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The Empirical $(1f_{7/2})^n$ Model.

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1. – Introduction.

One of the most attractive features of the spherical shell model is its relative simplicity for calculations in a strongly restricted configuration space. If the space is sufficiently truncated, one can perform exact shell model calculations which make the comparison with experiments more transparent and hence more attractive also for experimentalists. However, with any reasonable model space truncation one is always left with the problem of determining an effective residual interaction for the nucleons in the considered orbits, usually assumed to be a two-body force. Clearly, the smaller the number of orbits considered the smaller the number of two-body matrix elements one has to deal with. Since it is a nontrivial problem to establish the two-body matrix elements for a shell model calculation, the uncertainties might increase with a larger shell model space, although in principle one should get better agreement with experiment.

The simplest nuclei in terms of the shell model are those which can be described by a closed inert core and some active neutrons and protons distributed in a single j-orbit. The residual interaction of these particles leads to a splitting of the otherwise degenerate energies which is reflected in the energy levels of the considered nuclei. If the residual interaction is represented by a two-body force, it follows from a general theorem of jj-coupling [1] that the matrix elements of such an interaction in the $(j)^n$ configuration can be expressed as a linear combination of the matrix elements of the same interaction in the $(j)^2$ configuration, $\langle j^2|V_{12}|j^2\rangle_{J=0,1...2j}$. Thus, the problem of describing the $(2j+1)^2$ nuclei of the $(j)^n$ configuration is reduced to the determination of the $2j+1$ two-body interaction matrix elements of the $(j)^2$ configuration. These latter matrix elements can be obtained in various ways (both empirical and theoretical) and will be discussed in sect. 2.

Whether the described simplification has any relation to real nuclei depends primarily on the separation of the single j-orbit from the neighbouring ones. There is actually only one nuclear region where a single j-orbit for both protons and neutrons is relatively well separated from the others, namely the $1f_{7/2}$ orbit. Thus, nuclei in this region, which span from ^{40}Ca to ^{48}Ca to ^{56}Ni, are expected to become closest to the idealistic picture described above. Still it is not expected that such a model can account for all the observed levels. It rather picks out a certain class of levels which belong to this presumable simple configuration. Strictly speaking, one cannot even draw conclusions about the configurational purity of the observed levels in comparison with the calculated ones, unless one is sure to have used pure $(j)^2$ matrix elements to construct the n-particle system.

For the region considered here it is still an open question as to what extent one knows the two-body matrix elements of the « pure » $(1f_{7/2})^2$ configuration [2].

After the pioneering shell model calculations on $1f_{7/2}$ nuclei by LEVINSON and FORD [3], LAWSON and URETSKY [4] and TALMI [5], the first rather complete $(1f_{7/2})^n$ calculations were performed by MCCULLEN, BAYMAN and ZAMICK (MBZ) [6] and GINOCCHIO and FRENCH [7] using two-body matrix elements from experiment. Later, a number of $(1f_{7/2})^n$ calculations were performed by using new information about the $(1f_{7/2})^2$ matrix elements (see table I and ref. [8]).

MBZ used the experimental level scheme of ^{42}Sc which was not well known in 1964. In spite of this, they found a remarkably good agreement with many experimental levels which is in part due to the fact that their interaction was sufficiently similar to the ones which have subsequently been obtained from more complete ^{42}Sc experiments. Since MBZ in 1964 the experimental information on $1f_{7/2}$ nuclei has been increased tremendously (see, for example, ref. [9]). In particular, there are the following three points which seemed to us to warrant a new MBZ-type calculation:

i) Now there are experimental data on three different two-body systems in $1f_{7/2}$ nuclei available: ^{42}Sc, ^{48}Sc and ^{54}Co. In addition to these nuclei which deliver information on both the $T = 0$ and $T = 1$ matrix elements there are five nuclei which can be used for an experimental $T = 1$ two-body interaction: ^{42}Ti, ^{42}Ca, ^{46}Ca, ^{50}Ti and ^{54}Fe.

ii) Recently, high-spin states in many $1f_{7/2}$ nuclei with presumable simple shell model configurations have been found [10-14]. The increase of this information has been largely due to the advent of heavy-ion beams in connection with in-beam γ-ray spectroscopy. Especially the versatility of heavy-ion beams available at tandem laboratories has strongly influenced this field (see, for example, ref. [15]).

iii) Now a large amount of experimental data on electromagnetic matrix elements is available (*e.g.* about 100 $B(E2)$ values connecting states of presumable $(1f_{7/2})^n$ configuration).

In the present paper, the following quantities are calculated for all experimentally known nuclei of the $1f_{7/2}$-shell:

1) with 5 different empirical two-body interactions:

   all energy levels,

   ground-state interaction energy relative to ^{40}Ca,

   wave functions of the first and second excited state of each spin;

2) with the ^{42}Sc interaction:

   $E2$ and $M1$ matrix elements for the first and second excited state of each spin.

In addition, the formulae needed to calculate the β-decay matrix elements and spectroscopic factors (one- and two-nucleon transfer) from our $1f_{7/2}$ wave functions are given.

In sect. 2 the choice of the two-body matrix elements and the level schemes of the corresponding nuclei are discussed. In sect. 3 the concept of the calculation is outlined and in sect. 4 the tables of the above-mentioned quantities are presented. The aim of the present paper is to give rather complete information on calculable properties of $1f_{7/2}$ nuclei within the frame of the empirical $(1f_{7/2})^n$ model.

We finally note that the $(1f_{7/2})^n$ calculation is the only reasonable one which can be carried out exactly for all nuclei $A = 42$ to 56 with the present-day shell model technology. The next orbitals involved in the same major shell are the $2p_{3/2}$, $1f_{5/2}$ and $2p_{1/2}$, none of which can be separated from the others as well as the $1f_{7/2}$ orbital is separated from them. $(fp)^n$ calculations have been carried out exactly for $A = 42 \div 44$ [18], for which the dimensions involved in the JT formalism are at most 337 [29]. The maximum dimensions for $A = 45$, 48 and 56 are about $1.8 \cdot 10^3$, $1.1 \cdot 10^5$ and $4.0 \cdot 10^7$, respectively. Thus any calculation for nuclei near $A = 56$ which includes all of the fp orbitals must involve either shell model calculations with a limited number of excitations out of the $1f_{7/2}$ orbital or self-consistent calculations for the ground-state deformation from which rotational bands can be projected. The $(1f_{7/2})^n$ calculation can provide a touchstone for these more involved approximations.

2. – The two-body interaction matrix elements.

2·1. *Choice of the matrix elements.* – In order to calculate the matrix elements of the $(1f_{7/2})^n$ configuration, we need the eight matrix elements of the $(1f_{7/2})^2$ configuration with $J^\pi(T) = 0^+(1), 1^+(0), 2^+(1), 3^+(0), 4^+(1), 5^+(0), 6^+(1), 7^+(0)$. These matrix elements have been obtained in the past by four different methods: i) from the $(1f_{7/2})^2$ levels of the two-body nuclei (*e.g.* ^{42}Sc [6, 16]); ii) from a simultaneous fit of the eight matrix elements to many levels in $1f_{7/2}$ nuclei with presumable $(1f_{7/2})^n$ configuration [17, 18]; iii) from a phenomenological potential (*e.g.* delta, quadrupole, finite-range central, tensor, LS force), where some strength parameters are fitted to experimental levels [2, 19, 20]; iv) from a realistic interaction based on the free nucleon-nucleon potential [21] through the reaction matrix approach [22]. Some of these matrix elements [18, 19, 22] were chosen for $(fp)^n$ model space calculations, whereas others [6, 16, 17] are more appropriate for the $(1f_{7/2})^n$ model space calculations. Only the last approach iv) might be called a purely theoretical one, whereas the others are more or less empirical. A collection of matrix elements for all four methods taken from the above-quoted references is given in table I.

TABLE I. – *Various sets of* $(1f_{7/2})^2$ *matrix elements used in the literature (in units of* MeV).

Method		i) empirical ([a])		ii) empirical fit		iii) model parameter fit			iv) reaction matrix	
reference model space		MBZ ([b]) $(1f_{7/2})$	SBCS ([c]) $(1f_{7/2})$	DB ([d]) $(1f_{7/2})$	MG ([e]) (fp)	GBW ([f]) (fp)	MJBA ([g]) ([k])	ST ([h]) ([k])	KB (G)	KB $(G+G_{3p1h})$ ([j]) $(fp+1g_{9/2})$
J^π	(T)									
0^+	(1)	−3.174	−3.174	−3.09	−2.22	−2.400	−2.799	−1.83	−0.869	−1.807
1^+	(0)	−2.139	−2.563	−2.40	−1.45	−1.338	−2.170	−1.51	−0.230	−0.525
2^+	(1)	−1.665	−1.587	−1.58	−1.15	−0.371	−0.891	−0.48	−0.664	−0.785
3^+	(0)	−0.926	−1.683	−1.11	−1.07	−0.895	−1.065	−1.03	−0.211	−0.208
4^+	(1)	−0.178	−0.362	−0.33	−0.36	−0.081	+0.033	+0.02	−0.297	−0.087
5^+	(0)	−1.218	−1.663	−0.77	−1.10	−0.876	−0.954	−1.17	−0.604	−0.502
6^+	(1)	+0.23	+0.063	+0.44	+0.29	+0.060	+0.178	+0.24	−0.120	+0.226
7^+	(0)	−2.557	−2.556	−2.54	−2.42	−1.152	−2.152	−2.75	−2.185	−2.199

(*a*) These matrix elements are calculated from the respective excitation energies in ^{42}Sc by the procedure described in the appendix.
(*b*) See ref. [6].
(*c*) See ref. [16].
(*d*) See ref. [17]. Fit of the eight $(1f_{7/2})^2$ matrix elements to 34 energy levels with presumable $(1f_{7/2})^n$ configuration in the $40 \leqslant A \leqslant 48$ region.
(*e*) See ref. [18]. Fitted $(1f_{7/2})^2$ matrix elements to obtain optimum agreement with 29 excitation energies and 7 ground-state binding energies of all nuclei with $42 \leqslant A \leqslant 44$ in a full f-p shell calculation. All other matrix elements were taken from KUO and BROWN [22].
(*f*) See ref. [19]. Matrix elements of a modified surface delta-interaction with $A_0 = 0.4$, $B_0 = -0.5$, $A_1 = 0.6$ and $B_1 = 0.2$ MeV.
(*g*) See ref. [20]. Matrix elements of a delta plus quadrupole force fitted to the experimental spectra of ^{34}Cl, ^{42}Sc, ^{90}Nb and ^{210}Pb (4 parameters).
(*h*) See ref. [2]. Matrix elements from a 12-parameter fit of a detailed (central plus noncentral) two-body force to over 100 experimental two-body matrix elements throughout the nuclear chart $(6 \leqslant A \leqslant 210)$.
(*j*) See ref. [22]. These matrix elements are obtained from the free nucleon-nucleon interaction of HAMADA and JOHNSTON [21]. The first column gives the bare reaction matrix elements (G) and the second the sum of the bare and the $3p$-$1h$ matrix elements (G_{3p1h}) which take care for the renormalization due to the polarization of the ^{40}Ca core.
(*k*) Best fit for many nuclei throughout the nuclear chart including ^{42}Sc within a $1f_{7/2}$ model space.

In the present paper we have devoted ourselves to the method i), which is essentially the Talmi approach. It is assumed that a subset of the energy levels for the region ^{40}Ca to ^{48}Ca to ^{56}Ni can be described by $(fp)^n$ wave functions which have dominant components of $(1f_{7/2})^n$. The truncation, exact $\to$ $\to (fp)^n \to (1f_{7/2})^n$, for these wave functions is made by introducing an empirical effective two-body interaction based on the two-particle nuclei. In addition to the predominantly $(1f_{7/2})^n$ states, there always occur starting at about 2 MeV in excitation core excited states with predominant configurations of the type $(sd)^{-2}(1f_{7/2})^{n+2}$ and $(1f_{7/2})^{n-m}(2p_{3/2})^m$, where $m = 1$ and 2, which will be treated as intruder states. The primary consideration for the two-particle nuclei is in distinguishing between the $(1f_{7/2})^2$ states and the intruder states. Reaction data are very useful in this respect, especially the information from the one-nucleon transfer reaction [2]. Unfortunately, none of the two-particle nuclei in the $1f_{7/2}$-shell can be reached by such a reaction on stable targets. For this reason, we use several empirical interactions based simply on the lowest observed state of each spin. This approach would be of fundamental interest if somehow the mixing with intruder states were simulated by an effective two-body interaction in the many-particle nuclei. Recently, however, by the use of a ^{41}Ca target ($T_{1/2} = 8 \cdot 10^4$ y) the reactions ^{41}Ca(^{3}He, d)^{42}Sc [24] and ^{41}Ca(d, p)^{42}Ca [25] have been studied. A considerable fragmentation of the $l = 3$ strength into several states of the respective spins ($J \leqslant 5$) has been observed, which leads to an effective $(1f_{7/2})^2$ interaction which is less dependent on the $(sd)^{-2}(1f_{7/2})^4$ intruder states.

The experimental status of $1f_{7/2}$ nuclei offers ten different sets of $T = 1$, $J =$ even, and four different sets of $T = 0$, $J =$ odd $(1f_{7/2})^2$ matrix elements deducible from the energy levels of the nuclei ^{42}Ti, ^{42}Sc, ^{42}Ca, ^{48}Sc, ^{50}Ti, ^{54}Fe and ^{54}Co (see fig. 1 and also the appendix). In addition, we have the results of the above-mentioned one-nucleon transfer reactions. The experimental data for these nuclei are discussed in detail in subsect. 2.2.

The interaction energies in fig. 1 clearly show a charge dependence of the effective interaction. Some of this charge dependence comes from the Coulomb interaction of the two protons and, to the extent that this Coulomb interaction is a state-independent constant, it is only relevant for the calculation of binding energies. After the subtraction of a constant from the two-proton interactions, to align the 6^+ states (see fig. 1), the energy differences of the $T = 1$ multiplets in the mass-42 nuclei are relatively small. For this case it is adequate to use a charge-independent interaction in the shell model calculation based on the proton-neutron interaction energies of ^{42}Sc. This situation is similar for the mass-54 multiplet. However, the interaction energies of ^{50}Ti, $(^{48}\text{Sc})_T$ and ^{46}Ca compared in this way differ significantly. This effect arises more from configuration mixing than from Coulomb interaction. In this case, it is interesting to make a calculation in which the proton-neutron interaction is different from the proton-proton and neutron-neutron interac-

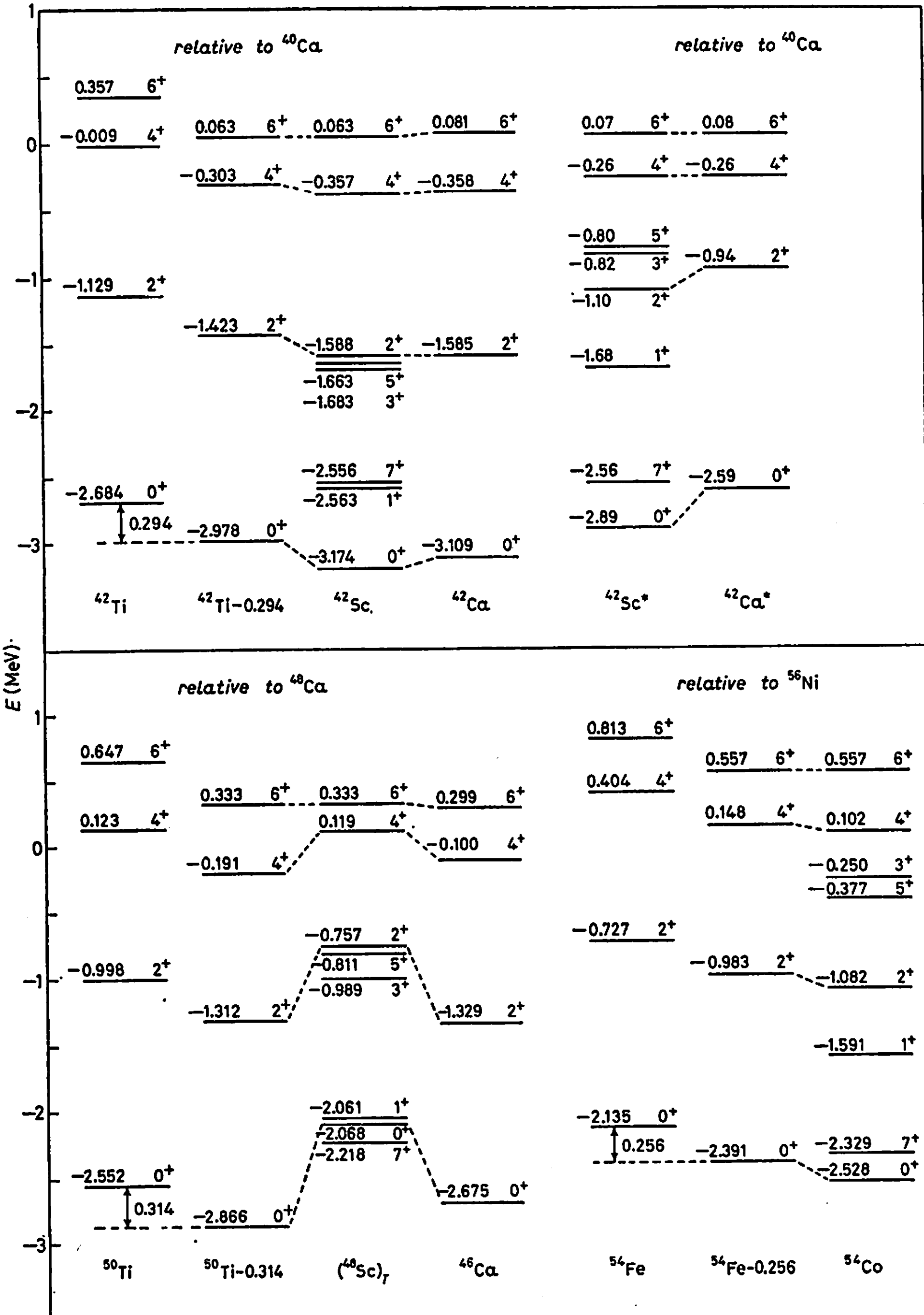

Fig. 1. – Two-body interaction energies calculated from the experimental energy levels of the corresponding nuclei by the procedure described in the appendix. Even-spin states have isospin $T = 1$ and odd-spin states have $T = 0$. The two-proton spectra have been arbitrary normalized to the 6^+ levels of the proton-neutron spectra to correct for the two-body Coulomb shift.

tions. (The interaction energies of ^{46}Ca are similar to the interaction energies of ^{50}Ti—0.314 MeV.)

In the present paper we have chosen the following five sets of two-body matrix elements which we think are the most relevant for an empirical $(1f_{7/2})^n$ model:

1) the particle-particle interaction extracted from the lowest level of each spin in ^{42}Sc,

2) the hole-hole interaction extracted from single levels (not necessarily the lowest of each spin) in ^{54}Co,

3) the Pandya transformed [23] particle-hole interaction from the lowest level of each spin in ^{48}Sc,

4) the particle-particle interaction from the centroids of levels in ^{42}Sc weighted with the spectroscopic factors from the ^{41}Ca(^{3}He, d)^{42}Sc reaction [24],

5) the proton-neutron interaction from single levels of ^{48}Sc (the same as in 3)) and the proton-proton and neutron-neutron interactions from single levels in ^{46}Ca.

For all of these sets the $(1f_{7/2})^n$ energy levels of cross-conjugate pairs of nuclei (see fig. 2) are identical. The eigenstates of the $(1f_{7/2})^n$ configuration have good isospin for the interaction sets from 1) to 4), but not for set 5).

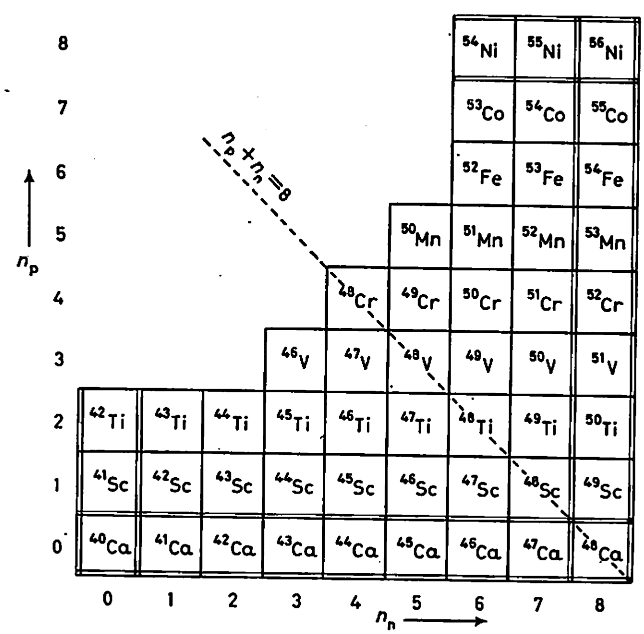

Fig. 2. – $1f_{7/2}$ shell nuclei. The cross-conjugate nuclei are the mirror pairs of nuclei, lying on either side of the line $n_p + n_n = 8$ and the self-cross-conjugate nuclei lie on the line $n_p + n_n = 8$.

2.2. *Energy levels of the* $(1f_{7/2})^2$ *multiplet.* – In this subsection we present the relevant level spectra of those nuclei which were used to determine the $(1f_{7/2})^2$ matrix elements shown in fig. 1. The adopted $(1f_{7/2})^2$ levels are derived on the basis of the level spectra shown in fig. 3 to 6.

The quality of the experimental information varies for the different nuclei. For example, ^{42}Sc is very well investigated, whereas less significant information for ^{54}Co is known. The information on the two-proton and two-neutron nuclei is rather complete with the exception of ^{54}Ni.

^{42}Ti, ^{42}Ca, ^{46}Ca, ^{50}Ti *and* ^{54}Fe.

Energy levels up to an excitation energy of 4 MeV are shown in fig. 3. The spectra have been taken from ref. [30, 31] for ^{42}Ti, ref. [30] for ^{42}Ca, ref. [31-33] for ^{46}Ca, ref. [31, 34, 35] for ^{50}Ti, ref. [36, 37] for ^{54}Fe and ref. [25] for the ^{41}Ca(d, p)^{42}Ca reaction. The $T = 1$, $J^\pi = 0^+, 2^+, 4^+, 6^+$ states of the $(1f_{7/2})^2$ multiplet are usually assigned to the lowest excitation energies of the respective spins. However, the l_n values shown in the level spectrum from the ^{41}Ca(d, p)^{42}Ca reaction [25] indicate a splitting of the $l = 3$ strength into three 0^+, four 2^+, two 4^+ and one 6^+ state. The energy centroids $E(J)$ of the $(1f_{7/2})^2$ states shown in the last spectrum have been calculated with the relation [25]

$$E(J) = \sum_i S_i(J)\cdot E_i(J)\Big/\sum_i S_i(J)\,,$$

where the excitation energy $E_i(J)$ of the i-th component of spin J is weighted by its spectroscopic factor.

^{42}Sc.

Figure 4 shows the relevant level schemes of ^{42}Sc. Similar to ^{42}Ca a fragmentation of the $l = 3$ strength has been observed in the one-nucleon transfer reaction on ^{41}Ca [24]. The energy centroids weighted with the spectroscopic factors as described for ^{42}Ca above are given in the spectrum labelled as ^{42}Sc*. A strong upward shift is observed for the $T = 0$, $J^\pi = 1^+, 3^+, 5^+$ states as compared to the adopted $(1f_{7/2})^2$ single-level multiplet. It is interesting that fortuitously these states are closer to the MBZ spectrum [6] than the lowest states of each spin in ^{42}Sc.

^{48}Sc.

Energy levels of ^{48}Sc obtained from various experiments are shown in fig. 5. In order to get the particle-particle interaction energies, the particle-hole spectrum of ^{48}Sc has to be transformed by the Pandya relation [23] (see the appendix). In the transformed spectrum shown in fig. 5 the energy of the 7^+ state has been arbitrarily set to zero.

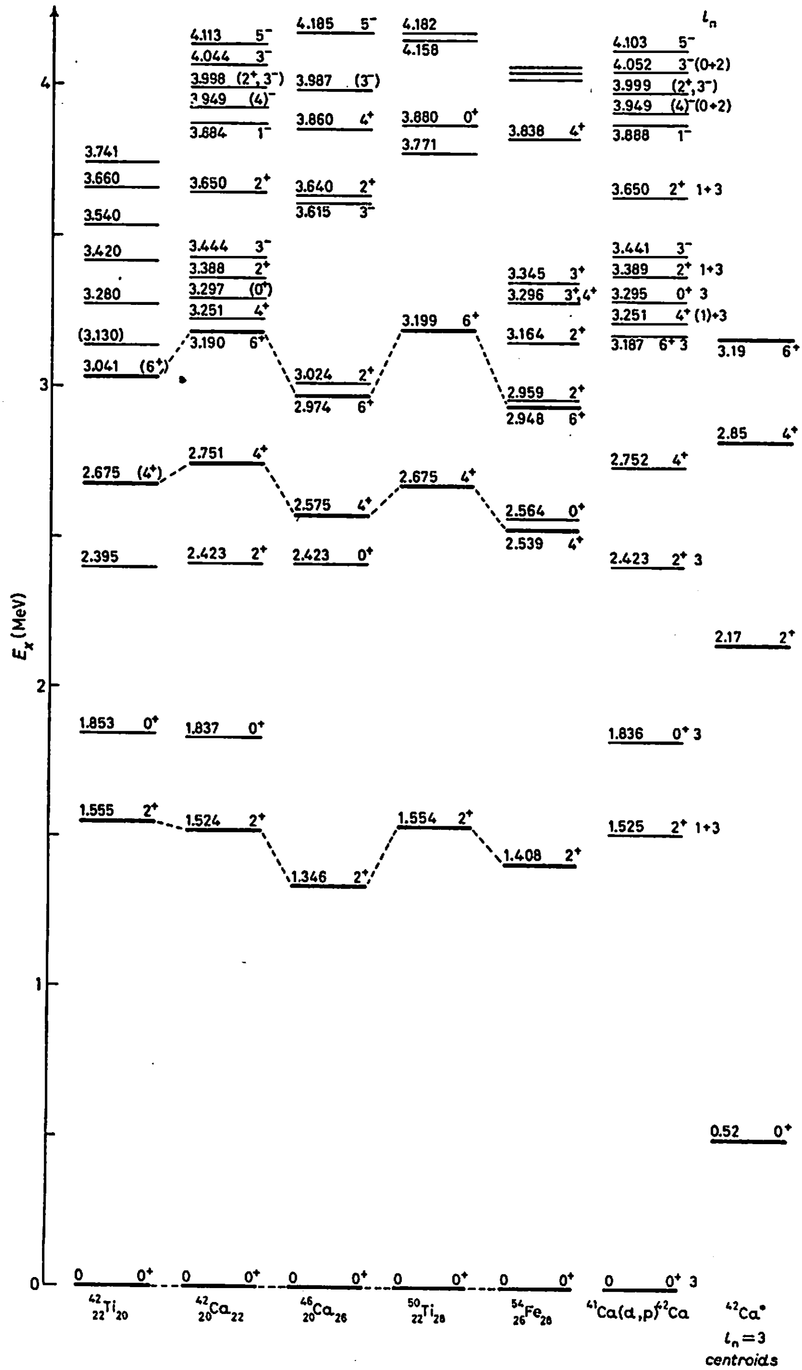

Fig. 3. – Energy levels of nuclei with two identical particles or holes in the $1f_{7/2}$ shell. See subsect. 2·2 for the experimental references. The states adopted for the $(1f_{7/2})^2$ configuration are connected with dashed lines. The spectrum labelled with $^{42}Ca^*$ represents energy centroids of levels populated by $l=3$ transfer in the $^{41}Ca(d, p)^{42}Ca$ reaction [25] weighted with the respective spectroscopic factors.

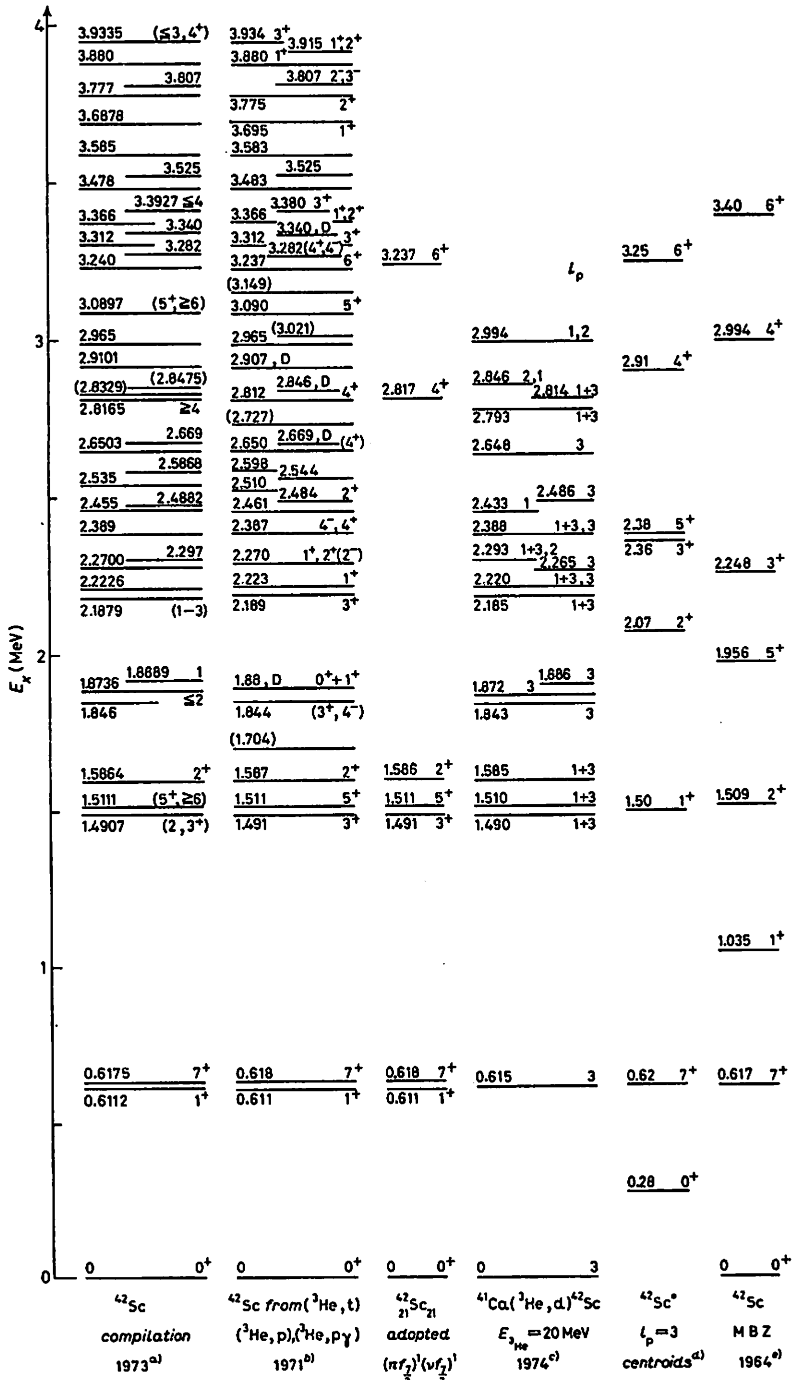

Fig. 4. – Energy levels of ^{42}Sc. *a*) ref. [30], *b*) ref. [16], *c*) ref. [24], *d*) energy centroids of levels populated by $l = 3$ transfer in the ^{41}Ca(^{3}He, d)^{42}Sc reaction [24] weighted with the respective spectroscopic factors, *e*) original spectrum of McCullen, Bayman and Zamick [6].

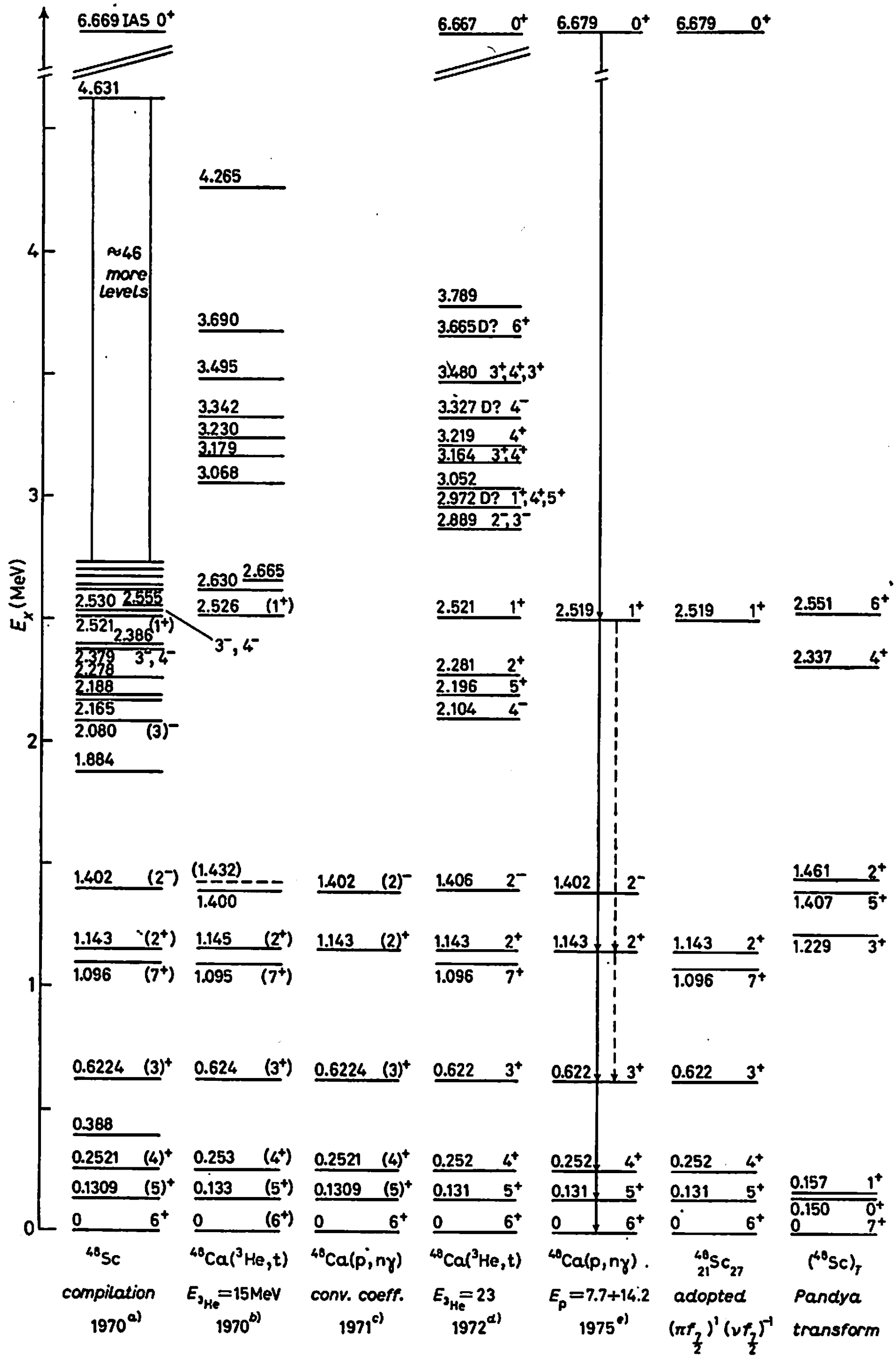

Fig. 5. – Energy levels of ^{48}Sc. *a*) ref. [38], *b*) ref. [39], *c*) ref. [40], *d*) ref. [41], *e*) ref. [42].

^{54}Co.

Energy levels of ^{54}Co observed in various experiments are shown in fig. 6. From older measurements *a*)-*f*) it is difficult to make a definite assignment for all states of the $(1f_{7/2})^{-2}$ multiplet. The assignment of the lowest two $T = 0$ states, 7^+ and 1^+, and the assignment of the lowest three $T = 1$ states,

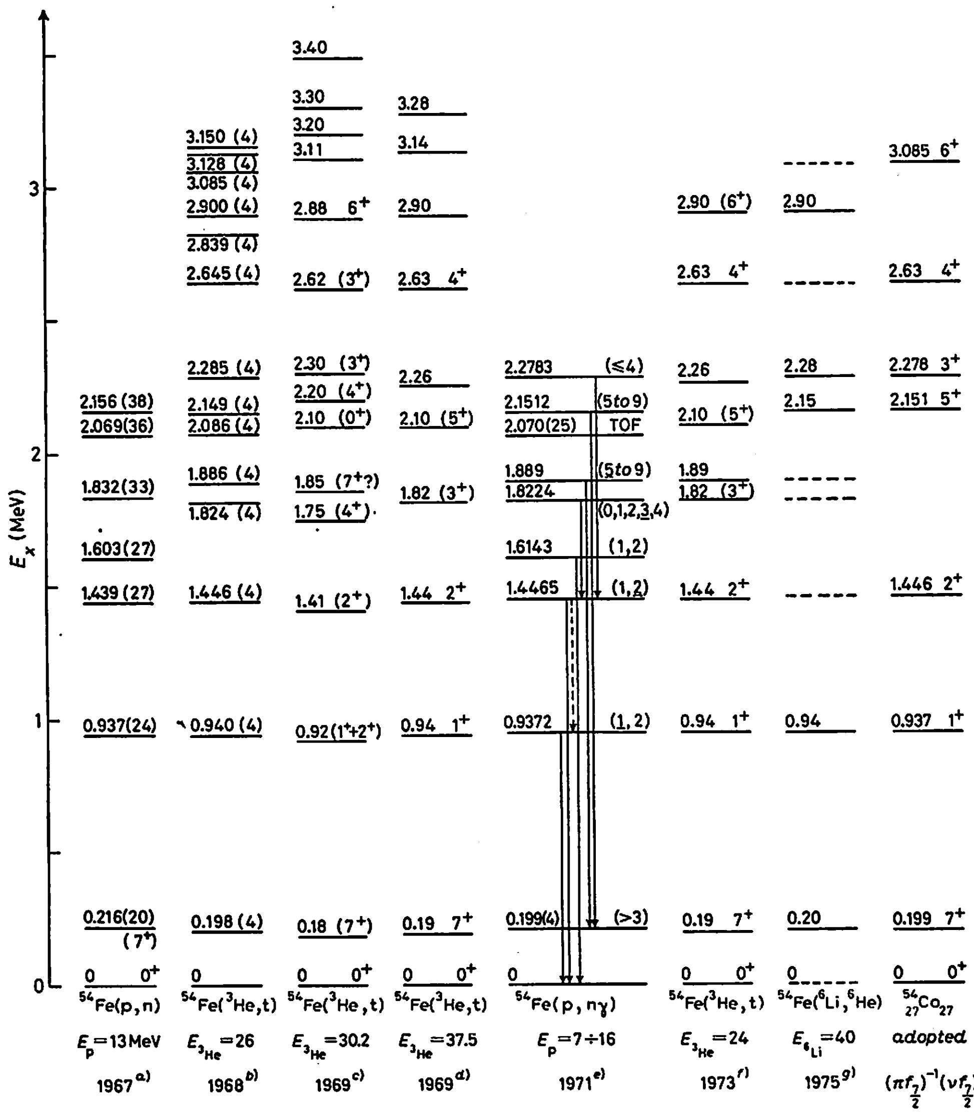

Fig. 6. – Energy levels of ^{54}Co from various experiments. *a*) ref. [43], *b*) ref. [44], *c*) ref. [45], *d*) ref. [46], *e*) ref. [47], *f*) ref. [48], *g*) ref. [49]; the dashed lines mean that these levels are not observed or only weakly populated. The numbers in parenthesis beside the energy values in the first two spectra are the experimental errors.

0^+, 2^+ and 4^+, may be done uniquely. In the latter case, the comparison of the excitation energies of the 0^+, 2^+ and 4^+ states in ^{54}Fe and ^{54}Co gives further support to these assignments. The assignments of the 3^+, 5^+ and 6^+ members of the $(1f_{7/2})^{-2}$ configuration are on the contrary not at all unique in those older measurements. McGRATH *et al.* [49], however, measured the ^{54}Fe(^{6}Li, ^{6}He)^{54}Co reaction and found a strong selectivity (isospin dependence) of this reaction, namely the 0^+, 2^+ and 4^+ states are very weakly populated, but the 1^+ and 7^+ very strongly. They argue that the states at 2.15 and 2.28 MeV should be assigned to the 5^+ and 3^+ ($T = 0$) members, since they were strongly populated in this reaction. The 5^+ and 3^+ are associated with the 2.15 and 2.28 MeV states, respectively, on the basis of the spin limitations obtained in ref. [47]. On the other hand, the older assignments of $J^\pi = 6^+$ to the 2.9 MeV state are put into question because this state is also strongly excited in this reaction. They suggest the 3.085 MeV state as the candidate to the 6^+ member of the $(1f_{7/2})^{-2}$ multiplet. The unpublished DWBA analysis of the (^{3}He, t) data of Schwartz *et al.* [49] also supports this assignment. With this assignment the $E_{6^+} - E_{4^+}$ energy difference is 0.440 MeV (calculated from the 3.085 and 2.645 MeV levels of ref. [44]), which compares more favourably with the corresponding energy difference in ^{54}Fe (0.409 MeV) as compared to a value of 0.255 MeV by assuming the 2.900 MeV state to be the 6^+. Therefore, we assigned the $(1f_{7/2})^{-2}$ multiplet as shown in the last spectrum of fig. 6.

3. – Shell model calculation.

3·1. *Comments on different shell model methods.* – Basically, there exist two different methods of the *jj*-coupling shell model for the calculation of the states in the j^n configuration of both protons and neutrons. One i) uses the isospin formalism and the other one ii) the neutron-proton representation.

i) With the isospin formalism the states of the j^n configuration, where n is the number of particles (both protons and neutrons) in the j-shell, are classified by the total spin J and the isospin T. An additional quantum number α, which usually includes the seniority, a reduced isospin quantum number and so on should be introduced for a complete specification of the states. Basis wave functions are represented as $|j^n\alpha TJ\rangle$. The number of different α's corresponds to the dimension of the Hamiltonian matrix of the given T and J. In the $(7/2)^3$ configuration, for example, the dimension of the Hamiltonian of the $T = 1/2$ and $J = 7/2$ is three and that of the $T = 3/2$ and $J = 7/2$ is one [50]. The maximum dimension is 23 for the $(7/2)^8$ $T = 1$, $J = 5$ states. The calculation of the matrix elements of the Hamiltonian

$$H = H_0 + \sum_{i<j}^{n} V_{ij}\,, \tag{1a}$$

where H_0 is a single-particle Hamiltonian and V_{ij} are two-body interactions, is carried out by the use of standard techniques which are explained, for example, in ref. [1]. In this procedure we need the $n \to n-2$ c.f.p. (the coefficients of fractional parentage), $[j^{n-2}(\alpha_2 T_2 J_2) j^2(J') TJ | \} j^n \alpha TJ]$, which can be obtained from the $n \to n-1$ c.f.p., $[j^{n-1}(\alpha_1 T_1 J_1) jTJ | \} j^n \alpha TJ]$. The procedure of calculating these $n \to n-1$ c.f.p. which include the isospin factor explicitly (the c.f.p. with isospin) is generally shown in ref. [51]. Tables of the $n \to n-1$ c.f.p. with isospin are available for $j = 3/2$ and $5/2$ [52]. For $j = 7/2$, the $n \to n-1$ c.f.p. with isospin are tabulated only up to $n = 5$ [53].

Recently an alternative method of the isospin scheme based on a quasi-particle formalism has been developed [54]. In this method one can avoid the use of the large number of $n \to n-1$ c.f.p. with isospin.

ii) In the proton-neutron representation, the jj-coupling technique is applied for the configuration of protons and neutrons which occupy different orbits, *i.e.* the $j_p^{n_p} \cdot j_n^{n_n}$ configurations. The wave functions of the j^n configuration are described by a coupling of the proton states j^{n_p} and the neutron states j^{n_n}, where $n = n_p + n_n$ and n_p and n_n are the number of protons and neutrons in the j-orbit.

Since the numbers of the states of the identical particles in the single j-shell are very limited, one can easily classify these states. In the case of the $j = 7/2$ shell, the states of the protons or neutrons are completely classified by the use of the total spin J and a seniority v. In the appendix we show the table of states of the identical particles in the $j = 7/2$ shell. From the table we notice that the introduction of the seniority is necessary for the classification of the states in the $(7/2)^4$ configuration of the identical particles. The four-proton or four-neutron configuration of the $j = 7/2$ shell has two $J = 2$ states and two $J = 4$ states. By using the seniority number we can discriminate the states with same spin in the $j = 7/2$ shell; however, in the case of a $j \geqslant 9/2$ shell additional quantum numbers should be introduced to specify the states of the identical-particle configuration.

Thus the basis wave functions of the state with total spin J in the n_p-proton and n_n-neutron configuration are represented as $|j^{n_p}(v_p J_p) \cdot j^{n_n}(v_n J_n) J\rangle$ for the $j \leqslant 7/2$ shell, where v_p and v_n are the seniorities and J_p and J_n are the spins of the proton and of the neutron states, respectively. All states which satisfy the relation $\boldsymbol{J}_p + \boldsymbol{J}_n = \boldsymbol{J}$ are considered as basis wave functions of the spin-J state. For example, in the ^{43}Sc nucleus the dimension of the Hamiltonian for the $J = 7/2^-$ state is 4. The maximum dimension is 49 for the $(7/2)^8$ $J = 4$ states. Though in this method each basis wave function is not an eigenstate of the isospin operator $\boldsymbol{T}$, each eigenstate of the isospin-independent Hamiltonian has its definite isospin. For example, among the four eigenstates of the $J = 7/2^-$ states of ^{43}Sc, three of them are the isospin $T = 1/2$ states and the other one is the $T = 3/2$ state which is the isobaric analogous state of the $J = 7/2^-$ state in the ^{43}Ca nucleus.

In this method we need the $n \to n-1$ c.f.p. and the $n \to n-2$ c.f.p. of the identical-particle states. But the numbers of these c.f.p. are very much smaller than those of the $n \to n-1$ and the $n \to n-2$ c.f.p. with isospin. Because of this condition the proton-neutron representation is more practical than the isospin representation for the j^n-configuration problem.

In the present article we use the proton-neutron representation for the calculation in the $1f_{7/2}$-shell. A description of the calculation procedures is given in the following subsections.

3'2. *Calculation of the Hamiltonian matrix.* – In order to get the energies and wave functions of the levels in the (n_p, n_n) nucleus, where n_p and n_n are the numbers of protons and neutrons in the $1f_{7/2}$ orbit, all the matrix elements of the Hamiltonian H are calculated. Since the two-body interaction $\sum_{i<j} V_{ij}$ in eq. (1*a*) can be decomposed into three parts, the proton-proton (V_{pp}), the neutron-neutron (V_{nn}) and the proton-neutron (V_{pn}) interaction, the Hamiltonian for the configuration of both protons and neutrons is written as

$$H = H_0 + V_{pp} + V_{nn} + V_{pn} \,. \tag{1b}$$

A matrix element of the Hamiltonian H can be described as follows:

$$\begin{aligned}\langle j^{n_p}(v_p J_p) j^{n_n}(v_n J_n) J | H | j^{n_p}(v'_p J'_p) j^{n_n}(v'_n J'_n) J\rangle &= \\ = (n_p \cdot \varepsilon_p + n_n \cdot \varepsilon_n) \cdot \delta(v_p J_p, v'_p J'_p) \cdot \delta(v_n J_n, v'_n J'_n) &+ \\ + \langle j^{n_p} v_p J_p | V_{pp} | j^{n_p} v'_p J_p\rangle \, \delta(J_p, J'_p)\, \delta(v_n J_n, v'_n J'_n) &+ \\ + \langle j^{n_n} v_n J_n | V_{nn} | j^{n_n} v'_n J_n\rangle \, \delta(J_n, J'_n)\, \delta(v_p J_p, v'_p J'_p) &+ \\ + \langle j^{n_p}(v_p J_p) j^{n_n}(v_n J_n) J | V_{pn} | j^{n_p}(v'_p J'_p) j^{n_n}(v'_n J'_n) J\rangle &,\end{aligned} \tag{2}$$

where J is the spin of the total system. Equation (2) is valid for any single-j configuration, if v_p and v_n include all quantum numbers necessary for a complete specification of the states of the identical particles.

The first terms of eq. (2) are the single-particle energies which appear only in the diagonal elements of the matrix. The second and third terms are the matrix elements of the interactions of identical nucleons, protons or neutrons, and can be expanded in a linear combination of the two-body matrix elements by the use of the $n \to n-2$ c.f.p.:

$$\begin{aligned}\langle j^{n_p} v_p J_p | V_{pp} | j^{n_p} v'_p J_p\rangle = \frac{n_p(n_p-1)}{2} \sum_{J'} \sum_{v_0 J_0} [j^{n_p} v_p J_p \{| j^{n_p-2}(v_0 J_0) j^2(J') J_p] \cdot \\ \cdot [j^{n_p-2}(v_0 J_0) j^2(J') J_p |\} j^{n_p} v'_p J_p] \cdot V_{pp}(j^2 J') \,,\end{aligned} \tag{3}$$

where

$$V_{pp}(j^2J') = \langle j^2|V_{pp}|j^2\rangle_{(J',T'=1)}\,, \qquad J' = 0, 2, \ldots, 2j-1\,,$$

is a two-body matrix element of the proton interaction. The $n \to n-2$ c.f.p. can be expressed in terms of products of one-body c.f.p. (the $n \to n-1$ c.f.p.) as follows:

$$(4) \qquad [j^{n-2}(v_0J_0)\,j^2(J')J|\}j^n vJ] = \sum_{v_1J_1} [j^{n-2}(v_0J_0)\,jJ_1|\}j^{n-1}v_1J_1]\cdot$$
$$\cdot [j^{n-1}(v_1J_1)\,jJ|\}j^n vJ]\sqrt{(2J_1+1)(2J'+1)}\,W(J_0jJj;J_1J')\,.$$

The $n \to n-1$ c.f.p. which are used in the present calculations are tabulated in the appendix.

It is well known that the matrix of V_{pp} or V_{nn} in a single-j configuration is diagonal for $j < 7/2$. Since we are considering the $(1f_{7/2})^n$ configuration, we can rewrite eq. (3) in a much simpler way:

$$(5) \qquad \langle j^{n_p}v_pJ_p|V_{pp}|j^{n_p}v'_pJ_p\rangle = \delta(v_pv'_p)\sum_{J'} C_{J'}^{(n_pv_pJ_p)}\,V_{pp}(j^2J') \qquad \text{for } j < 7/2\,,$$

where

$$C_{J'}^{(nvJ)} = \frac{n(n-1)}{2}\sum_{v_0J_0}[j^{n-2}(v_0J_0)\,j^2(J')J|\}j^n vJ]^2\,.$$

The values of the coefficients $C_{J'}^{(nvJ)}$ of the $j = 7/2$ shell are given in the appendix. Of course, we can calculate the third term in eq. (2) in exactly the same way as the second term, and we obtain

$$(6) \qquad \langle j^{n_n}v_nJ_n|V_{nn}|j^{n_n}v'_nJ_n\rangle = \delta(v_nv'_n)\sum_{J'} C_{J'}^{(n_nv_nJ_n)}\,V_{nn}(j^2J') \qquad \text{for } j < 7/2\,,$$

where

$$V_{nn}(j^2J') = \langle j^2|V_{nn}|j^2\rangle_{(J',T'=1)}\,.$$

The fourth term of eq. (2) is the matrix element of the proton-neutron interaction V_{pn}. This element can be represented as a linear combination of the two-body matrix elements of the proton-neutron interactions

$$V_{pn}(j^2J') = \langle j^2|V_{pn}|j^2\rangle_{(J',T')}\,, \qquad J' = 0, 1, \ldots, 2j\,,$$

and $T' = 0$ if $J' =$ odd and $T' = 1$ if $J' =$ even.

We obtain the following equation by the use of the 9-j coefficients:

$$(7)\quad \langle j^{n_p}(v_pJ_p)\,j^{n_n}(v_nJ_n)J|V_{pn}|j^{n_p}(v'_pJ'_p)\,j^{n_n}(v'_nJ'_n)J\rangle =$$
$$= n_p n_n \sum_{v_{p_1}J_{p_1}} \sum_{v_{n_1}J_{n_1}} [j^{n_p}v_pJ_p\{|j^{n_p-1}(v_{p_1}J_{p_1})\,jJ_p][j^{n_n}v_nJ_n\{|j^{n_n-1}(v_{n_1}J_{n_1})\,jJ_n]\cdot$$
$$\cdot[j^{n_p-1}(v_{p_1}J_{p_1})\,jJ'_p|\}j^{n_p}v'_pJ'_p][j^{n_n-1}(v_{n_1}J_{n_1})\,jJ'_n|\}j^{n_n}v'_nJ'_n]\cdot$$
$$\cdot\sqrt{(2J_p+1)(2J_n+1)(2J'_p+1)(2J'_n+1)}\sum_{J'}(2J'+1)\,V_{pn}(j^2J')\cdot$$
$$\cdot\sum_{J''}(2J''+1)\begin{Bmatrix} J_{p_1} & j & J_p \\ J_{n_1} & j & J_n \\ J'' & J' & J \end{Bmatrix}\cdot\begin{Bmatrix} J_{p_1} & j & J'_p \\ J_{n_1} & j & J'_n \\ J'' & J' & J \end{Bmatrix}.$$

This element contributes to both diagonal and nondiagonal elements of the Hamiltonian matrix.

Using eqs. (5)-(7) with the $n \to n-1$ c.f.p. and the $C_{J'}^{(nvJ)}$ coefficients of the appendix, we can calculate the matrix elements of the Hamiltonian (2).

Energy and wave function. The diagonalization of this matrix gives us all energies and wave functions of the spin-J states in the (n_p, n_n) nucleus. The predicted excitation energies calculated with five different empirical interactions are given in table VI of sect. 4.

The i-th state of a spin J is described as follows:

$$(8)\quad |J_i\rangle = \sum_{(v_pJ_p, v_nJ_n)} \mathscr{A}^{(J,i)}_{(v_pJ_p,v_nJ_n)}|j^{n_p}(v_pJ_p)\,j^{n_n}(v_nJ_n)J\rangle\,,$$

where $\mathscr{A}^{(J,i)}_{(v_pJ_p,v_nJ_n)}$ are the amplitudes, which are directly obtained from the i-th eigenvector. The amplitudes of the first and second lowest states of each spin are given in table IX of sect. 4.

Isospin. If we use the charge-independent interactions for V_{pp}, V_{nn} and V_{pn}, the isospin operator $\boldsymbol{T}^2$ commutes with the Hamiltonian H, *i.e.* $[H, \boldsymbol{T}^2] = 0$. Thus the eigenstates of H are also eigenstates of $\boldsymbol{T}$. We can define the isospin T of a state $|J_i\rangle$ by the following equation:

$$(9)\quad T(T+1) = \langle J_i|\boldsymbol{T}^2|J_i\rangle = \sum_{v_pJ_p,v_nJ_n} \mathscr{A}^{(J,i)}_{(v_pJ_p,v_nJ_n)} \sum_{v'_pJ'_p,v'_nJ'_n} \mathscr{A}^{(J,i)}_{(v'_pJ'_p,v'_nJ'_n)}\cdot$$
$$\cdot\langle j^{n_p}(v_pJ_p)\,j^{n_n}(v_nJ_n)J|\boldsymbol{T}^2|j^{n_p}(v'_pJ'_p)\,j^{n_n}(v'_nJ'_n)J\rangle\,.$$

Since the $\boldsymbol{T}$ operator is a linear combination of the one-body operators $\boldsymbol{t}$,

$$\boldsymbol{T} = \sum_{i=1}^{n_p}\boldsymbol{t}_i + \sum_{j=1}^{n_n}\boldsymbol{t}_j\,,$$

the T^2 operator is decomposed into three parts, the proton, the neutron and the proton-neutron part:

$$(10)\qquad T^2 = \Big(\sum_{i=1}^{n_p} t_i + \sum_{j=1}^{n_n} t_j\Big)^2 = \Big(\sum_{i=1}^{n_p} t_i\Big)^2 + \Big(\sum_{j=1}^{n_n} t_j\Big)^2 + \sum_{i=1}^{n_p}\sum_{j=1}^{n_n} 2(t_i\cdot t_j)\,.$$

Using this equation, we can write the matrix elements of the T^2 operator as

$$(11)\qquad \langle j^{n_p}(v_pJ_p)\,j^{n_n}(v_nJ_n)J|T^2|j^{n_p}(v'_pJ'_p)\,j^{n_n}(v'_nJ'_n)J\rangle =$$
$$= \left\{\frac{n_p}{2}\left(\frac{n_p}{2}+1\right) + \frac{n_n}{2}\left(\frac{n_n}{2}+1\right)\right\}\delta(v_pJ_p, v'_pJ'_p)\cdot\delta(v_nJ_n, v'_nJ'_n) +$$
$$+ \langle j^{n_p}(v_pJ_p)\,j^{n_n}(v_nJ_n)J|\sum_{i=1}^{n_p}\sum_{j=1}^{n_n} 2(t_i\cdot t_j)|j^{n_p}(v'_pJ'_p)\,j^{n_n}(v'_nJ'_n)J\rangle\,.$$

In order to calculate the last term of the equation above, we can use eq. (7). The only difference is that, instead of the two-body interaction matrix elements, we should insert the value of

$$\langle j^2|2(t_1\cdot t_2)|j^2\rangle_{(J',T')}$$

into

$$V_{pn}(j^2J')\,.$$

In other words, since

$$\langle j^2|2(t_1\cdot t_2)|j^2\rangle_{(J',T')} = T'(T'+1) - 3/2\,,$$

one can calculate the last term of eq. (11) by the use of eq. (7) with the value of $V_{pn}(j^2J') = 1/2$ for $J' =$ even and $-3/2$ for $J' =$ odd.

The isospins calculated in this way are given for each state in table VI. In the case of the 5th interaction in table VI in which $V_{pp} = V_{nn}$ are different from V_{pn}, the effective two-body interactions are not charge independent and, as a consequence of this, the Hamiltonian H and T^2 do not commute. The eigenstates of the Hamiltonian H are no longer eigenstates of T^2. Thus the resultant wave functions generally contain several different isospin states. However, since the amount of admixture of different isospin is usually not large, it is still meaningful to show the main component of the isospin. The isospin values shown for the 5th case in table VI are the main components.

Two-body interaction energy. The eigenvalue of the predicted ground state provides information on the binding energy relative to ^{40}Ca. Since we are mainly interested in the property of the two-body nuclear interactions, contributions of the single-particle energies and of the Coulomb forces V_C are not considered in the present calculations. In other words, ε_p and ε_n of eq. (2) are set to zero and no Coulomb correction is considered to the proton-proton interaction V_{pp}. Thus the eigenvalues of the ground states in the present calculation can be called the two-body interaction energy. These energies are given in Table V. A relation between the interaction energy of the (n_p, n_n) nucleus, $I[n_p, n_n]$, and that of the cross-conjugate nucleus, $I[(2j+1)-n_n, (2j+1)-n_p]$, is given by the following equation:

$$(12)\qquad I[(2j+1)-n_n, (2j+1)-n_p] = I[n_p, n_n] + \frac{2j+1-n_p-n_n}{2j+1} I[(2j+1), (2j+1)] .$$

$I[(2j+1), (2j+1)]$ is the interaction energy of the doubly closed nucleus, ^{56}Ni in our case, and is obtained generally by the equation

$$(13)\qquad I[(2j+1), (2j+1)] = \sum_{J'=0,2,\dots,2j-1} (2J'+1)[V_{pp}(j^2J') + V_{nn}(j^2J')] + \sum_{J'=0,1,\dots,2j} (2J'+1) V_{pn}(j^2J') .$$

If one assumes a constant value for the Coulomb matrix $\langle j^2|V_C|j^2\rangle_{J'} = C$, $J' = 0, 2, \dots, 2j-1$, the total binding energy of the (n_p, n_n) nucleus, $\mathrm{BE}[n_p, n_n]$, can be obtained as

$$(14)\qquad \mathrm{BE}[n_p, n_n] = -I[n_p, n_n] - n_p\varepsilon_p - n_n\varepsilon_n - \frac{n_p(n_p-1)}{2}\cdot C$$

and compared with the experimental values.

3·3. *Electromagnetic moments and transitions.* – Reduced matrix elements of the one-body operator $\mathcal{F}^{(k)}$ with rank k are calculated in the following way. The operator $\mathcal{F}^{(k)}$ is decomposed into the proton and neutron parts:

$$(15)\qquad \mathcal{F}^{(k)} = \sum_{i=1}^{n_p} f_p^{(k)}(i) + \sum_{i=1}^{n_n} f_n^{(k)}(i) ,$$

where n_p and n_n are the numbers of protons and neutrons.

The reduced matrix element between the l-th state of the spin J and the m-th state of the spin J', $\langle J'_m \| \mathcal{F}^{(k)} \| J_l \rangle$, is written as a sum of the reduced matrix elements of the proton and neutron system

$$(16)\qquad \langle J'_m \| \mathcal{F}^{(k)} \| J_l \rangle = \sum_{(v'_p J'_p, v'_n J'_n)} \mathcal{A}^{(J',m)}_{(v'_p J'_p, v'_n J'_n)} \sum_{(v_p J_p, v_n J_n)} \mathcal{A}^{(J,l)}_{(v_p J_p, v_n J_n)} \cdot \langle j^{n_p}(v'_p J'_p) j^{n_n}(v'_n J'_n) J' \| \mathcal{F}^{(k)} \| j^{n_p}(v_p J_p) j^{n_n}(v_n J_n) J \rangle ,$$

where

$$\langle j^{n_p}(v'_p J'_p)\, j^{n_n}(v'_n J'_n) J' \| \mathscr{F}^{(k)} \| j^{n_p}(v_p J_p)\, j^{n_n}(v_n J_n) J\rangle = \sqrt{(2J+1)(2J'+1)}\cdot \tag{17}$$

$$\cdot\Big\{W(J'_p J_n k J;\, J' J_p)\langle j^{n_p} v'_p J'_p \| \sum_{i=1}^{n_p} f_p^{(k)}(i) \| j^{n_p} v_p J_p\rangle \delta(v_n J_n;\, v'_n J'_n) +$$

$$+\, W(J_p J' J_n k;\, J'_n J)\langle j^{n_n} v'_n J'_n \| \sum_{i=1}^{n_n} f_n^{(k)}(i) \| j^{n_n} v_n J_n\rangle \delta(v_p J_p;\, v'_p J'_p)\Big\}.$$

The reduced matrix elements of the proton state

$$\langle j^{n_p} v'_p J'_p \| \sum_{i=1}^{n_p} f_p^{(k)}(i) \| j^{n_n} v_p J_p\rangle$$

are calculated by the use of the $n \to n-1$ c.f.p.:

$$\langle j^{n_p} v'_p J'_p \| \sum_{i=1}^{n_p} f_p^{(k)}(i) \| j^{n_p} v_p J_p\rangle = n_p \sqrt{(2J_p+1)(2J'_p+1)}\cdot \tag{18}$$

$$\cdot\Big\{\sum_{v_{p_1} J_{p_1}} W(J_{p_1} J'_p j k;\, j J_p)[j^{n_p} v'_p J'_p\{| j^{n_p-1}(v_{p_1} J_{p_1})\, j J'_p]\cdot$$

$$\cdot [j^{n_p-1}(v_{p_1} J_{p_1})\, j J_p |\} j^{n_p} v_p J_p] \langle j \| f_p^{(k)} \| j\rangle\Big\},$$

where $\langle j \| f_p^{(k)} \| j\rangle$ is the single-particle reduced matrix element. For the reduced matrix elements of the neutron state

$$\langle j^{n_n} v'_n J'_n \| \sum_{i=1}^{n_n} f_n^{(k)}(i) \| j^{n_n} v_n J_n\rangle ,$$

the same equation is used by changing the suffix p to n.

If the operator $\mathscr{F}^{(k)}$ is a transition operator, one can obtain the reduced transition probability between two states with the relation

$$B(k;\, J_l \to J'_m) = \frac{1}{2J+1} \left| \langle J'_m \| \mathscr{F}^{(k)} \| J_l\rangle \right|^2 . \tag{19}$$

If $\mathscr{F}^{(k)}$ is a moment operator, one can obtain the moment of the J_l state by the relation

$$M(k;\, J_l) = \frac{1}{\sqrt{2J+1}} (JJk0|JJ) \langle J_l \| \mathscr{F}^{(k)} \| J_l\rangle , \tag{20}$$

where $(JJk0|JJ)$ is a Clebsch-Gordan coefficient.

In this paper we calculate the moments and transitions of the electric-quadrupole ($E2$) and the magnetic-dipole ($M1$) operators.

E2 moments and transitions. The operator for the $E2$ moment, $Q^{(2)}$, is defined as

$$Q^{(2)} = \sum_i \sqrt{\frac{16\pi}{5}}\, e_i Y^{(2)}(\theta_i\varphi_i) r_i^2\,, \tag{21}$$

where e_i is the charge of the i-th nucleon and $Y^{(2)}(\theta_i\varphi_i)$ is the spherical harmonic with rank 2. The $E2$ transition operator is

$$\mathcal{M}(E2) = \sum_i e_i Y^{(2)}(\theta_i\varphi_i) r_i^2\,. \tag{22}$$

According to eq. (18) we need the single-particle reduced matrix elements of

$$q^{(2)} = \sqrt{\frac{16\pi}{5}}\, e Y^{(2)}(\theta\varphi) r^2 \quad\text{and}\quad m(E2) = \sqrt{\frac{5}{16\pi}}\, q^{(2)}\,,$$

which are given by

$$\langle j \| q^{(2)} \| j\rangle = -\sqrt{\frac{(2j-1)(2j+1)(2j+3)}{2j(2j+2)}}\, e \langle j|r^2|j\rangle \tag{23}$$

and

$$\langle j \| m(E2) \| j\rangle = \sqrt{\frac{5}{16\pi}}\, \langle j \| q^{(2)} \| j\rangle\,, \tag{24}$$

respectively.

The radial matrix element has been calculated in our case from harmonic-oscillator radial wave functions with the relation [66]

$$\langle 1f_{7/2}|r^2|1f_{7/2}\rangle = \frac{9}{2}\frac{\hbar}{m\omega} = 4.55 A^{1/3}\ \text{fm}^2\,, \tag{25}$$

by assuming $\hbar\omega = 41 A^{-1/3}$ MeV.

TABLE II. – *Effective proton charges from highest-spin transitions of the $(\pi f_{7/2})^n$ configuration.*

Nucleus	$(\pi f_{7/2})^n$ n	Transition	$B(E2)$ (e^2 fm^4)	References	e_p (^{a}) (e)
^{42}Ti	2	$6^+ \to 4^+$	25^{+16}_{-7}	[31]	$1.7^{+0.5}_{-0.3}$
^{50}Ti	2	$6^+ \to 4^+$	33.8 ± 1.2	[59, 60]	1.87 ± 0.04
^{51}V	3	$15/2^- \to 11/2^-$	66 ± 5	[63]	1.94 ± 0.07
^{53}Mn	-3	$15/2^- \to 11/2^-$	68^{+12}_{-8}	[61]	1.94 ± 0.14
^{54}Fe	-2	$6^+ \to 4^+$	40.7 ± 0.7	[59, 60, 62]	2.00 ± 0.02

(a) Unweighted mean: $e_p = 1.89 \pm 0.05e$. Program input: $e_p = 1.9e$.

The $E2$ moments Q and the reduced transition probabilities $B(E2)$ shown in tables VII and VIII, respectively, have been calculated with effective charges of $e_p = 1.9e$ for protons and $e_n = 0.9e$ for neutrons. These values have been determined from high-spin transitions in the $N = 28$ isotones and

TABLE III. – *Effective neutron charges from highest-spin transitions of the* $(\nu f_{7/2})^n$ *configuration.*

Nucleus	$(\nu f_{7/2})^n$ n	Transition	$B(E2)$ (e^2 fm^4)	References	e_n ([a]) (e)
^{42}Ca	2	$6^+ \rightarrow 4^+$	6.42 ± 0.11	[30]	0.86 ± 0.01
^{43}Ca	3	$15/2^- \rightarrow 11/2^-$	16.0 ± 0.7	[63, 64]	1.01 ± 0.02
^{46}Ca	-2	$6^+ \rightarrow 4^+$	5.34 ± 0.28	[31, 65]	0.76 ± 0.02

(a) Unweighted mean: $e_n = 0.88 \pm 0.07e$. Program input: $e_n = 0.9e$.

the Ca isotopes, respectively (see tables II and III). It should be noticed that, within our model, the extraction of effective charges from the semi-closed nuclei is independent of the effective interaction.

*M*1 *moments and transitions.* The single-particle operators for the $M1$ moment, $\boldsymbol{\mu}$, can be defined by the spin operator $\boldsymbol{j}$ in the case of the single-j configuration:

$$\boldsymbol{\mu} = \sum_i g_i(j)\boldsymbol{j}_i = g_p(j)\boldsymbol{J}_p + g_n(j)\boldsymbol{J}_n\,, \tag{26}$$

where $\boldsymbol{J}_p = \sum_{i=1}^{n_p} \boldsymbol{j}_i$, $\boldsymbol{J}_n = \sum_{i=1}^{n_n} \boldsymbol{j}_i$ and $g_p(j)$ and $g_n(j)$ are the g-factors of the protons and neutrons, respectively, in the orbit j.

By using the same g-factors the $M1$ transition operator is defined as

$$\mathscr{M}(M1) = \sqrt{\frac{3}{4\pi}}\,[g_p(j)\boldsymbol{J}_p + g_n(j)\boldsymbol{J}_n]\,. \tag{27}$$

The factors $g_p(j)$ and $g_n(j)$ are given by the equation

$$g(j) = g_l \pm \frac{g_s - g_l}{2l+1} \qquad \text{for } j = l \pm \frac{1}{2}\,, \tag{28}$$

where l is the orbital angular moment of the j-orbit. If one uses the bare values of g_l and g_s (g_l and g_s are 1.0 and 5.585 for protons, and 0.0 and $-$ 3.826 for neutrons in n.m. units), one gets the bare g-factor (Schmidt values) for the $1f_{7/2}$ particle as

$$g_p(1f_{7/2}) = 1.655 \text{ n.m.} \qquad \text{and} \qquad g_n(1f_{7/2}) = -\,0.547 \text{ n.m.}$$

As usual, one has to reduce the Schmidt values in order to get agreement with experiment. In the present calculation we have adopted the following effective g-factors which were chosen to get optimum agreement with experimental odd-proton and odd-neutron ground-state g-factors, respectively:

$$g_p(\text{effective}) = 0.88 g_p(1f_{7/2}) = \quad 1.456 \text{ n.m.} ,$$

$$g_n(\text{effective}) = 0.69 g_n(1f_{7/2}) = -0.377 \text{ n.m.}$$

Calculated results of g-factors and $M1$ reduced transition probabilities, $B(M1)$, are shown in tables VII and VIII.

Some important aspects of the $M1$ moments and transitions shown in the tables are easily understood by rewriting the $M1$ operator in the following way. The $M1$ moment operator defined by eq. (26) can be written as

$$(29) \qquad \boldsymbol{\mu} = (1/2)[g_p(j) + g_n(j)]\boldsymbol{J} + (1/2)[g_p(j) - g_n(j)](\boldsymbol{J}_p - \boldsymbol{J}_n) .$$

From this relation we can calculate the $M1$ moment of the J_l state $M(M1; J_l)$, using

$$(30) \qquad M(M1; J_l) = \frac{1}{2}[g_p(j) + g_n(j)]J + \frac{1}{2}[g_p(j) - g_n(j)] \cdot \sum_{v_pJ_p, v_nJ_n} (\mathscr{A}^{(J,l)}_{(v_pJ_p, v_nJ_n)})^2 \frac{J_p(J_p+1) - J_n(J_n+1)}{J+1} .$$

Similarly the $M1$ reduced transition probability is given by the expression

$$(31) \qquad B(M1; J_l \to J'_m) = \frac{1}{2J+1} \frac{3}{4\pi} \left(\frac{g_p(j) - g_n(j)}{2}\right)^2 \left\{ \sum_{v_pJ_p, v_nJ_n} \mathscr{A}^{(J,l)}_{(v_pJ_p, v_nJ_n)} \cdot \mathscr{A}^{(J',m)}_{(v_pJ_p, v_nJ_n)} \cdot w(J_pJ_nJJ') \right\}^2 ,$$

where

$$w(J_pJ_nJJ') = \begin{cases} [J_p(J_p+1) - J_n(J_n+1)]\sqrt{J(J+1)/(2J+1)} & \text{for } J' = J , \\ -\sqrt{\{J^2 - (J_p - J_n)^2\}\{-J^2 + (J_p + J_n + 1)^2\}/J} & \text{for } J' = J - 1 . \end{cases}$$

From these equations one can see that all states of nuclei with $n_p = n_n$ and with $n_p + n_n = 2j + 1$ (self-cross-conjugate nuclei) have a constant g-factor of $(1/2)[g_p(j) + g_n(j)]$. Furthermore, all the $M1$ transition matrix elements depend on $g_p(j) - g_n(j)$, *i.e.* only the isovector part of the $M1$ operator contributes to the transition matrix elements. The latter fact explains that all $T = 0 \to T' = 0$ $M1$ transitions within the $(j)^n$ configuration are forbidden.

E2/M1 mixing ratios. The $E2/M1$ mixing ratio for the transition $J_i \to J'_m$ is given by the equation

$$\delta(E2/M1;\, J_i \to J'_m) = -\frac{k\sqrt{3}}{10}\,\frac{\langle J'_m\|\mathcal{M}(E2)\|J_i\rangle}{\langle J'_m\|\mathcal{M}(M1)\|J_i\rangle}\,, \tag{32}$$

$k\sqrt{3}/10 = [E_\gamma(\text{MeV})/120]\ \text{fm}^{-1}$, where E_γ is the energy difference between the two states. $\mathcal{M}(E2)$ and $\mathcal{M}(M1)$ are the transition operators, defined by eqs. (22) and (27), respectively.

The phase convention follows BRUSSAARD ([28], eq. (4.3)) for the emission matrix element of his operator $\mathcal{O}'$.

Other electromagnetic moments and transitions. The general transition operators which can be used in eqs. (16)-(20) to calculate $M3$, $E4$, $M5$, $E6$ ... moments and transitions are defined by

$$\mathcal{M}(Ek) = \sum_i e_i\, Y^{(k)}(\theta_i\varphi_i)\, r_i^k \tag{33}$$

and

$$\mathcal{M}(Mk) = \sum_i \text{grad}\,[r_i^k\, Y^{(k)}(\theta_i\varphi_i)]\left(g_{s_i} s_i + \frac{2}{k+1}\, g_{l_i} l_i\right). \tag{34}$$

The single-particle reduced matrix elements are given by the following equations [55, 66]:

$$\langle j\|\mathcal{M}(Ek)\|j\rangle = e\sqrt{2j+1}\left(j\,\frac{1}{2}\,k0\middle|j\,\frac{1}{2}\right)\sqrt{\frac{2k+1}{4\pi}}\,\langle j|r^k|j\rangle \qquad \text{for } k = \text{even} \tag{35}$$

and

$$\langle j\|\mathcal{M}(Mk)\|j\rangle = \sqrt{2j+1}\left(j\,\frac{1}{2}\,k0\middle|j\,\frac{1}{2}\right)\frac{k\pm(2j+1)}{2}\cdot \tag{36}$$

$$\cdot\left[g_s - 2g_l \pm \frac{2(2j+1)}{k+1}\,g_l\right]\sqrt{\frac{2k+1}{4\pi}}\,\langle j|r^{k-1}|j\rangle \qquad \text{for } j = l\pm\tfrac{1}{2} \text{ and } k = \text{odd}\,,$$

where $(j\frac{1}{2}k0|j\frac{1}{2})$ is a Clebsch-Gordan coefficient.

3'4. *Beta-decay matrix elements.* – The calculation for two types of the β-decay matrix elements, the Fermi matrix elements M_F and the Gamow-Teller matrix elements M_{GT}, are described in this subsection.

The ft value is defined by the following equation [56]:

$$ft = \frac{6200}{|M_F|^2 + 1.56|M_{GT}|^2}\,. \tag{37}$$

Fermi matrix elements. Since the Fermi operator is $\sum_i t^{(\pm)}(i) = T^{(\pm)}$ with $+$ for the β^+-decay and $-$ for the β^--decay, the matrix element M_F has a nonzero value only for the β-decay between states of the same isospin multiplet (a $\Delta T = 0$ and $\Delta J = 0$ transition). When the transition occurs from the state with J, T and T_z to its isobaric analogue state with J, T and $T'_z = T_z \pm 1$, the matrix element is

$$(38) \qquad |M_F|^2 = \frac{1}{2J+1} |\langle JT, T_z \pm 1 \| T^{(\pm)} \| JT, T_z \rangle|^2 = T(T+1) - T_z(T_z \pm 1)\,,$$

where $T_z = (N - Z)/2$ or $(n_n - n_p)/2$ for the initial state.

Examples:

$$|M_F|^2 = 2 \text{ for the } {}^{42}\text{Sc}(0^+, \text{ g.s.}) \to {}^{42}\text{Ca}(0^+, \text{ g.s.}) \text{ transition}\,,$$

$$|M_F|^2 = 1 \text{ for the } {}^{41}\text{Sc}(7/2^-, \text{g.s.}) \to {}^{41}\text{Ca}(7/2^-, \text{g.s.}) \text{ transition}\,.$$

Gamow-Teller matrix elements. The Gamow-Teller operator is $\sum_i t^{(\pm)}(i)\sigma(i)$ and provides the following selection rule:

$$\Delta T = 0, \pm 1 \qquad \text{(but no } T = 0 \to T' = 0 \text{ transition)}\,,$$

and

$$\Delta J = 0, \pm 1 \qquad \text{(but no } J = 0 \to J' = 0 \text{ transition)}\,.$$

The matrix element of this operator can be calculated in the following way. When the transition occurs from the k-th level of spin J in the (n_p, n_n) nucleus to the m-th level of spin J' in the $(n_p + 1, n_n - 1)$ nucleus, the Gamow-Teller matrix element for this β^- decay is

$$(39) \qquad |M_{GT}(\beta^-; J_k \to J'_m)|^2 = \frac{1}{2J+1} |\langle J'_m \| \sum t^{(\pm)}(i)\, \sigma(i) \| J_k \rangle|^2 =$$

$$= n_n(n_p + 1)\langle j \| \sigma \| j \rangle^2 \cdot (2J' + 1) \Big| \sum_{(v'_p J'_p, v'_n J'_n)} \sum_{(v_p J_p, v_n J_n)} \mathscr{A}^{(J',m)}_{(v'_p J'_p, v'_n J'_n)} \mathscr{A}^{(J,k)}_{(v_p J_p, v_n J_n)} \cdot$$

$$\cdot [j^{n_n - 1}(v'_n J'_n) j J_n | \} j^{n_n} v_n J_n][j^{n_p}(v_p J_p) j J'_p | \} j^{n_p + 1} v'_p J'_p] \cdot$$

$$\cdot (-)^{J_p + j - J'_p} \sqrt{(2J'_p + 1)(2J_n + 1)} \sum_{J''} (2J'' + 1)\, W(J_p J'_n J j; J'' J_n) \cdot$$

$$\cdot W(J'_n J_p J' j; J'' J'_p)\, W(j J' j J; J'' 1) \Big|^2 .$$

For the β^+ decay from the k-th state of spin J in the (n_p, n_n) nucleus to the

m-th state of spin J' in the $(n_p - 1, n_n + 1)$ nucleus one obtains

$$(40)\qquad |M_{GT}(\beta^+; J_k \to J'_m)|^2 = n_p(n_n+1)\langle j\|\sigma\|j\rangle^2(2J'+1)\cdot$$
$$\cdot\Big|\sum_{(v'_pJ'_p,v'_nJ'_n)}\ \sum_{(v_pJ_p,v_nJ_n)} \mathscr{A}^{(J',m)}_{(v'_pJ'_p,v'_nJ'_n)}\,\mathscr{A}^{(J,k)}_{(v_pJ_p,v_nJ_n)}\cdot$$
$$\cdot[j^{n_n}(v_nJ_n)\,jJ'_n|\}\,j^{n_n+1}v'_nJ'_n][j^{n_p-1}(v'_pJ'_p)\,jJ_p|\}\,j^{n_p}v_pJ_p]\cdot$$
$$\cdot(-)^{J'_p+j-J_p}\sqrt{(2J_p+1)(2J'_n+1)}\sum_{J''}(2J''+1)\,W(J_nJ'_pJj;\,J''J_p)\cdot$$
$$\cdot W(J'_pJ_nJ'j;\,J''J'_n)\,W(jJjJ';\,J''1)\Big|^2,$$

where

$$(41)\qquad \langle j\|\sigma\|j\rangle = \begin{cases} \sqrt{\dfrac{(j+1)(2j+1)}{j}} & \text{for } j = l+\dfrac{1}{2}, \\[2ex] -\sqrt{\dfrac{j(2j+1)}{j+1}} & \text{for } j = l-\dfrac{1}{2}, \end{cases}$$

and l is the orbital angular momentum of the single-particle orbit j.

Using the above equations, one obtains the single-particle Gamow-Teller matrix element $(J = j \to J' = j)$ as

$$(42)\qquad |M_{GT}|^2 = \begin{cases} \dfrac{j+1}{j} & \text{for } j = l+\dfrac{1}{2}, \\[2ex] \dfrac{j}{j+1} & \text{for } j = l-\dfrac{1}{2}. \end{cases}$$

Example:

$$|M_{GT}|^2 = 9/7 \text{ for the } {}^{41}\text{Sc}(7/2^-,\text{g.s.}) \to {}^{41}\text{Ca}(7/2^-,\text{g.s.}) \text{ transition}.$$

Thus for the β-decay transitions between the $(1f_{7/2})^n$ configuration states, one can calculate the ft values by the use of eqs. (37)-(40). The corresponding amplitudes of the wave functions and the c.f.p. are given in table IX and in the appendix, respectively.

3'5. *Spectroscopic factors.* – The study of the direct reactions provides much information on the nuclear structure. The cross-section of the transfer reaction depends on two parts, the nuclear-structure part and the kinematical part. In this subsection we give the equations needed to calculate the nuclear-structure part for one-nucleon and two-nucleon transfer reactions using the wave functions of table IX. The notation of ref. [57] has been adopted.

One-nucleon transfer reactions. The spectroscopic factor for one-neutron stripping and/or pick-up reactions is given by

$$(43)\qquad S_j[J(n_p, n_n) \leftrightarrow J'(n_p, n_n+1)] = (n_n+1)|\langle\psi^{J,k}(n_p, n_n)\cdot\phi_j|\psi^{J',m}(n_p, n_n+1)\rangle|^2,$$

where $\psi^{J,k}(n_p, n_n)$ and $\psi^{J',m}(n_p, n_n+1)$ are wave functions of the initial and final states for the stripping reactions (the final and initial states for the pick-up reactions) and ϕ_j is the wave function of the transferred neutron.

Using the amplitudes of table IX and the c.f.p. of the appendix, one can calculate S_j from the equation

$$
(44)\qquad S_j[J(n_p, n_n) \leftrightarrow J'(n_p, n_n+1)] = (n_n+1)\Big|\sum_{(v_pJ_p,v_nJ_n)}\ \sum_{(v'_pJ'_p,v'_nJ'_n)} \mathscr{A}^{(J,k)}_{(v_pJ_p,v_nJ_n)}\mathscr{A}^{(J',m)}_{(v'_pJ'_p,v'_nJ'_n)}\cdot \delta(v_pJ_p, v'_pJ'_p)[j^{n_n}(v_nJ_n)jJ'_n|\}j^{n_n+1}v'_nJ'_n]\sqrt{(2J+1)(2J'_n+1)}\,W(J_pJ_nJ'j;\,JJ'_n)\Big|^2 .
$$

A similar equation is obtained for the one-proton transfer reactions between the (n_p, n_n) nucleus and the (n_p+1, n_n) nucleus:

$$
(45)\qquad S_j[J(n_p, n_n) \leftrightarrow J'(n_p+1, n_n)] = (n_p+1)\big|\langle\psi^{J,k}(n_p, n_n)\cdot\phi_j|\psi^{J',m}(n_p+1, n_n)\rangle\big|^2 = (n_p+1)\Big|\sum_{(v_pJ_p,v_nJ_n)}\ \sum_{(v'_pJ'_p,v'_nJ'_n)} \mathscr{A}^{(J,k)}_{(v_pJ_p,v_nJ_n)}\mathscr{A}^{(J',m)}_{(v'_pJ'_p,v'_nJ'_n)}\delta(v_nJ_n, v'_nJ'_n)\cdot [j^{n_p}(v_pJ_p)jJ'_p|\}j^{n_p+1}v'_pJ'_p]\sqrt{(2J+1)(2J'_p+1)}\,W(J_nJ'_pJ_j;\,J'J_p)\Big|^2 .
$$

Two-nucleon transfer reactions. Usually the following parentage factor β is used for the study of the two-nucleon transfer reactions instead of the spectroscopic factors for the one-nucleon transfer reactions [58].

The parentage factor for the two-neutron stripping or pick-up reaction between the (n_p, n_n) nucleus and the (n_p, n_n+2) nucleus is defined as

$$
(46)\qquad \beta_{L_0S_0J_0}[J(n_p, n_n) \leftrightarrow J'(n_p, n_n+2)] = \sqrt{\binom{n_n+2}{2}}\langle\psi^{J,k}(n_p, n_n)(\phi_j^2)_{L_0S_0J_0}|\psi^{J',m}(n_p, n_n+2)\rangle ,
$$

where $\psi^{J,k}(n_p, n_n)$ and $\psi^{J',m}(n_p, n_n+2)$ are wave functions of the initial and the final states for the stripping reactions (the final and the initial states for the pick-up reactions) and L_0, S_0 and J_0 are the orbital, spin and total angular momentum of the pair of transferred nucleons. This factor can be calculated by the use of the $n \to n-2$ c.f.p. (see eq. (4)):

$$
(47)\qquad \beta_{L_0S_0J_0}[J(n_p, n_n) \leftrightarrow J'(n_p, n_n+2)] = \sqrt{\binom{n_n+2}{2}}\sum_{(v_pJ_p,v_nJ_n)}\ \sum_{(v'_pJ'_p,v'_nJ'_n)} \mathscr{A}^{(J,k)}_{(v_pJ_p,v_nJ_n)}\mathscr{A}^{(J',m)}_{(v'_pJ'_p,v'_nJ'_n)}\cdot \delta(v_pJ_p, v'_pJ'_p)[j^{n_n}(v_nJ_n)\,j^2(J_0)J'_n|\}j^{n_n+2}v'_nJ'_n]\cdot \sqrt{(2J+1)(2J'_n+1)}\,W(J_pJ_nJ'J_0;JJ'_n)Z(j^2, L_0S_0J_0) .
$$

The transformation factor $Z(j^2, L_0S_0J_0)$ is defined with the 9-j coefficient:

$$(48)\qquad Z(j^2, L_0S_0J_0) = (2j+1)\sqrt{(2L_0+1)(2S_0+1)}\begin{Bmatrix} l & l & L_0 \\ \frac{1}{2} & \frac{1}{2} & S_0 \\ j & j & J_0 \end{Bmatrix},$$

where l is the orbital momentum of the j-orbit.

Similarly for the two-proton transfer reactions we obtain

$$(49)\qquad \beta_{L_0S_0J_0}[J(n_p, n_n) \leftrightarrow J'(n_p+2, n_n)] = \sqrt{\binom{n_p+2}{2}} \sum_{(v_pJ_p, v_nJ_n)} \sum_{(v'_pJ'_p, v'_nJ'_n)} \mathscr{A}^{(J,k)}_{(v_pJ_p, v_nJ_n)} \mathscr{A}^{(J',m)}_{(v'_pJ'_p, v'_nJ'_n)} \cdot \delta(v_nJ_n, v'_nJ'_n)\,[j^{n_p}(v_pJ_p)\,j^2(J_0)J'_p|\}j^{n_p+2}v'_pJ'_p] \cdot \sqrt{(2J+1)(2J'_p+1)}\,W(J_nJ'_pJJ_0; J'J_p)\,Z(j^2, L_0S_0J_0)\,.$$

In the case of the proton-neutron transfer reactions, *e.g.* (^{3}He, n) or (d, α), $\beta_{L_0S_0J_0}$ for the reaction between the (n_p, n_n) and the (n_p+1, n_n+1) nucleus is defined with the $n \to n-1$ c.f.p. and the 9-j coefficient:

$$(50)\qquad \beta_{L_0S_0J_0}[J(n_p, n_n) \leftrightarrow J'(n_p+1, n_n+1)] = \sqrt{(n_p+1)(n_n+1)} \sum_{(v_pJ_p, v_nJ_n)} \sum_{(v'_pJ'_p, v'_nJ'_n)} \mathscr{A}^{(J,k)}_{(v_pJ_p, v_nJ_n)} \mathscr{A}^{(J',m)}_{(v'_pJ'_p, v'_nJ'_n)} \cdot [j^{n_p}(v_pJ_p)\,jJ'_p|\}j^{n_p+1}v'_pJ'_p][j^{n_n}(v_nJ_n)\,jJ'_n|\}j^{n_n+1}v'_nJ'_n] \cdot \sqrt{(2J'_p+1)(2J'_n+1)(2J+1)(2J_0+1)}\begin{Bmatrix} J_p & j & J'_p \\ J_n & j & J'_n \\ J & J_0 & J \end{Bmatrix} Z(j^2, L_0S_0J_0)\,.$$

4. – Tables of the results.

Table IV gives the five sets of experimental $(1f_{7/2})^2$ matrix elements which have been used as input data for the shell model calculation. The choice of these matrix elements is discussed in detail in subsect. 2·1. The different sets are labelled by the name of the interaction which is used to specify the computer output of the results. The corresponding data source is given in brackets below the label. In the last interaction $(^{48}\text{Sc})_T$ has been used for $\langle 1f^2_{7/2}|V_{pn}|1f^2_{7/2}\rangle$ and ^{46}Ca for $\langle 1f^2_{7/2}|V_{nn}|1f^2_{7/2}\rangle$ and $\langle 1f^2_{7/2}|V_{pp}|1f^2_{7/2}\rangle$.

The nuclei which have been calculated in the present paper are displayed in fig. 2. Each two nuclei which place symmetrically around the $n_p + n_n = 8$ axis are called a particle-hole cross-conjugate pair. Such a pair is described by the relation

$${}_{20+n_p}X_{20+n_n} = {}_{28-n_n}Y_{28-n_p}\,;$$

these two nuclei have identical level spectra in the $(1f_{7/2})^n$ configuration.

TABLE IV. – *Input data for the* $\langle 1f^2_{7/2}|V|1f^2_{7/2}\rangle_{JT}$ *matrix elements* (MeV).

J	(T)	^{42}Sc-INT (^{42}Sc)	^{54}Co-INT (^{54}Co)	^{48}Sc-INT ((^{48}Sc)$_T$)	^{42}Sc*-INT (^{41}Ca(^{3}He, d))	^{48}Sc*-INT ((^{48}Sc)$_T$ + ^{46}Ca)	
0+	(1)	−3.174	−2.528	−2.068	−2.89	−2.068	−2.675
1+	(0)	−2.563	−1.591	−2.061	−1.68	−2.061	
2+	(1)	−1.588	−1.082	−0.757	−1.10	−0.757	−1.329
3+	(0)	−1.683	−0.250	−0.989	−0.82	−0.989	
4+	(1)	−0.357	+0.102	+0.119	−0.26	+0.119	−0.100
5+	(0)	−1.663	−0.377	−0.811	−0.80	−0.811	
6+	(1)	+0.063	+0.557	+0.333	+0.07	+0.333	+0.299
7+	(0)	−2.556	−2.329	−2.218	−2.56	−2.218	

The calculated results are shown for each cross-conjugate pair. The pairs are arranged in the order of the lighter elements, *i.e.* ^{40}Ca-^{56}Ni, ^{41}Ca-^{55}Co, ..., ^{48}Ca-^{48}Ca, ^{41}Sc-^{55}Ni, ^{42}Sc-^{54}Co, ..., ^{48}Sc-^{48}Sc, ^{42}Ti-^{54}Ni, ..., ^{48}Ti-^{48}Ti, ^{46}V-^{50}Mn, ..., ^{48}V-^{48}V and ^{48}Cr-^{48}Cr.

In table V the two-body interaction energies relative to ^{40}Ca are calculated for the ground states of all the nuclei with the five different interactions of table IV.

In table VI the excitation energies and isospins are calculated for all cross-conjugate pairs with the five different interactions of table IV.

In tables VII and VIII the $E2$ and $M1$ matrix elements (moments and transitions, respectively) are calculated for the lowest and the second-lowest state of each spin with the ^{42}Sc-INT. The presentation of these matrix elements for the other interactions has been omitted, since they depend only very weakly on the specific interaction. This can be seen by comparing the wave functions of table IX for the five different interactions.

In table IX the wave functions for the lowest and second-lowest state of each spin are calculated with the five different interactions of table IV.

4·1. *Interaction energies relative to* ^{40}Ca. – *Table V.*

Symbols for table V:

ENERGY = interaction energy of the ground state,

J = spin of the ground state.

The ground-state energies are shown for the five different interactions. Since the single-particle energies of the $1f_{7/2}$ particles, ε_p and ε_n, are set equal to zero, the values shown in the table come from the two-body interaction part of the Hamiltonian. In comparing these values with the experimental binding energies relative to ^{40}Ca, the single-particle energy and the Coulomb energy should be taken into account, as explained in subsect. 3·2.

INTERACTION ENERGIES RELATIVE TO 40CA

NUCLEUS	42SC-INT ENERGY(J) (MEV)	54CO-INT ENERGY(J) (MEV)	48SC-INT ENERGY(J) (MEV)	42SC*-INT ENERGY(J) (MEV)	48SC*-INT ENERGY(J) (MEV)
41CA	0.0 (7/2-)	0.0 (7/2-)	0.0 (7/2-)	0.0 (7/2-)	0.0 (7/2-)
42CA	-3.174(0+)	-2.528(0+)	-2.068(0+)	-2.890(0+)	-2.675(0+)
43CA	-3.242(7/2-)	-1.667(7/2-)	-1.416(7/2-)	-2.745(7/2-)	-2.311(7/2-)
44CA	-6.483(0+)	-3.334(0+)	-2.833(0+)	-5.490(0+)	-4.622(0+)
45CA	-6.619(7/2-)	-1.612(7/2-)	-1.530(7/2-)	-5.200(7/2-)	-3.894(7/2-)
46CA	-9.928(0+)	-2.417(0+)	-2.295(0+)	-7.800(0+)	-5.841(0+)
47CA	-10.131(7/2-)	0.166(7/2-)	-0.340(7/2-)	-7.365(7/2-)	-4.750(7/2-)
48CA	-13.508(0+)	0.221(0+)	-0.453(0+)	-9.820(0+)	-6.333(0+)
41SC	0.0 (7/2-)	0.0 (7/2-)	0.0 (7/2-)	0.0 (7/2-)	0.0 (7/2-)
42SC	-3.174(0+)	-2.528(0+)	-2.218(7+)	-2.890(0+)	-2.218(7+)
43SC	-7.378(7/2-)	-5.694(7/2-)	-5.277(7/2-)	-6.396(7/2-)	-5.852(7/2-)
44SC	-9.525(2+)	-6.173(6+)	-5.912(6+)	-7.809(6+)	-6.894(6+)
45SC	-13.211(7/2-)	-7.728(7/2-)	-7.572(7/2-)	-10.902(7/2-)	-9.345(7/2-)
46SC	-14.868(2+)	-6.880(6+)	-7.270(6+)	-11.925(6+)	-9.663(6+)
47SC	-18.948(7/2-)	-7.538(7/2-)	-8.226(7/2-)	-14.819(7/2-)	-11.767(7/2-)
48SC	-20.535(6+)	-5.671(6+)	-7.132(6+)	-15.571(6+)	-11.542(6+)
49SC	-24.709(7/2-)	-5.452(7/2-)	-7.422(7/2-)	-18.295(7/2-)	-13.302(7/2-)
42TI	-3.174(0+)	-2.528(0+)	-2.068(0+)	-2.850(0+)	-2.675(0+)
43TI	-7.378(7/2-)	-5.694(7/2-)	-5.277(7/2-)	-6.396(7/2-)	-5.852(7/2-)
44TI	-14.756(0+)	-11.389(0+)	-10.555(0+)	-12.792(0+)	-11.705(0+)
45TI	-17.410(5/2-)	-11.909(5/2-)	-11.468(5/2-)	-14.496(7/2-)	-13.073(5/2-)
46TI	-23.113(0+)	-14.650(0+)	-14.383(0+)	-19.210(0+)	-16.742(0+)
47TI	-25.529(7/2-)	-13.647(7/2-)	-14.249(7/2-)	-20.496(7/2-)	-17.214(7/2-)
48TI	-31.142(0+)	-15.187(0+)	-16.226(0+)	-24.727(0+)	-20.368(0+)
49TI	-33.527(7/2-)	-13.156(7/2-)	-15.308(7/2-)	-25.749(7/2-)	-20.319(7/2-)
50TI	-39.085(0+)	-13.653(0+)	-16.458(0+)	-29.660(0+)	-22.945(0+)
46V	-23.113(0+)	-14.650(0+)	-14.420(5+)	-19.210(0+)	-16.436(5+)
47V	-29.560(5/2-)	-17.443(5/2-)	-17.889(5/2-)	-23.934(7/2-)	-20.653(5/2-)
48V	-34.110(2+)	-17.785(4+)	-19.120(4+)	-26.734(4+)	-22.534(4+)
49V	-40.107(7/2-)	-19.265(7/2-)	-21.331(7/2-)	-31.426(7/2-)	-25.766(7/2-)
50V	-44.024(2+)	-18.115(6+)	-21.434(6+)	-33.785(6+)	-26.767(6+)
51V	-50.354(7/2-)	-18.465(7/2-)	-22.776(7/2-)	-37.990(7/2-)	-29.550(7/2-)
48CR	-39.131(0+)	-22.600(0+)	-23.510(0+)	-31.660(0+)	-26.997(0+)
49CR	-44.138(5/2-)	-23.061(5/2-)	-24.971(5/2-)	-34.864(7/2-)	-29.205(5/2-)
50CR	-52.270(0+)	-25.885(0+)	-28.547(0+)	-41.070(0+)	-33.846(0+)
51CR	-56.946(7/2-)	-24.581(7/2-)	-28.818(7/2-)	-43.692(7/2-)	-35.001(7/2-)
52CR	-64.797(0+)	-25.805(0+)	-31.161(0+)	-49.210(0+)	-38.830(0+)
50MN	-52.270(0+)	-25.885(0+)	-28.584(5+)	-41.070(0+)	-33.540(5+)
51MN	-61.146(5/2-)	-28.762(5/2-)	-32.714(5/2-)	-47.286(7/2-)	-38.729(5/2-)
52MN	-67.038(2+)	-28.644(6+)	-34.240(6+)	-51.528(6+)	-41.102(6+)
53MN	-76.133(7/2-)	-29.756(7/2-)	-36.826(7/2-)	-57.395(7/2-)	-45.071(7/2-)
52FE	-73.069(0+)	-33.860(0+)	-38.883(0+)	-56.512(0+)	-45.913(0+)
53FE	-80.270(7/2-)	-33.783(7/2-)	-40.687(7/2-)	-61.046(7/2-)	-48.612(7/2-)
54FE	-90.644(0+)	-36.234(0+)	-44.560(0+)	-68.470(0+)	-53.987(0+)
53CO	-80.270(7/2-)	-33.783(7/2-)	-40.687(7/2-)	-61.046(7/2-)	-48.612(7/2-)
54CO	-90.644(0+)	-36.234(0+)	-44.710(7+)	-68.470(0+)	-53.530(7+)
55CO	-102.049(7/2-)	-39.324(7/2-)	-49.574(7/2-)	-76.510(7/2-)	-59.864(7/2-)
54NI	-90.644(0+)	-36.234(0+)	-44.560(0+)	-68.470(0+)	-53.987(0+)
55NI	-102.049(7/2-)	-39.324(7/2-)	-49.574(7/2-)	-76.510(7/2-)	-59.864(7/2-)
56NI	-116.627(0+)	-44.942(0+)	-56.656(0+)	-87.440(0+)	-68.416(0+)

4·2. *Energy levels. – Table VI.*

Symbols for table VI:

J = spin of the state,

ENERGY = excitation energy of the state in MeV,

T = isospin of the state.

Excitation energies of all levels calculated by five different interactions are shown. The value T in the case of ^{46}Sc*-INT shows the maximum component of the isospin.

ENERGY LEVELS

40CA - 56NI

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
0+	0.0 (0)	0.0 (0)	0.0 (0)	C.0 (0)	0.0 (0)

41CA - 55CO

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
7/2-	0.0 (1/2)	0.0 (1/2)	0.0 (1/2)	0.0 (1/2)	0.0 (1/2)

42CA - 54FE

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
0+	0.C (1)	0.0 (1)	0.0 (1)	0.0 (1)	0.0 (1)
2+	1.586(1)	1.446(1)	1.311(1)	1.790(1)	1.346(1)
4+	2.817(1)	2.630(1)	2.187(1)	2.630(1)	2.575(1)
6+	3.237(1)	3.085(1)	2.401(1)	2.960(1)	2.974(1)

43CA - 53MN

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
3/2-	1.379(3/2)	1.212(3/2)	1.210(3/2)	1.425(3/2)	1.221(3/2)
5/2-	0.327(3/2)	0.250(3/2)	0.378(3/2)	0.750(3/2)	0.151(3/2)
7/2-	0.0 (3/2)	0.0 (3/2)	0.0 (3/2)	0.0 (3/2)	0.0 (3/2)
9/2-	2.101(3/2)	1.944(3/2)	1.661(3/2)	1.950(3/2)	1.927(3/2)
11/2-	1.807(3/2)	1.703(3/2)	1.381(3/2)	1.785(3/2)	1.616(3/2)
15/2-	3.144(3/2)	3.028(3/2)	2.270(3/2)	2.730(3/2)	2.936(3/2)

44CA - 52CR

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
0+	0.0 (2)	0.0 (2)	0.0 (2)	C.0 (2)	0.0 (2)
2+	1.586(2) 3.607(2)	1.446(2) 3.300(2)	1.311(2) 2.924(2)	1.790(2) 3.480(2)	1.346(2) 3.265(2)
4+	2.589(2) 2.817(2)	2.396(2) 2.630(2)	2.073(2) 2.187(2)	2.630(2) 2.850(2)	2.218(2) 2.575(2)
5+	3.927(2)	3.668(2)	3.052(2)	3.750(2)	3.561(2)
6+	3.237(2)	3.085(2)	2.401(2)	2.960(2)	2.974(2)
8+	5.372(2)	5.133(2)	3.953(2)	4.800(2)	4.972(2)

ENERGY LEVELS

45CA - 51V

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
3/2-	1.379(5/2)	1.212(5/2)	1.210(5/2)	1.425(5/2)	1.221(5/2)
5/2-	0.327(5/2)	0.250(5/2)	0.378(5/2)	0.750(5/2)	0.151(5/2)
7/2-	0.0 (5/2)	0.0 (5/2)	0.0 (5/2)	0.0 (5/2)	0.0 (5/2)
9/2-	2.101(5/2)	1.944(5/2)	1.661(5/2)	1.950(5/2)	1.927(5/2)
11/2-	1.8C7(5/2)	1.703(5/2)	1.381(5/2)	1.785(5/2)	1.616(5/2)
15/2-	3.144(5/2)	3.028(5/2)	2.270(5/2)	2.730(5/2)	2.936(5/2)

46CA - 50TI

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
0+	0.0 (3)	0.0 (3)	0.0 (3)	0.0 (3)	0.0 (3)
2+	1.586(3)	1.446(3)	1.311(3)	1.790(3)	1.346(3)
4+	2.817(3)	2.630(3)	2.187(3)	2.630(3)	2.575(3)
6+	3.237(3)	3.085(3)	2.401(3)	2.960(3)	2.974(3)

47CA - 49SC

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
7/2-	0.0 (7/2)	0.0 (7/2)	0.0 (7/2)	0.0 (7/2)	0.0 (7/2)

48CA - 48CA

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
0+	0.0 (4)	0.0 (4)	0.0 (4)	0.0 (4)	0.0 (4)

41SC - 55NI

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
7/2-	0.0 (1/2)	0.0 (1/2)	0.0 (1/2)	0.0 (1/2)	0.0 (1/2)

42SC - 54CO

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
0+	0.0 (1)	0.0 (1)	0.150(1)	0.0 (1)	0.150(1)
1+	0.611(0)	0.937(0)	0.157(0)	1.210(0)	0.157(0)
2+	1.586(1)	1.446(1)	1.461(1)	1.790(1)	1.461(1)
3+	1.491(0)	2.278(0)	1.229(0)	2.070(0)	1.229(0)
4+	2.817(1)	2.630(1)	2.337(1)	2.630(1)	2.337(1)
5+	1.511(0)	2.151(0)	1.407(0)	2.090(0)	1.407(0)
6+	3.237(1)	3.085(1)	2.551(1)	2.960(1)	2.551(1)
7+	0.618(0)	0.199(0)	0.0 (0)	0.330(0)	0.0 (0)

ENERGY LEVELS

43SC - 53FE

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
1/2-	4.318(1/2)	5.472(1/2)	3.972(1/2)	4.776(1/2)	4.328(1/2)
3/2-	2.889(1/2) 5.515(3/2)	3.939(1/2) 5.239(3/2)	3.133(1/2) 5.071(3/2)	3.607(1/2) 5.376(3/2)	3.202(1/2) 5.361(3/2
5/2-	3.444(1/2) 3.937(1/2) 4.464(3/2)	4.113(1/2) 4.278(3/2) 5.022(1/2)	2.826(1/2) 3.765(1/2) 4.239(3/2)	3.942(1/2) 4.401(3/2) 4.515(1/2)	3.198(1/2) 4.012(1/2 4.521(3/2)
7/2-	0.0 (1/2) 2.791(1/2) 4.136(3/2) 4.391(1/2)	0.C (1/2) 3.764(1/2) 4.C27(3/2) 5.461(1/2)	0.0 (1/2) 2.927(1/2) 3.861(3/2) 3.946(1/2)	0.0 (1/2) 3.531(1/2) 3.651(3/2) 4.801(1/2)	0.0 (1/2) 3.058(1/2 4.170(3/2) 4.373(1/2
9/2-	1.681(1/2) 4.104(1/2) 6.238(3/2)	1.582(1/2) 4.929(1/2) 5.972(3/2)	1.379(1/2) 3.492(1/2) 5.522(3/2)	1.775(1/2) 4.503(1/2) 5.601(3/2)	1.442(1/2) 3.955(1/2) 5.896(3/2)
11/2-	2.336(1/2) 4.411(1/2) 5.943(3/2)	2.351(1/2) 5.357(1/2) 5.731(3/2)	2.009(1/2) 4.145(1/2) 5.242(3/2)	2.322(1/2) 4.824(1/2) 5.436(3/2)	2.146(1/2) 4.525(1/2) 5.625(3/2)
13/2-	3.503(1/2) 4.943(1/2)	3.463(1/2) 6.013(1/2)	2.841(1/2) 4.442(1/2)	3.124(1/2) 5.266(1/2)	3.207(1/2) 4.973(1/2)
15/2-	3.512(1/2) 7.280(3/2)	3.297(1/2) 7.055(3/2)	2.770(1/2) 6.131(3/2)	2.989(1/2) 6.381(3/2)	3.166(1/2) 6.631(3/2)
17/2-	4.291(1/2)	4.463(1/2)	3.478(1/2)	3.947(1/2)	4.019(1/2)
19/2-	3.638(1/2)	3.036(1/2)	2.450(1/2)	2.661(1/2)	2.991(1/2)

44SC - 52MN

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
0+	3.041(2)	2.839(2)	3.079(2)	2.319(2)	3.166(2)
1+	0.431(1) 2.346(1) 4.492(1)	0.498(1) 3.504(1) 5.753(1)	0.355(1) 2.313(1) 4.177(1)	0.821(1) 3.029(1) 4.966(1)	0.282(1) 2.336(1) 4.528(1)
2+	0.0 (1) 2.575(1) 4.034(1) 4.627(2) 6.648(2)	0.296(1) 3.630(1) 4.285(2) 5.149(1) 6.139(2)	0.161(1) 2.727(1) 3.905(1) 4.390(2) 6.003(2)	C.282(1) 3.369(1) 4.109(2) 4.612(1) 5.799(2)	0.127(1) 2.921(1) 4.076(1) 4.513(2) 6.268(2)
3+	0.764(1) 2.217(1) 3.130(1) 3.732(1) 4.468(1)	0.904(1) 2.552(1) 4.227(1) 4.784(1) 5.586(1)	0.677(1) 2.113(1) 3.192(1) 3.315(1) 4.125(1)	0.954(1) 2.404(1) 3.769(1) 4.339(1) 4.864(1)	0.694(1) 2.166(1) 3.300(1) 3.516(1) 4.464(1)
4+	0.716(1) 2.369(1) 3.697(1) 4.825(1) 5.630(2) 5.858(2)	0.853(1) 2.511(1) 4.940(1) 5.235(2) 5.469(2) 6.070(1)	0.591(1) 2.083(1) 3.621(1) 4.219(1) 5.153(2) 5.266(2)	0.538(1) 2.341(1) 4.413(1) 4.949(2) 5.169(2) 5.175(1)	0.712(1) 2.160(1) 3.887(1) 4.691(1) 5.363(2) 5.595(2)
5+	1.275(1) 2.058(1) 3.291(1) 4.074(1) 4.632(1) 6.969(2)	1.378(1) 2.390(1) 3.399(1) 5.244(1) 5.576(1) 6.507(2)	1.074(1) 1.952(1) 2.809(1) 3.722(1) 3.916(1) 6.131(2)	1.233(1) 2.330(1) 3.049(1) 4.579(1) 4.922(1) 6.069(2)	1.211(1) 1.889(1) 3.024(1) 4.008(1) 4.442(1) 6.503(2)
6+	0.379(1) 2.213(1) 3.297(1) 4.810(1) 6.278(2)	0.0 (1) 2.569(1) 3.568(1) 5.924(2) 5.970(1)	0.0 (1) 1.974(1) 2.908(1) 4.340(1) 5.480(2)	0.0 (1) 2.279(1) 3.187(1) 5.119(1) 5.279(2)	0.0 (1) 2.099(1) 3.216(1) 4.845(1) 5.917(2)
7+	1.271(1) 3.342(1) 3.689(1) 5.626(1)	0.967(1) 3.533(1) 3.727(1) 6.802(1)	0.754(1) 2.803(1) 2.943(1) 4.796(1)	0.666(1) 3.079(1) 3.318(1) 5.787(1)	0.885(1) 3.117(1) 3.317(1) 5.495(1)
8+	3.094(1) 4.123(1) 8.413(2)	2.797(1) 4.253(1) 7.972(2)	2.225(1) 3.400(1) 7.033(2)	2.432(1) 3.713(1) 7.119(2)	2.580(1) 3.874(1) 7.640(2)
9+	3.385(1) 5.435(1)	2.963(1) 5.982(1)	2.380(1) 4.391(1)	2.558(1) 5.006(1)	2.731(1) 5.116(1)
10+	4.787(1)	4.556(1)	3.529(1)	3.797(1)	4.283(1)
11+	4.619(1)	3.958(1)	3.041(1)	3.217(1)	3.795(1)

ENERGY LEVELS

45SC - 51CR

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
1/2-	2.095(3/2) 4.368(3/2)	2.547(3/2) 5.781(3/2)	2.C68(3/2) 4.522(3/2)	2.776(3/2) 5.417(3/2)	2.298(3/2) 4.792(3/2)
3/2-	1.658(3/2) 2.306(3/2) 4.466(3/2) 5.367(3/2) 7.972(5/2)	1.828(3/2) 2.884(3/2) 5.909(3/2) 6.536(3/2) 7.328(5/2)	1.625(3/2) 2.203(3/2) 4.301(3/2) 4.934(3/2) 7.253(5/2)	2.094(3/2) 2.624(3/2) 5.584(3/2) 6.112(3/2) 7.127(5/2)	1.707(3/2) 2.490(3/2) 4.565(3/2) 5.272(3/2) 7.618(5/2)
5/2-	1.573(3/2) 2.940(3/2) 4.130(3/2) 4.276(3/2) 5.311(3/2) 6.920(5/2)	2.264(3/2) 3.332(3/2) 4.576(3/2) 5.5C4(3/2) 6.367(5/2) 6.684(3/2)	1.801(3/2) 2.631(3/2) 3.883(3/2) 3.959(3/2) 4.977(3/2) 6.421(5/2)	2.254(3/2) 3.264(3/2) 4.428(3/2) 5.060(3/2) 6.022(3/2) 6.452(5/2)	1.883(3/2) 2.958(3/2) 4.220(3/2) 4.448(3/2) 5.402(3/2) 6.653(5/2)
7/2-	0.0 (3/2) 2.353(3/2) 2.929(3/2) 4.343(3/2) 4.557(3/2) 5.537(3/2) 6.593(5/2)	0.C (3/2) 2.8C8(3/2) 3.269(3/2) 4.617(3/2) 6.018(3/2) 6.116(5/2) 6.933(3/2)	0.0 (3/2) 2.309(3/2) 2.564(3/2) 3.849(3/2) 4.473(3/2) 5.217(3/2) 6.043(5/2)	0.0 (3/2) 2.830(3/2) 3.307(3/2) 4.383(3/2) 5.521(3/2) 5.702(5/2) 6.314(3/2)	0.0 (3/2) 2.461(3/2) 2.920(3/2) 4.190(3/2) 4.667(3/2) 5.674(3/2) 6.419(5/2)
9/2-	1.674(3/2) 2.685(3/2) 3.155(3/2) 4.114(3/2) 5.271(3/2) 6.360(3/2) 8.694(5/2)	1.557(3/2) 3.060(3/2) 3.716(3/2) 4.561(3/2) 6.625(3/2) 7.737(3/2) 8.061(5/2)	1.334(3/2) 2.412(3/2) 2.974(3/2) 3.751(3/2) 4.926(3/2) 5.490(3/2) 7.704(5/2)	1.714(3/2) 2.803(3/2) 3.738(3/2) 4.410(3/2) 5.991(3/2) 6.903(3/2) 7.652(5/2)	1.436(3/2) 2.838(3/2) 3.171(3/2) 4.131(3/2) 5.313(3/2) 6.347(3/2) 8.250(5/2)
11/2-	1.550(3/2) 2.812(3/2) 3.387(3/2) 4.464(3/2) 4.594(3/2) 6.108(3/2) 8.399(5/2)	1.346(3/2) 2.974(3/2) 3.718(3/2) 4.569(3/2) 5.416(3/2) 7.431(3/2) 7.823(5/2)	1.160(3/2) 2.478(3/2) 2.935(3/2) 3.924(3/2) 4.254(3/2) 5.456(3/2) 7.423(5/2)	1.489(3/2) 2.834(3/2) 3.511(3/2) 4.309(3/2) 4.998(3/2) 6.657(3/2) 7.487(5/2)	1.268(3/2) 2.730(3/2) 3.424(3/2) 4.259(3/2) 4.631(3/2) 6.239(3/2) 7.973(5/2)
13/2-	2.767(3/2) 3.465(3/2) 4.424(3/2) 4.815(3/2) 6.892(3/2)	2.586(3/2) 3.467(3/2) 4.796(3/2) 5.575(3/2) 8.184(3/2)	2.139(3/2) 2.872(3/2) 3.864(3/2) 4.321(3/2) 5.808(3/2)	2.675(3/2) 3.235(3/2) 4.506(3/2) 5.110(3/2) 7.279(3/2)	2.416(3/2) 3.280(3/2) 4.343(3/2) 4.759(3/2) 6.757(3/2)
15/2-	2.424(3/2) 3.691(3/2) 3.892(3/2) 5.302(3/2) 9.737(5/2)	1.983(3/2) 3.569(3/2) 4.010(3/2) 5.8C6(3/2) 9.144(5/2)	1.629(3/2) 2.898(3/2) 3.285(3/2) 4.582(3/2) 8.312(5/2)	1.928(3/2) 3.190(3/2) 3.773(3/2) 5.262(3/2) 8.432(5/2)	1.969(3/2) 3.307(3/2) 3.691(3/2) 5.206(3/2) 9.085(5/2)
17/2-	3.617(3/2) 4.980(3/2) 6.790(3/2)	3.267(3/2) 4.811(3/2) 7.592(3/2)	2.603(3/2) 3.981(3/2) 5.580(3/2)	3.024(3/2) 4.416(3/2) 6.667(3/2)	3.181(3/2) 4.526(3/2) 6.510(3/2)
19/2-	4.104(3/2) 6.041(3/2)	3.765(3/2) 6.194(3/2)	2.981(3/2) 4.858(3/2)	3.244(3/2) 5.532(3/2)	3.556(3/2) 5.843(3/2)
21/2-	6.291(3/2)	5.981(3/2)	4.669(3/2)	5.223(3/2)	5.672(3/2)
23/2-	6.338(3/2)	5.782(3/2)	4.560(3/2)	5.049(3/2)	5.563(3/2)

46SC - 50V

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
0+	4.940(3)	4.462(3)	4.976(3)	4.125(3)	5.004(3)
1+	1.206(2) 2.367(2) 3.106(2)	2.121(2) 3.044(2) 4.875(2)	1.531(2) 2.485(2) 3.461(2)	2.171(2) 3.031(2) 4.358(2)	1.473(2) 2.770(2) 3.356(2)
2+	0.0 (2) 1.253(2) 2.154(2) 3.637(2) 6.526(3)	0.726(2) 1.741(2) 2.572(2) 5.407(2) 5.908(3)	0.545(2) 1.509(2) 2.313(2) 3.849(2) 6.287(3)	0.706(2) 1.672(2) 2.737(2) 4.922(2) 5.915(3)	0.497(2) 1.556(2) 2.583(2) 3.934(2) 6.355(3)
3+	0.099(2) 1.671(2) 2.284(2) 2.622(2) 4.312(2)	0.298(2) 2.380(2) 3.033(2) 3.426(2) 5.930(2)	0.280(2) 1.951(2) 2.456(2) 2.742(2) 4.209(2)	0.553(2) 2.427(2) 2.982(2) 3.248(2) 5.358(2)	0.214(2) 2.045(2) 2.596(2) 2.748(2) 4.459(2)
4+	0.067(2) 0.615(2) 1.958(2) 2.792(2) 4.522(2) 7.757(3)	0.236(2) 1.122(2) 2.679(2) 3.601(2) 6.157(2) 7.092(3)	0.213(2) 0.950(2) 2.140(2) 3.055(2) 4.437(2) 7.163(3)	0.298(2) 1.167(2) 2.663(2) 3.411(2) 5.480(2) 6.755(3)	0.122(2) 0.909(2) 2.409(2) 3.169(2) 4.995(2) 7.470(3)
5+	0.279(2) 0.770(2) 2.018(2) 2.611(2) 3.909(2) 5.191(2)	0.264(2) 0.990(2) 2.323(2) 3.350(2) 5.106(2) 6.889(2)	0.290(2) 0.842(2) 2.071(2) 2.622(2) 3.800(2) 4.686(2)	0.491(2) 1.051(2) 2.302(2) 3.033(2) 4.562(2) 6.011(2)	0.238(2) 0.814(2) 2.109(2) 2.888(2) 4.050(2) 5.331(2)
6+	0.033(2) 1.901(2) 2.833(2) 3.644(2) 8.177(3)	0.0 (2) 2.170(2) 3.474(2) 4.571(2) 7.547(3)	0.0 (2) 1.886(2) 2.798(2) 3.487(2) 7.377(3)	C.0 (2) 2.239(2) 3.225(2) 4.122(2) 7.085(3)	0.0 (2) 1.894(2) 3.102(2) 3.823(2) 7.808(3)
7+	1.073(2) 2.458(2) 3.381(2) 4.892(2)	1.134(2) 2.566(2) 3.656(2) 6.086(2)	0.921(2) 2.072(2) 3.010(2) 4.295(2)	0.884(2) 2.488(2) 3.292(2) 5.321(2)	0.979(2) 2.406(2) 3.351(2) 4.840(2)
8+	1.906(2) 3.351(2) 3.667(2)	1.670(2) 3.351(2) 4.327(2)	1.338(2) 2.724(2) 3.406(2)	1.525(2) 2.949(2) 3.849(2)	1.671(2) 3.082(2) 3.967(2)
9+	2.829(2) 4.023(2)	2.625(2) 4.084(2)	2.130(2) 3.198(2)	2.455(2) 3.582(2)	2.472(2) 3.813(2)
10+	4.261(2)	4.193(2)	3.221(2)	3.554(2)	3.915(2)
11+	4.665(2)	4.441(2)	3.503(2)	3.758(2)	4.197(2)

ENERGY LEVELS

47SC - 49TI

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
1/2-	2.897(5/2)	3.074(5/2)	2.562(5/2)	3.111(5/2)	2.944(5/2)
3/2-	1.317(5/2) 2.655(5/2)	1.387(5/2) 3.383(5/2)	1.179(5/2) 2.715(5/2)	1.610(5/2) 3.177(5/2)	1.213(5/2) 3.092(5/7)
5/2-	1.433(5/2) 2.979(5/2) 5.190(5/2)	1.631(5/2) 3.790(5/2) 6.805(5/2)	1.446(5/2) 3.027(5/2) 4.753(5/2)	1.900(5/2) 3.642(5/2) 6.109(5/2)	1.500(5/2) 3.420(5/2) 5.282(5/2)
7/2-	0.0 (5/2) 2.311(5/2) 4.074(5/2) 8.817(7/2)	0.0 (5/2) 2.569(5/2) 5.098(5/2) 7.7C4(7/2)	0.0 (5/2) 2.170(5/2) 3.750(5/2) 7.887(7/2)	0.0 (5/2) 2.652(5/2) 4.700(5/2) 7.454(7/2)	0.0 (5/2) 2.397(5/2) 4.093(5/2) 8.287(7/2)
9/2-	1.568(5/2) 3.033(5/2) 4.964(5/2)	1.918(5/2) 3.589(5/2) 6.135(5/2)	1.608(5/2) 2.909(5/2) 4.330(5/2)	1.912(5/2) 3.404(5/2) 5.511(5/2)	1.765(5/2) 3.277(5/2) 4.782(5/2)
11/2-	1.443(5/2) 2.977(5/2) 3.426(5/2)	1.139(5/2) 3.124(5/2) 3.966(5/2)	1.055(5/2) 2.461(5/2) 3.242(5/2)	1.404(5/2) 2.952(5/2) 3.702(5/2)	1.136(5/2) 2.935(5/2) 3.665(5/2)
13/2-	2.872(5/2) 3.679(5/2)	2.681(5/2) 3.630(5/2)	2.116(5/2) 2.994(5/2)	2.638(5/2) 3.388(5/2)	2.628(5/2) 3.430(5/2)
15/2-	2.566(5/2) 3.758(5/2)	2.197(5/2) 3.640(5/2)	1.750(5/2) 2.937(5/2)	2.037(5/2) 3.263(5/2)	2.239(5/2) 3.396(5/2)
17/2-	3.629(5/2)	3.348(5/2)	2.656(5/2)	3.093(5/2)	3.223(5/2)
19/2-	4.433(5/2)	4.162(5/2)	3.361(5/2)	3.683(5/2)	3.927(5/2)

48SC - 48SC

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
0+	7.027(4)	5.892(4)	6.679(4)	5.751(4)	6.679(4)
1+	2.391(3)	3.965(3)	2.519(3)	3.440(3)	2.519(3)
2+	0.330(3)	1.452(3)	1.143(3)	1.316(3)	1.143(3)
3+	0.403(3)	0.734(3)	0.622(3)	0.841(3)	0.622(3)
4+	0.124(3)	0.447(3)	0.252(3)	0.274(3)	0.252(3)
5+	0.089(3)	0.191(3)	0.132(3)	0.286(3)	0.132(3)
6+	0.0 (3)	0.0 (3)	0.0 (3)	0.0 (3)	0.0 (3)
7+	1.189(3)	1.305(3)	1.096(3)	1.094(3)	1.096(3)

42TI - 54NI

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
0+	0.0 (1)	0.0 (1)	0.0 (1)	0.0 (1)	0.0 (1)
2+	1.586(1)	1.446(1)	1.311(1)	1.790(1)	1.346(1)
4+	2.817(1)	2.630(1)	2.187(1)	2.630(1)	2.575(1)
6+	3.237(1)	3.085(1)	2.401(1)	2.960(1)	2.974(1)

ENERGY LEVELS

43TI - 53CO

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
1/2-	4.318(1/2)	5.472(1/2)	3.972(1/2)	4.776(1/2)	4.328(1/2)
3/2-	2.889(1/2) 5.515(3/2)	3.939(1/2) 5.239(3/2)	3.133(1/2) 5.071(3/2)	3.607(1/2) 5.076(3/2)	3.202(1/2) 5.361(3/2)
5/2-	3.444(1/2) 3.937(1/2) 4.464(3/2)	4.114(1/2) 4.278(3/2) 5.022(1/2)	2.826(1/2) 3.766(1/2) 4.235(3/2)	3.942(1/2) 4.401(3/2) 4.515(1/2)	3.198(1/2) 4.012(1/2) 4.521(3/2)
7/2-	0.0 (1/2) 2.791(1/2) 4.136(3/2) 4.391(1/2)	0.0 (1/2) 3.764(1/2) 4.027(3/2) 5.461(1/2)	0.0 (1/2) 2.927(1/2) 3.861(3/2) 3.946(1/2)	0.0 (1/2) 3.531(1/2) 3.651(3/2) 4.801(1/2)	0.0 (1/2) 3.058(1/2) 4.170(3/2) 4.373(1/2)
9/2-	1.681(1/2) 4.104(1/2) 6.238(3/2)	1.582(1/2) 4.929(1/2) 5.572(3/2)	1.379(1/2) 3.492(1/2) 5.522(3/2)	1.775(1/2) 4.503(1/2) 5.601(3/2)	1.442(1/2) 3.955(1/2) 5.896(3/2)
11/2-	2.336(1/2) 4.411(1/2) 5.943(3/2)	2.351(1/2) 5.357(1/2) 5.731(3/2)	2.009(1/2) 4.145(1/2) 5.242(3/2)	2.322(1/2) 4.824(1/2) 5.436(3/2)	2.146(1/2) 4.525(1/2) 5.625(3/2)
13/2-	3.503(1/2) 4.943(1/2)	3.463(1/2) 6.013(1/2)	2.841(1/2) 4.442(1/2)	3.124(1/2) 5.266(1/2)	3.207(1/2) 4.973(1/2)
15/2-	3.512(1/2) 7.280(3/2)	3.297(1/2) 7.055(3/2)	2.770(1/2) 6.131(3/2)	2.989(1/2) 6.381(3/2)	3.166(1/2) 6.631(3/2)
17/2-	4.291(1/2)	4.463(1/2)	3.478(1/2)	3.947(1/2)	4.019(1/2)
19/2-	3.638(1/2)	3.036(1/2)	2.450(1/2)	2.661(1/2)	2.991(1/2)

44TI - 52FE

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
0+	0.0 (0) 5.583(0) 8.272(2) 8.782(0)	0.0 (0) 7.529(0) 8.055(2)10.921(C)	0.0 (0) 5.854(0) 7.722(2) 7.891(0)	0.0 (0) 7.061(0) 7.302(2) 9.601(0)	0.0 (0) 6.116(0) 8.340(2) 8.746(0)
1+	5.662(1) 7.577(1) 9.723(1)	5.714(1) 8.720(1) 10.969(1)	4.998(1) 6.956(1) 8.820(1)	5.804(1) 8.012(1) 9.949(1)	5.150(1) 7.858(1) 9.565(1)
2+	1.163(0) 4.956(0) 5.231(1) 7.806(1) 7.813(0) 7.968(0) 9.265(1) 9.858(2) 11.879(2)	1.049(0) 5.512(1) 5.975(0) 8.846(1) 9.470(0) 9.501(2) 9.944(0)10.365(1) 11.354(2)	0.933(0) 4.804(1) 4.846(0) 6.685(0) 7.370(1) 7.522(0) 8.547(1) 9.033(2) 10.646(2)	1.244(0) 5.265(1) 5.856(0) 8.353(1) 8.714(0) 8.958(0) 9.092(2) 9.595(1) 10.782(2)	0.965(0) 4.893(1) 5.063(0) 7.525(0) 7.695(1) 8.123(0) 9.359(1) 9.683(2) 11.330(2)
3+	5.788(0) 5.995(1) 7.448(1) 8.361(1) 8.688(0) 8.963(1) 9.639(1)	6.120(1) 6.679(0) 7.768(1) 9.443(1) 10.000(1)10.650(0) 10.802(1)	5.320(1) 5.356(0) 6.756(1) 7.782(0) 7.834(1) 7.957(1) 8.767(1)	5.937(1) 6.428(0) 7.387(1) 8.752(1) 9.322(1) 9.508(0) 9.847(1)	5.519(1) 5.754(0) 7.168(1) 8.561(1) 8.639(0) 8.930(1) 9.511(1)
4+	2.791(0) 5.001(0) 5.947(1) 6.768(0) 7.600(1) 8.143(0) 8.275(0) 8.928(1) 10.056(1)10.861(2) 11.089(2)	2.726(0) 5.867(0) 6.065(1) 7.727(1) 7.987(0) 9.923(0) 10.140(0)10.156(1) 10.451(2)10.685(2) 11.285(1)	2.306(0) 4.705(0) 5.234(1) 6.246(0) 6.726(1) 7.322(0) 7.595(0) 8.264(1) 8.862(1) 9.796(2) 9.909(2)	2.733(0) 5.467(0) 5.521(1) 7.321(0) 7.324(1) 8.957(0) 9.173(0) 9.396(1) 9.932(2)10.152(2) 10.158(1)	2.493(0) 5.070(0) 5.588(1) 6.772(0) 7.158(1) 8.149(0) 8.259(0) 8.786(1) 9.676(1)10.438(2) 10.620(2)
5+	5.869(0) 6.506(1) 7.018(0) 7.289(1) 8.522(1) 9.305(1) 9.863(1)12.200(2)	6.593(1) 6.658(C) 7.605(1) 8.164(0) 8.615(1)10.459(1) 10.792(1)11.723(2)	5.347(0) 5.717(1) 6.203(0) 6.595(1) 7.452(1) 8.364(1) 8.559(1)10.774(2)	6.216(1) 6.451(0) 7.313(1) 7.462(0) 8.032(1) 9.562(1) 9.905(1)11.052(2)	5.805(0) 6.130(1) 6.811(0) 7.215(1) 8.169(1) 9.269(1) 9.489(1)11.508(2)
6+	4.057(0) 5.167(0) 5.610(1) 6.878(0) 7.444(1) 7.551(0) 8.520(1) 9.094(0) 10.041(1)11.509(2)	4.327(0) 5.216(1) 5.372(0) 7.785(1) 7.824(0) 8.307(0) 8.783(1)11.106(0) 11.140(2)11.186(1)	3.368(0) 4.242(0) 4.643(1) 5.930(0) 6.476(0) 6.617(1) 7.551(1) 8.137(0) 8.983(1)10.123(2)	3.910(0) 4.983(1) 5.022(0) 7.123(0) 7.262(1) 7.525(0) 8.170(1) 9.832(0) 10.102(1)10.262(2)	3.836(0) 4.692(0) 5.167(1) 6.659(0) 7.147(1) 7.223(0) 8.095(1) 9.077(0) 9.692(1)10.891(2)
7+	6.035(0) 6.502(1) 8.369(0) 8.573(1) 8.920(1)10.857(1)	6.183(1) 6.502(0) 8.749(1) 8.943(1) 9.526(0)12.010(1)	5.061(0) 5.397(1) 7.254(0) 7.446(1) 7.586(1) 9.439(1)	5.649(1) 6.112(0) 8.062(1) 8.301(1) 8.462(0)10.770(1)	5.638(0) 6.057(1) 8.117(0) 8.283(1) 8.322(1)10.441(1)
8+	6.080(0) 7.345(0) 8.234(0) 8.325(1) 9.354(1)13.644(2)	5.980(0) 7.534(0) 8.013(1) 9.292(0) 9.469(1)13.188(2)	4.866(0) 5.987(0) 6.867(1) 7.138(0) 8.051(1)11.675(2)	5.589(0) 6.667(0) 7.415(1) 8.389(0) 8.696(1)12.102(2)	5.503(0) 6.819(0) 7.524(1) 8.001(0) 8.834(1)12.577(2)
9+	7.979(C) 8.616(1) 10.666(1)	8.179(1) 8.360(0) 11.198(1)	6.630(0) 7.023(1) 9.033(1)	7.460(0) 7.541(1) 9.989(1)	7.527(0) 7.967(1) 10.068(1)
10+	7.380(0) 8.891(0) 10.018(1)	7.022(0) 9.707(0) 9.772(1)	5.675(0) 7.388(0) 8.172(1)	6.260(0) 8.531(0) 6.780(1)	6.579(0) 8.462(0) 9.069(1)
11+	9.850(1)	9.174(1)	7.684(1)	8.200(1)	8.766(1)
12+	7.689(0)	6.974(0)	5.549(0)	6.134(0)	6.631(0)

ENERGY LEVELS

45TI - 51MN

J	42SC-INT	54CO-INT	48SC-INT	42SC*-INT	48SC*-INT
	ENERGY(T) (MEV)	ENERGY(T) (MEV)	ENERGY(T) (MEV)	ENERGY(T) (MEV)	ENERGY(T) (MEV)
1/2-	3.290(1/2) 5.252(1/2) 6.294(3/2) 7.328(1/2) 8.560(3/2)	3.739(1/2) 6.728(3/2) 7.C29(1/2) 9.836(1/2) 9.962(3/2)	3.044(1/2) 5.260(1/2) 5.964(3/2) 6.889(1/2) 8.418(3/2)	3.478(1/2) 5.943(1/2) 6.370(3/2) 8.718(1/2) 9.011(3/2)	3.299(1/2) 5.708(1/2) 6.064(3/2) 7.709(1/2) 9.013(3/2)
3/2-	1.525(1/2) 2.231(1/2) 4.656(1/2) 5.521(1/2) 5.857(3/2) 6.505(3/2) 7.341(1/2) 7.809(1/2) 8.665(3/2) 9.566(3/2) 12.171(5/2)	1.863(1/2) 2.995(1/2) 6.009(3/2) 6.320(1/2) 7.064(3/2) 7.197(1/2) 9.734(1/2) 9.990(1/2) 10.090(3/2)10.716(3/2) 11.509(5/2)	1.556(1/2) 2.365(1/2) 4.950(1/2) 5.522(3/2) 5.730(1/2) 6.099(3/2) 6.742(1/2) 7.244(1/2) 8.197(3/2) 8.830(3/2) 11.149(5/2)	1.569(1/2) 2.900(1/2) 5.688(3/2) 5.864(1/2) 6.218(3/2) 6.434(1/2) 8.517(1/2) 8.837(1/2) 9.178(3/2) 9.706(3/2) 10.721(5/2)	1.729(1/2) 2.477(1/2) 5.234(1/2) 5.770(3/2) 6.142(1/2) 6.457(3/2) 7.704(1/2) 7.939(1/2) 9.069(3/2) 9.764(3/2) 11.842(5/2)
5/2-	0.0 (1/2) 2.771(1/2) 3.752(1/2) 4.844(1/2) 5.111(1/2) 5.772(3/2) 6.010(1/2) 7.140(3/2) 7.393(1/2) 8.259(1/2) 8.329(3/2) 8.475(3/2) 9.510(3/2)11.119(5/2)	0.0 (1/2) 3.486(1/2) 4.560(1/2) 6.245(1/2) 6.445(3/2) 6.661(1/2) 7.513(3/2) 7.680(1/2) 8.756(3/2) 9.685(3/2) 9.852(1/2)10.548(5/2) 10.785(1/2)10.864(3/2)	0.0 (1/2) 2.755(1/2) 3.583(1/2) 4.557(1/2) 5.070(1/2) 5.697(3/2) 5.878(1/2) 6.527(3/2) 7.169(1/2) 7.711(1/2) 7.779(3/2) 7.895(3/2) 8.874(3/2)10.317(5/2)	0.139(1/2) 3.363(1/2) 4.107(1/2) 5.565(1/2) 5.708(1/2) 5.848(3/2) 6.805(1/2) 6.858(3/2) 8.023(3/2) 8.649(1/2) 8.654(3/2) 9.332(1/2) 9.616(3/2)10.046(5/2)	0.0 (1/2) 2.927(1/2) 3.911(1/2) 5.120(1/2) 5.494(1/2) 5.974(3/2) 6.406(1/2) 6.956(3/2) 7.841(1/2) 8.354(3/2) 8.468(3/2) 8.751(1/2) 9.719(3/2)10.939(5/2)
7/2-	0.093(1/2) 2.365(1/2) 3.229(1/2) 3.998(1/2) 4.199(3/2) 5.096(1/2) 5.389(1/2) 5.742(1/2) 6.552(3/2) 6.842(1/2) 7.128(3/2) 7.933(1/2) 8.542(3/2) 8.707(1/2) 8.757(3/2) 9.737(3/2) 10.792(5/2)	0.222(1/2) 2.893(1/2) 3.974(1/2) 4.181(3/2) 4.944(1/2) 6.494(1/2) 6.989(3/2) 7.015(1/2) 7.432(1/2) 7.450(3/2) 8.531(1/2) 8.798(3/2) 10.199(3/2)10.297(5/2) 10.383(1/2)11.114(3/2) 11.249(1/2)	0.099(1/2) 2.351(1/2) 3.CC8(1/2) 3.796(1/2) 3.896(3/2) 4.958(1/2) 5.252(1/2) 5.715(1/2) 6.205(3/2) 6.460(3/2) 6.469(1/2) 7.545(1/2) 7.745(3/2) 7.858(1/2) 8.370(3/2) 9.113(3/2) 9.939(5/2)	0.0 (1/2) 2.736(1/2) 3.594(3/2) 3.635(1/2) 4.527(1/2) 5.769(1/2) 6.196(1/2) 6.424(3/2) 6.725(1/2) 6.902(3/2) 7.454(1/2) 7.978(3/2) 8.963(1/2) 9.115(3/2) 9.296(5/2) 9.671(1/2) 9.908(3/2)	0.210(1/2) 2.544(1/2) 3.335(1/2) 4.045(1/2) 4.320(3/2) 5.465(1/2) 5.784(1/2) 6.216(1/2) 6.678(3/2) 6.843(3/2) 7.133(1/2) 8.287(1/2) 8.350(3/2) 8.909(1/2) 9.282(3/2)10.015(3/2) 10.657(5/2)
9/2-	1.528(1/2) 3.136(1/2) 3.625(1/2) 4.693(1/2) 4.916(1/2) 5.046(1/2) 5.873(3/2) 6.137(1/2) 6.885(3/2) 7.054(1/2) 7.173(1/2) 7.355(3/2) 8.105(1/2) 8.314(3/2) 9.471(3/2)10.560(3/2) 12.893(5/2)	1.523(1/2) 3.864(1/2) 4.442(1/2) 5.630(1/2) 5.737(3/2) 6.052(1/2) 7.240(3/2) 7.388(1/2) 7.531(1/2) 7.897(3/2) 8.533(1/2) 8.742(3/2) 8.884(1/2)10.771(1/2) 10.406(3/2)11.918(3/2) 12.241(5/2)	1.239(1/2) 2.968(1/2) 3.328(1/2) 4.383(1/2) 4.716(1/2) 5.231(3/2) 5.584(1/2) 5.833(1/2) 6.308(3/2) 6.441(1/2) 6.667(1/2) 6.870(3/2) 7.641(1/2) 7.648(3/2) 8.822(3/2) 9.386(3/2) 11.60C(5/2)	1.411(1/2) 3.368(1/2) 3.905(1/2) 5.180(1/2) 5.308(3/2) 5.322(1/2) 6.398(3/2) 6.569(1/2) 6.709(1/2) 7.332(3/2) 7.426(1/2) 7.737(1/2) 8.004(3/2) 9.274(1/2) 9.585(3/2)10.497(3/2) 11.246(5/2)	1.411(1/2) 3.341(1/2) 3.765(1/2) 4.818(1/2) 5.167(1/2) 5.626(3/2) 6.179(1/2) 6.372(1/2) 6.725(3/2) 7.188(1/2) 7.323(1/2) 7.599(3/?) 8.175(3/2) 8.566(1/2) 9.815(3/2)10.303(3/2) 12.387(5/2)
11/2-	1.570(1/2) 3.594(1/2) 4.194(1/2) 4.684(1/2) 5.223(1/2) 5.749(3/2) 6.253(1/2) 6.432(1/2) 6.730(1/2) 7.012(3/2) 7.587(3/2) 7.826(1/2) 8.664(3/2) 8.794(3/2) 8.992(1/2)10.308(3/2) 12.999(5/2)	1.561(1/2) 4.525(1/2) 5.128(1/2) 5.527(3/2) 5.605(1/2) 5.763(1/2) 7.C74(1/2) 7.155(3/2) 7.899(3/2) 8.049(1/2) 8.437(1/2) 8.750(3/2) 9.596(3/2) 9.687(1/2) 11.475(1/2)11.612(3/2) 12.000(5/2)	1.228(1/2) 3.406(1/2) 3.875(1/2) 4.358(1/2) 4.663(1/2) 5.056(3/2) 5.450(1/2) 6.157(1/2) 6.269(1/2) 6.374(3/2) 6.831(3/2) 6.953(1/2) 7.820(3/2) 8.026(1/2) 8.150(3/2) 9.352(3/2) 11.319(5/2)	1.335(1/2) 3.725(1/2) 4.467(1/2) 5.083(3/2) 5.092(1/2) 5.144(1/2) 6.305(1/2) 6.428(3/2) 7.105(3/2) 7.146(1/2) 7.410(1/2) 7.903(3/2) 8.309(1/2) 8.592(3/2) 9.877(1/2)10.251(3/2) 11.081(5/2)	1.490(1/2) 3.856(1/2) 4.351(1/2) 4.844(1/2) 5.167(1/2) 5.580(3/2) 6.195(1/2) 6.657(1/2) 6.937(1/2) 7.048(3/2) 7.371(3/2) 7.888(1/2) 8.550(3/2) 8.858(3/2) 9.183(1/2)10.170(3/2) 12.105(5/2)
13/2-	3.489(1/2) 4.112(1/2) 5.148(1/2) 5.366(1/2) 5.862(1/2) 6.415(1/2) 6.635(1/2) 6.966(3/2) 7.425(1/2) 7.665(3/2) 8.282(1/2) 8.623(3/2) 9.015(3/2)11.092(3/2)	3.562(1/2) 4.454(1/2) 5.801(1/2) 6.503(1/2) 6.767(3/2) 7.132(1/2) 7.504(1/2) 7.647(3/2) 7.929(1/2) 8.796(1/2) 8.977(3/2) 9.756(3/2) 10.104(1/2)12.364(3/2)	2.870(1/2) 3.486(1/2) 4.677(1/2) 4.889(1/2) 5.490(1/2) 5.654(1/2) 5.885(1/2) 6.035(3/2) 6.636(1/2) 6.768(3/2) 7.326(1/2) 7.760(3/2) 8.217(3/2) 9.704(3/2)	3.076(1/2) 3.920(1/2) 5.243(1/2) 5.529(1/2) 6.258(1/2) 6.269(3/2) 6.634(1/2) 6.829(3/2) 6.898(1/2) 7.720(1/2) 8.100(3/2) 8.632(1/2) 8.705(3/2)10.873(3/2)	3.310(1/2) 4.000(1/2) 5.190(1/2) 5.503(1/2) 6.143(1/2) 6.345(1/2) 6.537(1/2) 6.690(3/2) 7.441(3/2) 7.505(1/2) 8.302(1/2) 8.451(3/2) 9.124(3/2)10.839(3/2)
15/2-	3.236(1/2) 4.550(1/2) 5.268(1/2) 6.136(1/2) 6.624(3/2) 6.644(1/2) 6.778(1/2) 7.526(1/2) 7.890(3/2) 8.091(3/2) 8.380(1/2) 9.502(3/2) 13.936(5/2)	3.136(1/2) 5.442(1/2) 5.865(1/2) 6.164(3/2) 6.864(1/2) 7.610(1/2) 7.749(3/2) 7.960(1/2) 8.191(3/2) 8.777(1/2) 9.986(3/2)10.154(1/2) 13.325(5/2)	2.499(1/2) 3.944(1/2) 4.943(1/2) 5.344(1/2) 5.525(3/2) 5.880(1/2) 6.120(1/2) 6.523(1/2) 6.794(3/2) 7.181(3/2) 7.336(1/2) 8.478(3/2) 12.208(5/2)	2.645(1/2) 4.271(1/2) 5.133(1/2) 5.522(3/2) 6.018(1/2) 6.656(1/2) 6.785(3/2) 6.969(1/2) 7.367(3/2) 7.522(1/2) 8.706(1/2) 8.856(3/2) 12.026(5/2)	2.990(1/2) 4.650(1/2) 5.163(1/2) 6.071(1/2) 6.211(3/2) 6.668(1/2) 6.857(1/2) 7.432(1/2) 7.588(3/2) 7.900(3/2) 8.446(1/2) 9.319(3/2) 13.155(5/2)
17/2-	3.719(1/2) 5.316(1/2) 6.478(1/2) 6.504(1/2) 7.308(1/2) 7.816(3/2) 7.857(1/2) 9.179(3/2) 10.989(3/2)	3.647(1/2) 5.636(1/2) 6.606(1/2) 7.084(1/2) 7.448(3/2) 8.615(1/2) 8.918(1/2) 8.992(3/2) 11.773(3/2)	2.812(1/2) 4.427(1/2) 5.339(1/2) 5.436(1/2) 6.333(1/2) 6.499(3/2) 6.747(1/2) 7.877(3/2) 9.476(3/2)	3.160(1/2) 4.928(1/2) 5.691(1/2) 6.259(1/2) 6.618(3/2) 7.300(1/2) 7.704(1/2) 8.010(3/2) 10.261(3/2)	3.383(1/2) 5.114(1/2) 6.160(1/2) 6.295(1/2) 7.126(1/2) 7.403(3/2) 7.732(1/2) 8.840(3/2) 10.657(3/2)
19/2-	4.222(1/2) 5.861(1/2) 6.927(1/2) 7.695(1/2) 8.303(3/2) 9.153(1/2) 10.240(3/2)	4.100(1/2) 5.778(1/2) 7.536(1/2) 7.946(3/2) 8.417(1/2)10.375(3/2) 10.687(1/2)	3.161(1/2) 4.569(1/2) 5.904(1/2) 6.412(1/2) 6.878(3/2) 7.751(1/2) 8.754(3/2)	3.253(1/2) 4.950(1/2) 6.532(1/2) 6.838(3/2) 7.121(1/2) 9.010(1/2) 9.126(3/2)	3.892(1/2) 5.365(1/2) 6.789(1/2) 7.404(1/2) 7.879(3/2) 9.009(1/2) 9.650(3/2)
21/2-	6.338(1/2) 7.403(1/2) 8.845(1/2)10.490(3/2)	6.184(1/2) 7.489(1/2) 9.914(1/2)10.161(3/2)	4.816(1/2) 5.935(1/2) 7.341(1/2) 8.565(3/2)	5.360(1/2) 6.367(1/2) 8.370(1/2) 8.817(3/2)	5.766(1/2) 6.977(1/2) 8.574(1/2) 9.693(3/2)
23/2-	6.521(1/2) 8.037(1/2) 10.537(3/2)	6.105(1/2) 8.133(1/2) 9.963(3/2)	4.827(1/2) 6.369(1/2) 8.456(3/2)	5.146(1/2) 6.833(1/2) 8.643(3/2)	5.814(1/2) 7.543(1/2) 9.707(3/2)
25/2-	8.453(1/2)	8.443(1/2)	6.372(1/2)	6.946(1/2)	7.714(1/2)
27/2-	7.873(1/2)	7.084(1/2)	5.539(1/2)	5.794(1/2)	6.881(1/2)

ENERGY LEVELS

46TI - 56CR

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
0+	0.0 (1) 4.625(1)	0.0 (1) 5.512(1)	0.0 (1) 4.540(1)	0.0 (1) 5.470(1)	0.0 (1) 4.851(1)
	6.282(1) 7.896(1)	6.951(1) 9.770(1)	5.568(1) 7.638(1)	6.745(1) 8.991(1)	6.086(1) 8.204(1)
	9.309(1) 13.185(3)	12.194(1) 12.232(3)	8.931(1) 12.089(3)	10.929(1) 11.410(3)	9.467(1) 12.835(3)
1+	3.654(1) 6.066(1)	4.266(1) 6.831(1)	3.481(1) 5.581(1)	4.372(1) 6.613(1)	3.662(1) 6.097(1)
	7.788(1) 8.735(1)	9.613(1) 9.891(2)	7.440(1) 7.973(1)	8.707(1) 9.456(2)	8.213(1) 8.744(1)
	9.452(2) 10.613(2)	10.617(1) 10.814(2)	8.644(2) 9.597(2)	9.862(1) 10.316(2)	9.441(2) 10.271(2)
	11.352(2)	12.644(2)	10.574(2)	11.643(2)	11.484(2)
2+	1.148(1) 2.497(1)	1.012(1) 2.923(1)	0.893(1) 2.419(1)	1.214(1) 2.898(1)	0.945(1) 2.541(1)
	3.426(1) 4.885(1)	3.656(1) 5.698(1)	3.066(1) 4.647(1)	3.636(1) 5.568(1)	3.306(1) 5.068(1)
	5.151(1) 6.160(1)	6.255(1) 7.307(1)	4.957(1) 5.713(1)	6.074(1) 6.848(1)	5.364(1) 6.302(1)
	6.792(1) 7.253(1)	7.965(1) 8.388(1)	6.145(1) 6.712(1)	7.414(1) 7.890(1)	6.795(1) 7.299(1)
	7.548(1) 8.222(1)	8.496(2) 9.286(1)	7.271(1) 7.623(1)	7.991(2) 8.658(1)	7.798(1) 8.245(2)
	8.245(2) 8.503(1)	9.511(2) 9.908(1)	7.658(2) 7.877(1)	8.957(2) 9.138(1)	8.433(1) 8.561(1)
	9.498(2) 9.902(1)	10.374(1) 10.742(2)	8.622(2) 9.280(1)	9.453(1) 10.022(2)	9.266(2) 9.959(2)
	10.171(1) 10.399(2)	12.615(1) 13.050(1)	9.367(1) 9.426(2)	11.399(1) 11.646(1)	10.231(1) 10.378(1)
	11.883(2) 14.771(3)	13.177(2) 13.678(3)	10.962(2) 13.400(3)	12.207(2) 13.200(3)	11.992(2) 14.163(3)
3+	3.592(1) 5.012(1)	3.936(1) 5.377(1)	3.302(1) 4.472(1)	4.148(1) 5.402(1)	3.453(1) 4.907(1)
	5.096(1) 6.247(1)	5.605(1) 7.126(1)	4.543(1) 5.610(1)	5.458(1) 6.903(1)	4.961(1) 6.225(1)
	6.651(1) 6.842(1)	7.768(1) 8.068(2)	6.083(1) 6.318(1)	7.212(1) 7.608(1)	6.700(1) 7.035(1)
	7.344(1) 7.844(1)	8.155(1) 8.564(1)	6.812(1) 7.393(2)	7.838(2) 7.983(1)	7.377(1) 7.884(2)
	8.345(2) 8.355(1)	9.704(1) 10.150(2)	7.394(1) 7.812(1)	8.972(1) 9.304(1)	8.191(1) 8.609(1)
	9.041(1) 9.916(2)	10.180(1) 10.603(2)	8.294(1) 9.064(2)	9.712(2) 10.110(1)	9.044(1) 9.657(2)
	10.530(2) 10.726(1)	11.167(1) 11.196(2)	9.569(2) 9.656(1)	10.267(2) 10.533(2)	10.261(2) 10.581(2)
	10.868(2) 12.558(2)	13.490(1) 13.700(2)	9.854(2) 11.322(2)	12.069(1) 12.643(2)	10.953(1) 12.477(2)
4+	2.221(1) 2.971(1)	2.012(1) 3.055(1)	1.710(1) 2.478(1)	2.216(1) 2.931(1)	1.890(1) 2.815(1)
	3.426(1) 4.827(1)	3.943(1) 5.197(1)	3.119(1) 4.267(1)	3.557(1) 5.015(1)	3.458(1) 4.695(1)
	5.059(1) 5.413(1)	5.465(1) 6.387(1)	4.511(1) 5.097(1)	5.388(1) 6.067(1)	4.957(1) 5.513(1)
	6.319(1) 6.426(1)	7.456(1) 7.766(1)	5.905(1) 6.071(1)	7.021(1) 7.207(1)	6.519(1) 6.648(1)
	6.676(1) 7.248(1)	7.941(1) 8.006(2)	6.123(1) 6.683(1)	7.362(1) 7.584(2)	6.696(1) 7.268(1)
	7.398(1) 7.664(1)	8.153(1) 8.670(1)	6.710(1) 6.961(1)	7.683(1) 7.971(1)	7.355(1) 7.684(1)
	8.092(1) 8.312(2)	8.892(2) 9.179(1)	7.326(2) 7.426(1)	8.453(2) 8.651(1)	7.959(2) 8.229(1)
	8.526(1) 8.800(1)	9.617(1) 10.375(1)	7.843(1) 8.063(2)	8.727(1) 9.531(1)	8.581(2) 8.717(1)
	8.860(2) 9.399(1)	10.449(2) 10.619(1)	8.159(1) 8.457(1)	9.690(1) 9.948(2)	8.989(1) 9.320(1)
	10.204(2) 11.038(2)	11.361(1) 11.371(2)	9.253(2) 9.897(1)	10.270(1) 10.696(2)	9.860(2) 10.867(2)
	11.318(1) 12.768(2)	13.927(2) 14.022(1)	10.168(2) 11.550(2)	12.498(1) 12.765(2)	11.302(1) 12.553(2)
	16.002(3)	14.862(3)	14.276(3)	14.040(3)	15.191(3)
5+	3.810(1) 4.860(1)	3.810(1) 5.205(1)	3.107(1) 4.278(1)	3.750(1) 5.145(1)	3.540(1) 4.642(1)
	5.585(1) 5.970(1)	6.096(1) 6.526(1)	4.853(1) 5.265(1)	5.914(1) 6.101(1)	5.420(1) 5.896(1)
	6.516(1) 6.795(1)	7.543(1) 7.840(1)	5.731(1) 6.205(1)	6.985(1) 7.264(1)	6.378(1) 6.893(1)
	7.151(1) 7.631(1)	8.034(2) 8.383(1)	6.400(1) 6.916(1)	7.640(1) 7.776(2)	7.259(1) 7.561(1)
	7.829(1) 8.015(1)	8.699(1) 8.760(2)	7.156(1) 7.281(1)	8.001(1) 8.336(2)	7.839(1) 7.953(1)
	8.253(1) 8.525(2)	9.037(1) 9.337(1)	7.403(2) 7.601(1)	8.468(1) 8.590(1)	8.120(1) 8.299(1)
	9.016(2) 9.467(1)	9.707(1) 10.093(2)	7.955(2) 8.506(1)	8.968(1) 9.587(2)	8.670(2) 9.485(1)
	10.263(2) 10.444(1)	11.120(2) 11.415(1)	9.184(2) 9.206(1)	10.318(2) 10.323(1)	9.929(2) 10.415(1)
	10.856(2) 12.154(2)	12.519(1) 12.876(2)	9.735(2) 10.913(2)	11.233(1) 11.847(2)	10.472(2) 11.961(2)
	13.436(2)	14.659(2)	11.799(2)	13.296(2)	13.069(2)
6+	3.154(1) 3.797(1)	3.010(1) 4.112(1)	2.423(1) 3.161(1)	2.895(1) 3.699(1)	2.855(1) 3.703(1)
	4.621(1) 5.696(1)	4.586(1) 6.054(1)	3.797(1) 4.908(1)	4.442(1) 5.685(1)	4.249(1) 5.424(1)
	5.777(1) 6.302(1)	6.459(1) 6.788(1)	5.217(1) 5.402(1)	6.097(1) 6.282(1)	5.839(1) 6.064(1)
	6.569(1) 6.988(1)	7.543(1) 7.754(1)	5.924(1) 6.138(1)	7.051(1) 7.195(1)	6.493(1) 6.850(1)
	7.226(1) 7.851(1)	7.770(2) 8.284(1)	6.378(1) 6.924(1)	7.285(2) 7.584(1)	7.156(1) 7.688(1)
	8.009(1) 8.279(2)	8.539(1) 9.088(1)	7.091(1) 7.113(2)	7.886(1) 8.436(1)	7.757(1) 7.954(1)
	8.535(1) 8.767(1)	9.870(1) 9.940(2)	7.621(1) 7.790(1)	8.966(1) 9.150(1)	8.489(1) 8.575(1)
	9.070(1) 9.656(1)	10.161(1) 10.767(1)	8.223(1) 8.549(1)	9.524(2) 9.776(1)	9.141(1) 9.547(1)
	10.146(2) 10.732(1)	11.244(2) 11.360(1)	8.999(2) 9.320(1)	10.192(1) 10.510(2)	9.765(2) 10.489(1)
	11.078(2) 11.890(2)	12.341(2) 12.899(1)	9.911(2) 10.600(2)	11.407(2) 11.452(1)	10.809(2) 11.562(2)
	16.423(3)	15.317(3)	14.490(3)	14.370(3)	15.493(3)
7+	5.440(1) 5.536(1)	5.426(1) 5.699(1)	4.427(1) 4.486(1)	5.186(1) 5.502(1)	5.028(1) 5.161(1)
	6.119(1) 6.963(1)	6.205(1) 7.424(1)	5.056(1) 5.928(1)	5.890(1) 6.917(1)	5.696(1) 6.716(1)
	7.232(1) 7.980(1)	7.884(1) 8.779(1)	6.240(1) 6.924(1)	7.289(1) 8.073(1)	7.097(1) 7.708(1)
	8.177(1) 8.514(1)	8.903(2) 9.238(1)	7.287(1) 7.641(1)	8.169(2) 8.422(1)	8.118(1) 8.557(1)
	8.958(1) 9.319(2)	9.880(1) 10.198(1)	7.784(1) 8.034(2)	8.969(1) 9.284(1)	8.759(1) 8.865(2)
	9.494(1) 10.087(1)	10.336(2) 11.097(1)	8.385(1) 8.665(1)	9.773(2) 10.013(1)	9.380(1) 9.888(1)
	10.703(2) 11.626(2)	11.426(2) 11.590(1)	9.184(2) 10.123(2)	10.387(1) 10.577(2)	10.037(2) 11.105(2)
	13.137(2)	13.856(2)	11.408(2)	12.606(2)	12.701(2)
8+	4.867(1) 5.686(1)	4.501(1) 5.702(1)	3.662(1) 4.588(1)	4.308(1) 5.440(1)	4.276(1) 5.272(1)
	6.442(1) 6.950(1)	6.664(1) 7.052(1)	5.306(1) 5.748(1)	6.044(1) 6.399(1)	6.110(1) 6.562(1)
	7.134(1) 7.632(1)	7.497(1) 8.241(1)	5.933(1) 6.563(1)	6.939(1) 7.453(1)	6.805(1) 7.379(1)
	7.756(1) 8.490(1)	8.604(1) 8.927(1)	6.723(1) 7.123(1)	7.693(1) 8.052(1)	7.562(1) 8.007(1)
	8.542(1) 9.206(1)	9.440(2) 9.613(1)	7.539(1) 7.906(1)	8.810(2) 8.861(1)	8.467(1) 8.879(1)
	9.968(1) 10.151(2)	10.388(1) 11.100(1)	8.369(1) 8.451(2)	9.390(1) 9.903(1)	9.400(2) 9.579(1)
	11.091(1) 11.596(2)	11.121(2) 12.097(2)	9.371(1) 9.837(2)	10.234(2) 11.134(2)	10.671(1) 10.847(2)
	11.913(2)	12.903(1)	10.519(2)	11.428(1)	11.540(2)
9+	6.492(1) 7.262(1)	6.499(1) 7.312(1)	5.171(1) 5.818(1)	5.902(1) 6.662(1)	6.033(1) 6.761(1)
	7.405(1) 8.351(1)	7.605(1) 8.756(1)	5.934(1) 7.089(1)	6.819(1) 7.969(1)	6.890(1) 8.011(1)
	8.741(1) 9.721(1)	9.446(1) 10.395(2)	7.422(1) 8.055(1)	8.579(1) 9.368(1)	8.400(1) 9.246(1)
	10.659(1) 11.074(2)	10.472(1) 11.854(2)	8.934(1) 9.243(2)	9.740(2) 10.695(1)	10.141(2) 10.525(1)
	12.268(2)	12.057(1)	10.311(2)	10.867(2)	11.456(2)
10+	6.325(1) 7.110(1)	5.760(1) 6.685(1)	4.670(1) 5.382(1)	5.334(1) 6.064(1)	5.504(1) 6.354(1)
	7.729(1) 8.436(1)	7.754(1) 8.781(1)	6.166(1) 6.835(1)	7.022(1) 7.922(1)	7.191(1) 7.801(1)
	9.131(1) 9.275(1)	9.543(1) 9.929(1)	7.667(1) 7.861(1)	8.639(1) 8.925(1)	8.776(1) 8.984(1)
	10.927(1) 12.507(2)	11.962(2) 11.994(1)	8.948(1) 10.334(2)	10.588(1) 10.839(2)	10.300(1) 11.577(2)
11+	7.377(1) 9.175(1)	7.009(1) 9.034(1)	5.525(1) 7.240(1)	6.126(1) 8.047(1)	6.653(1) 8.383(1)
	10.274(1) 12.911(2)	10.546(1) 12.211(2)	8.095(1) 10.615(2)	9.336(1) 11.043(2)	9.536(1) 11.981(2)
12+	8.013(1) 9.984(1)	7.405(1) 9.614(1)	5.894(1) 7.697(1)	6.511(1) 8.471(1)	7.048(1) 9.085(1)
	10.836(1)	11.083(1)	8.435(1)	9.689(1)	9.927(1)
13+	10.220(1)	9.847(1)	7.777(1)	8.664(1)	9.332(1)
14+	10.509(1)	9.653(1)	7.647(1)	8.385(1)	9.202(1)

ENERGY LEVELS

47TI - 49V

J	42SC-INT	54CO-INT	48SC-INT	42SC*-INT	48SC*-INT
	ENERGY(T) (MEV)	ENERGY(T) (MEV)	ENERGY(T) (MEV)	ENERGY(T) (MEV)	ENERGY(T) (MEV)
1/2-	1.517(3/2) 3.594(3/2) 4.961(3/2) 6.818(3/2) 9.477(5/2)	1.778(3/2) 4.433(3/2) 6.315(3/2) 8.825(3/2) 9.183(5/2)	1.632(3/2) 3.472(3/2) 5.097(3/2) 6.493(3/2) 8.585(5/2)	2.283(3/2) 4.165(3/2) 5.956(3/2) 8.173(3/2) 8.788(5/2)	1.527(3/2) 3.712(3/2) 5.414(3/2) 7.183(3/2) 9.112(5/2)
3/2-	0.825(3/2) 2.000(3/2) 2.547(3/2) 3.714(3/2) 4.858(3/2) 5.427(3/2) 6.234(3/2) 6.998(3/2) 7.897(5/2) 9.235(5/2) 9.461(3/2)	0.710(3/2) 2.409(3/2) 3.325(3/2) 4.740(3/2) 6.357(3/2) 7.131(3/2) 7.496(5/2) 7.598(3/2) 9.326(3/2) 9.492(5/2) 12.557(3/2)	0.686(3/2) 1.968(3/2) 2.805(3/2) 3.768(3/2) 5.017(3/2) 5.482(3/2) 5.739(3/2) 6.730(3/2) 7.202(5/2) 8.637(3/2) 8.738(5/2)	0.989(3/2) 2.234(3/2) 3.207(3/2) 4.722(3/2) 5.922(3/2) 6.552(3/2) 6.972(3/2) 7.286(5/2) 8.335(3/2) 8.854(5/2) 11.047(3/2)	0.660(3/2) 2.107(3/2) 2.921(3/2) 3.922(3/2) 5.366(3/2) 6.024(3/2) 6.344(3/2) 7.435(3/2) 7.629(5/2) 9.099(5/2) 9.801(3/2)
5/2-	0.126(3/2) 1.428(3/2) 2.926(3/2) 3.405(3/2) 3.942(3/2) 4.611(3/2) 5.374(3/2) 5.607(3/2) 5.766(3/2) 6.031(3/2) 7.883(3/2) 8.013(5/2) 9.559(5/2)11.770(5/2)	0.077(3/2) 1.893(3/2) 3.146(3/2) 4.226(3/2) 5.052(3/2) 5.575(3/2) 6.028(3/2) 7.291(3/2) 7.478(3/2) 7.636(3/2) 7.740(5/2) 9.899(5/2) 10.331(3/2)12.914(5/2)	0.148(3/2) 1.590(3/2) 2.710(3/2) 3.317(3/2) 3.952(3/2) 4.501(3/2) 4.956(3/2) 5.453(3/2) 5.698(3/2) 5.855(3/2) 7.323(3/2) 7.468(5/2) 9.049(5/2)10.775(5/2)	0.380(3/2) 2.052(3/2) 3.277(3/2) 3.903(3/2) 4.805(3/2) 5.340(3/2) 5.661(3/2) 6.469(3/2) 6.904(3/2) 6.974(3/2) 7.577(5/2) 9.163(3/2) 9.319(5/2)11.786(5/2)	0.013(3/2) 1.580(3/2) 2.840(3/2) 3.573(3/2) 4.270(3/2) 4.965(3/2) 5.389(3/2) 5.906(3/2) 6.283(3/2) 6.364(3/2) 7.758(5/2) 8.162(3/2) 9.537(5/2)11.706(5/2)
7/2-	0.0 (3/2) 2.284(3/2) 2.620(3/2) 3.738(3/2) 3.982(3/2) 4.684(3/2) 4.818(3/2) 5.143(3/2) 5.479(3/2) 6.289(3/2) 6.580(5/2) 6.599(3/2) 7.607(3/2) 8.635(3/2) 8.891(5/2)10.654(5/2) 15.358(7/2)	0.0 (3/2) 2.628(3/2) 3.080(3/2) 4.235(3/2) 4.344(3/2) 5.662(3/2) 6.071(3/2) 6.109(5/2) 6.147(3/2) 6.722(3/2) 8.099(3/2) 8.498(3/2) 8.678(5/2) 8.802(3/2) 11.135(3/2)11.207(5/2) 13.813(7/2)	0.0 (3/2) 2.223(3/2) 2.489(3/2) 3.533(3/2) 3.568(3/2) 4.451(3/2) 4.803(3/2) 4.923(3/2) 5.284(3/2) 6.023(5/2) 6.038(3/2) 6.339(3/2) 6.537(3/2) 7.880(3/2) 8.192(5/2) 9.773(5/2) 13.909(7/2)	0.0 (3/2) 2.700(3/2) 3.095(3/2) 4.094(3/2) 4.354(3/2) 5.316(3/2) 5.588(3/2) 5.677(5/2) 5.867(3/2) 6.199(3/2) 7.344(3/2) 7.730(3/2) 8.010(3/2) 8.329(5/2) 9.858(3/2)10.377(5/2) 13.131(7/2)	0.0 (3/2) 2.370(3/2) 2.640(3/2) 3.777(3/2) 3.918(3/2) 4.804(3/2) 5.176(3/2) 5.406(3/2) 5.683(3/2) 6.365(5/2) 6.604(3/2) 6.957(3/2) 7.142(3/2) 8.550(5/2) 8.891(3/2)10.516(5/2) 14.593(7/2)
9/2-	1.636(3/2) 2.016(3/2) 2.549(3/2) 3.261(3/2) 3.737(3/2) 4.478(3/2) 4.647(3/2) 4.926(3/2) 5.415(3/2) 5.892(3/2) 6.153(3/2) 6.440(3/2) 7.239(3/2) 7.830(3/2) 8.549(5/2) 9.614(5/2) 11.545(5/2)	1.484(3/2) 2.086(3/2) 2.849(3/2) 3.849(3/2) 4.364(3/2) 5.000(3/2) 5.294(3/2) 5.950(3/2) 6.273(3/2) 7.211(3/2) 7.416(3/2) 7.951(3/2) 8.027(5/2) 9.248(3/2) 9.698(5/2) 9.893(3/2) 12.244(5/2)	1.321(3/2) 1.780(3/2) 2.327(3/2) 3.046(3/2) 3.371(3/2) 4.133(3/2) 4.234(3/2) 4.843(3/2) 4.931(3/2) 5.596(3/2) 5.641(3/2) 5.919(3/2) 6.824(3/2) 7.146(3/2) 7.631(5/2) 8.931(5/2) 10.353(5/2)	1.653(3/2) 2.062(3/2) 2.830(3/2) 3.528(3/2) 4.187(3/2) 4.849(3/2) 5.012(3/2) 5.532(3/2) 5.792(3/2) 6.566(3/2) 6.764(3/2) 7.155(3/2) 7.589(5/2) 8.283(3/2) 8.817(3/2) 9.081(5/2) 11.187(5/2)	1.308(3/2) 1.936(3/2) 2.591(3/2) 3.432(3/2) 3.757(3/2) 4.533(3/2) 4.609(3/2) 5.245(3/2) 5.486(3/2) 6.139(3/2) 6.244(3/2) 6.476(3/2) 7.548(3/2) 7.925(3/2) 8.221(5/2) 9.502(5/2) 11.303(5/2)
11/2-	1.276(3/2) 2.349(3/2) 2.921(3/2) 3.646(3/2) 4.149(3/2) 4.588(3/2) 5.133(3/2) 5.479(3/2) 5.603(3/2) 6.075(3/2) 6.212(3/2) 7.242(3/2) 7.552(3/2) 8.023(5/2) 8.949(3/2) 9.558(5/2) 10.006(5/2)	1.046(3/2) 2.606(3/2) 3.239(3/2) 4.113(3/2) 4.549(3/2) 5.362(3/2) 5.555(3/2) 6.273(3/2) 6.743(3/2) 7.105(3/2) 7.248(5/2) 7.749(3/2) 8.771(3/2) 9.094(3/2) 9.233(5/2)10.075(5/2) 11.170(3/2)	0.878(3/2) 2.082(3/2) 2.634(3/2) 3.250(3/2) 3.703(3/2) 4.236(3/2) 4.629(3/2) 4.966(3/2) 5.302(3/2) 5.449(3/2) 5.862(3/2) 6.526(3/2) 6.702(3/2) 7.078(5/2) 7.841(3/2) 8.484(5/2) 9.265(5/2)	1.126(3/2) 2.414(3/2) 3.124(3/2) 3.721(3/2) 4.313(3/2) 5.000(3/2) 5.235(3/2) 5.666(3/2) 6.196(3/2) 6.371(3/2) 7.064(3/2) 7.081(5/2) 7.911(3/2) 8.112(3/2) 8.629(5/2) 9.379(5/2) 9.832(3/2)	1.021(3/2) 2.398(3/2) 2.974(3/2) 3.669(3/2) 4.116(3/2) 4.655(3/2) 5.058(3/2) 5.511(3/2) 5.796(3/2) 6.090(3/2) 6.481(3/2) 7.387(3/2) 7.402(3/2) 7.692(3/2) 8.707(3/2) 9.102(5/2) 9.919(5/2)
13/2-	3.218(3/2) 3.388(3/2) 3.969(3/2) 4.115(3/2) 4.567(3/2) 5.390(3/2) 6.019(3/2) 6.136(3/2) 6.296(3/2) 7.088(3/2) 7.487(3/2) 8.113(3/2) 9.452(5/2)10.260(5/2)	3.117(3/2) 3.345(3/2) 4.287(3/2) 4.491(3/2) 5.228(3/2) 5.982(3/2) 6.599(3/2) 6.993(3/2) 7.512(3/2) 8.377(3/2) 8.721(3/2) 8.790(5/2) 9.739(5/2) 9.949(3/2)	2.556(3/2) 2.772(3/2) 3.412(3/2) 3.710(3/2) 4.087(3/2) 4.759(3/2) 5.274(3/2) 5.649(3/2) 5.779(3/2) 6.209(3/2) 6.523(3/2) 7.189(3/2) 8.139(5/2) 9.017(5/2)	2.980(3/2) 3.250(3/2) 3.978(3/2) 4.399(3/2) 4.895(3/2) 5.577(3/2) 6.106(3/2) 6.401(3/2) 6.840(3/2) 7.479(3/2) 7.782(3/2) 8.314(5/2) 8.743(3/2) 9.065(5/2)	2.902(3/2) 3.135(3/2) 3.896(3/2) 4.064(3/2) 4.445(3/2) 5.394(3/2) 5.935(3/2) 6.105(3/2) 6.413(3/2) 7.093(3/2) 7.350(3/2) 8.241(3/2) 8.801(5/2) 9.765(5/2)
15/2-	2.946(3/2) 3.351(3/2) 3.713(3/2) 4.572(3/2) 5.223(3/2) 5.757(3/2) 5.933(3/2) 6.054(3/2) 6.769(3/2) 7.109(3/2) 8.174(3/2) 9.146(5/2) 10.338(5/2)	2.209(3/2) 3.346(3/2) 3.811(3/2) 4.991(3/2) 5.633(3/2) 5.937(3/2) 7.041(3/2) 7.139(3/2) 7.549(3/2) 8.185(3/2) 8.306(5/2) 9.626(3/2) 9.749(5/2)	1.761(3/2) 2.624(3/2) 3.047(3/2) 3.934(3/2) 4.560(3/2) 4.856(3/2) 5.397(3/2) 5.489(3/2) 6.029(3/2) 6.244(3/2) 6.993(3/2) 7.772(5/2) 8.959(5/2)	2.029(3/2) 3.045(3/2) 3.300(3/2) 4.613(3/2) 5.152(3/2) 5.423(3/2) 6.225(3/2) 6.378(3/2) 6.827(3/2) 7.374(3/2) 7.714(5/2) 8.493(3/2) 8.940(5/2)	2.185(3/2) 3.119(3/2) 3.566(3/2) 4.461(3/2) 5.132(3/2) 5.490(3/2) 6.097(3/2) 6.221(3/2) 6.641(3/2) 7.049(3/2) 8.051(3/2) 8.568(5/2) 9.742(5/2)
17/2-	3.561(3/2) 5.148(3/2) 5.758(3/2) 6.237(3/2) 6.452(3/2) 6.640(3/2) 7.274(3/2) 8.673(3/2) 10.210(5/2)	3.285(3/2) 5.068(3/2) 6.082(3/2) 6.533(3/2) 7.011(3/2) 7.453(3/2) 7.986(3/2) 9.457(5/2) 10.016(3/2)	2.614(3/2) 4.143(3/2) 4.629(3/2) 5.087(3/2) 5.417(3/2) 5.902(3/2) 6.143(3/2) 7.285(3/2) 8.679(5/2)	3.011(3/2) 4.674(3/2) 5.529(3/2) 5.879(3/2) 6.108(3/2) 6.689(3/2) 7.102(3/2) 8.742(3/2) 8.770(5/2)	3.159(3/2) 4.746(3/2) 5.525(3/2) 5.875(3/2) 6.155(3/2) 6.672(3/2) 6.972(3/2) 8.237(3/2) 9.533(5/2)
19/2-	4.200(3/2) 4.928(3/2) 5.753(3/2) 6.666(3/2) 7.132(3/2) 7.596(3/2) 11.014(5/2)	3.789(3/2) 4.680(3/2) 5.746(3/2) 6.721(3/2) 7.300(3/2) 8.190(3/2) 10.271(5/2)	3.036(3/2) 3.740(3/2) 4.593(3/2) 5.448(3/2) 5.785(3/2) 6.106(3/2) 9.383(5/2)	3.330(3/2) 4.164(3/2) 5.291(3/2) 6.043(3/2) 6.474(3/2) 7.225(3/2) 9.360(5/2)	3.653(3/2) 4.423(3/2) 5.415(3/2) 6.269(3/2) 6.671(3/2) 7.099(3/2) 10.350(5/2)
21/2-	5.687(3/2) 6.554(3/2) 7.010(3/2) 8.549(3/2)	5.129(3/2) 6.451(3/2) 6.881(3/2) 9.157(3/2)	4.126(3/2) 5.144(3/2) 5.447(3/2) 6.829(3/2)	4.618(3/2) 5.769(3/2) 5.960(3/2) 7.967(3/2)	4.967(3/2) 6.113(3/2) 6.482(3/2) 7.898(3/2)
23/2-	6.140(3/2) 7.326(3/2) 7.621(3/2)	5.540(3/2) 7.029(3/2) 7.616(3/2)	4.415(3/2) 5.507(3/2) 6.067(3/2)	4.849(3/2) 6.035(3/2) 6.611(3/2)	5.291(3/2) 6.640(3/2) 7.138(3/2)
25/2-	7.830(3/2)	7.301(3/2)	5.745(3/2)	6.332(3/2)	6.977(3/2)
27/2-	8.385(3/2)	7.741(3/2)	6.114(3/2)	6.563(3/2)	7.347(3/2)

ENERGY LEVELS

48TI - 48TI

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
0+	0.0 (2) 4.621(2)	0.0 (2) 5.138(2)	0.0 (2) 4.340(2)	0.0 (2) 5.305(2)	0.0 (2) 4.794(2)
	8.148(2)17.634(4)	10.196(2)15.408(4)	7.500(2)15.773(4)	9.399(2)14.907(4)	8.186(2)16.574(4)
1+	3.664(2) 6.594(2)	3.801(2) 7.918(2)	3.294(2) 6.192(2)	4.131(2) 7.503(2)	3.493(2) 6.935(2)
	12.558(3)	13.480(3)	11.613(3)	12.597(3)	12.625(3)
2+	1.263(2) 2.014(2)	1.120(2) 1.996(2)	0.991(2) 1.769(2)	1.352(2) 2.285(2)	1.045(2) 1.853(2)
	3.672(2) 4.866(2)	3.762(2) 5.423(2)	3.149(2) 4.483(2)	3.816(2) 5.371(2)	3.416(2) 5.002(2)
	5.773(2) 6.107(2)	6.866(2) 7.193(2)	5.489(2) 5.675(2)	6.546(2) 6.797(2)	6.157(2) 6.417(2)
	7.434(2) 9.621(2)	9.297(2)10.968(3)	6.888(2) 8.488(2)	8.551(2)10.473(3)	7.696(2) 9.378(2)
	10.937(3)	12.047(2)	10.237(3)	10.868(2)	10.921(3)
3+	3.075(2) 4.916(2)	2.933(2) 5.156(2)	2.599(2) 4.335(2)	3.420(2) 5.312(2)	2.740(2) 4.830(2)
	5.371(2) 6.171(2)	6.107(2) 6.815(2)	4.894(2) 5.467(2)	5.860(2) 6.474(2)	5.435(2) 6.252(2)
	7.747(2) 8.257(2)	8.940(2)10.250(3)	6.663(2) 7.523(2)	8.365(2) 9.389(2)	7.527(2) 8.633(2)
	11.010(3)	10.386(2)	9.716(3)	9.998(3)	10.453(3)
4+	2.521(2) 3.102(2)	2.237(2) 3.153(2)	1.905(2) 2.624(2)	2.398(2) 3.049(2)	2.162(2) 3.044(2)
	3.971(2) 4.695(2)	4.535(2) 4.656(2)	3.697(2) 3.862(2)	4.479(2) 4.641(2)	4.109(2) 4.351(2)
	4.827(2) 5.047(2)	5.115(2) 5.748(2)	4.255(2) 4.700(2)	5.276(2) 5.602(2)	4.800(2) 5.243(2)
	6.202(2) 6.449(2)	6.699(2) 7.668(2)	5.445(2) 6.210(2)	6.427(2) 7.260(2)	6.223(2) 6.688(2)
	7.233(2) 8.109(2)	8.426(2) 9.747(2)	6.278(2) 7.144(2)	7.664(2) 8.987(2)	7.155(2) 8.198(2)
	10.731(3)	9.962(3)	9.347(3)	9.431(3)	10.106(3)
5+	4.269(2) 4.800(2)	4.201(2) 5.186(2)	3.474(2) 4.230(2)	4.143(2) 5.200(2)	3.967(2) 4.783(2)
	5.908(2) 6.141(2)	6.612(2) 6.665(2)	5.253(2) 5.355(2)	6.207(2) 6.256(2)	5.906(2) 6.078(2)
	6.855(2) 6.891(2)	7.783(2) 7.943(2)	5.988(2) 6.135(2)	7.234(2) 7.577(2)	6.815(2) 6.942(2)
	7.978(2)10.696(3)	9.496(2) 9.706(3)	6.973(2) 9.226(3)	8.633(2) 9.443(3)	7.980(2) 9.967(3)
6+	3.277(2) 3.294(2)	2.978(2) 3.230(2)	2.404(2) 2.554(2)	2.998(2) 3.039(2)	2.931(2) 3.116(2)
	4.699(2) 5.850(2)	4.717(2) 5.995(2)	3.933(2) 4.920(2)	4.589(2) 5.879(2)	4.394(2) 5.666(2)
	6.319(2) 6.471(2)	6.695(2) 6.847(2)	5.281(2) 5.600(2)	6.294(2) 6.432(2)	6.071(2) 6.229(2)
	6.534(2) 7.296(2)	7.827(2) 8.101(2)	6.143(2) 6.255(2)	7.265(2) 7.524(2)	6.951(2) 6.992(2)
	8.764(2)10.607(3)	9.515(3)10.212(2)	7.529(2) 9.094(3)	9.157(3) 9.258(2)	8.371(2) 9.920(3)
7+	5.293(2) 5.661(2)	5.138(2) 5.676(2)	4.173(2) 4.648(2)	5.010(2) 5.630(2)	4.923(2) 5.362(2)
	6.378(2) 7.393(2)	6.510(2) 7.964(2)	5.285(2) 6.032(2)	6.061(2) 7.461(2)	6.162(2) 6.952(2)
	7.503(2)11.796(3)	8.176(2)10.820(3)	6.296(2)10.190(3)	7.469(2)10.251(3)	7.126(2)11.082(3)
8+	4.592(2) 5.162(2)	4.041(2) 4.802(2)	3.292(2) 3.925(2)	3.942(2) 4.681(2)	3.993(2) 4.551(2)
	6.108(2) 6.879(2)	6.323(2) 6.927(2)	4.964(2) 5.650(2)	5.908(2) 6.384(2)	5.977(2) 6.505(2)
	7.100(2) 8.719(2)	7.046(2) 9.560(2)	5.753(2) 7.156(2)	6.442(2) 8.643(2)	6.568(2) 8.130(2)
9+	6.299(2) 6.963(2)	5.900(2) 6.602(2)	4.682(2) 5.351(2)	5.533(2) 6.147(2)	5.738(2) 6.299(2)
	7.212(2)	7.567(2)	6.069(2)	6.884(2)	7.094(2)
10+	6.519(2) 6.930(2)	5.874(2) 6.452(2)	4.790(2) 5.131(2)	5.433(2) 6.041(2)	5.738(2) 6.223(2)
	7.782(2)	7.443(2)	6.059(2)	6.799(2)	7.048(2)
11+	7.466(2)	7.023(2)	5.538(2)	6.242(2)	6.671(2)
12+	8.359(2)	7.810(2)	6.276(2)	6.994(2)	7.409(2)

46V - 50MN

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
0+	0.0 (1) 4.425(1)	0.0 (1) 5.512(1)	0.037(1) 4.577(1)	0.0 (1) 5.470(1)	0.116(1) 4.732(1)
	6.282(1) 7.896(1)	6.951(1) 9.770(1)	5.605(1) 7.675(1)	6.745(1) 8.991(1)	5.970(1) 8.413(1)
	9.309(1)13.185(3)	12.194(1)12.232(3)	8.968(1)12.126(3)	10.929(1)11.410(3)	10.212(1)12.804(3)
1+	0.523(0) 1.536(0)	0.991(0) 2.592(0)	0.296(0) 1.527(0)	1.465(0) 2.579(0)	0.296(0) 1.659(0)
	3.224(0) 3.654(1)	4.266(1) 4.713(0)	3.256(0) 3.518(1)	4.372(1) 4.535(0)	3.427(0) 3.613(1)
	4.718(0) 4.807(0)	5.927(0) 6.831(1)	4.666(0) 4.730(0)	5.679(0) 6.184(0)	4.925(0) 5.138(0)
	6.066(1) 7.299(0)	6.850(0) 9.613(1)	5.618(1) 6.976(0)	6.613(1) 8.707(1)	5.832(1) 7.640(0)
	7.788(1) 8.735(1)	9.781(0) 9.891(2)	7.477(1) 8.010(1)	8.834(0) 9.456(2)	7.752(1) 8.656(1)
	8.743(0) 9.452(2)	10.617(1)10.814(2)	8.338(0) 8.681(2)	9.862(1)10.316(2)	9.046(0) 9.321(2)
	10.613(2)11.352(2)	12.298(0)12.645(2)	9.634(2)10.611(2)	10.891(0)11.643(2)	10.128(2)11.648(2)
2+	1.148(1) 2.497(1)	1.011(1) 2.923(1)	0.929(1) 2.229(0)	1.214(1) 2.898(1)	0.995(1) 2.517(0)
	2.539(0) 2.862(0)	3.606(0) 3.656(1)	2.455(1) 2.809(0)	3.571(0) 3.636(1)	2.695(1) 2.989(0)
	3.426(1) 4.791(0)	3.977(0) 5.698(1)	3.103(1) 4.684(1)	3.781(0) 5.569(1)	3.259(1) 4.828(1)
	4.885(1) 5.151(1)	6.255(1) 6.567(0)	4.847(0) 4.994(1)	6.074(1) 6.231(0)	5.110(0) 5.314(1)
	6.160(1) 6.792(1)	7.307(1) 7.965(1)	5.750(1) 6.182(1)	6.848(1) 7.414(1)	6.151(1) 6.609(1)
	7.231(0) 7.253(1)	8.388(1) 8.496(2)	6.749(1) 7.039(0)	7.889(1) 7.991(2)	7.227(1) 7.546(0)
	7.548(1) 8.222(1)	9.286(1) 9.511(2)	7.308(1) 7.661(1)	8.658(1) 8.957(2)	7.758(1) 8.055(2)
	8.246(2) 8.503(1)	9.908(1) 9.962(0)	7.695(2) 7.914(1)	9.069(0) 9.138(1)	8.188(1) 8.633(1)
	9.499(2) 9.902(1)	10.374(1)10.742(2)	8.659(2) 9.317(1)	9.453(1)10.022(2)	9.084(2) 9.870(2)
	10.171(1)10.399(2)	12.615(1)13.050(1)	9.404(1) 9.463(2)	11.400(1)11.646(1)	9.982(1)10.732(1)
	11.883(2)14.771(3)	13.177(2)13.678(3)	10.999(2)13.437(3)	12.207(2)13.200(3)	11.889(2)14.098(3)
3+	0.611(0) 1.480(0)	0.948(0) 2.036(0)	0.341(0) 1.249(0)	1.362(0) 2.058(0)	0.394(0) 1.410(0)
	2.598(0) 3.262(0)	3.485(0) 3.937(1)	2.495(0) 3.073(0)	3.273(0) 4.148(1)	2.696(0) 3.336(0)
	3.592(1) 3.944(0)	4.471(0) 5.135(0)	3.339(1) 3.715(0)	4.296(0) 4.841(0)	3.574(1) 3.973(0)
	4.180(0) 4.980(0)	5.377(1) 5.605(1)	3.971(0) 4.509(1)	5.402(1) 5.417(0)	4.351(0) 4.612(1)
	5.012(1) 5.096(1)	5.814(0) 6.739(0)	4.580(1) 5.000(0)	5.458(1) 6.202(0)	4.832(1) 5.413(0)
	5.488(0) 6.227(0)	7.126(1) 7.211(0)	5.231(0) 5.647(1)	6.708(0) 6.903(1)	5.598(0) 6.000(1)
	6.247(1) 6.651(1)	7.766(1) 8.068(2)	5.894(0) 6.121(1)	7.212(1) 7.484(0)	6.399(0) 6.460(1)
	6.842(1) 7.042(0)	8.091(0) 8.155(1)	6.355(1) 6.733(0)	7.608(1) 7.839(2)	6.735(1) 7.292(0)
	7.344(1) 7.844(1)	8.564(1) 9.558(0)	6.849(1) 7.430(2)	7.983(1) 8.738(0)	7.332(1) 7.021(2)
	8.345(2) 8.355(1)	9.704(1)10.150(2)	7.431(1) 7.671(0)	8.972(1) 9.304(1)	7.856(1) 8.448(1)
	8.523(0) 9.041(1)	10.181(1)10.803(2)	7.849(1) 8.331(1)	9.712(2)10.048(0)	8.573(0) 9.404(1)
	9.916(2) 9.974(0)	11.167(1)11.196(2)	8.853(0) 9.101(2)	10.110(1)10.268(2)	9.437(2)10.093(0)
	10.530(2)10.726(1)	11.323(0)13.478(0)	9.606(2) 9.693(1)	10.533(2)11.880(0)	10.217(2)10.633(2)
	10.868(2)12.558(2)	13.490(1)13.700(2)	9.892(2)11.359(2)	12.069(1)12.644(2)	10.668(1)12.456(2)

ENERGY LEVELS

46V - 50MN

J	42SC-INT	54CO-INT	48SC-INT	42SC*-INT	48SC*-INT
J	ENERGY(T) (MEV)	ENERGY(T) (MEV)	ENERGY(T) (MEV)	ENERGY(T) (MEV)	ENERGY(T) (MEV)
4+	1.878(0) 2.221(1)	2.012(1) 2.245(0)	1.542(0) 1.747(1)	2.216(1) 2.344(0)	1.691(0) 1.882(1)
	2.971(1) 3.426(1)	3.055(1) 3.943(1)	2.519(1) 3.156(1)	2.931(1) 3.557(1)	2.680(1) 3.492(1)
	3.541(0) 4.227(0)	4.845(0) 5.197(1)	3.218(0) 3.943(0)	4.603(0) 5.015(1)	3.549(0) 4.280(0)
	4.789(0) 4.827(1)	5.420(0) 5.465(1)	4.304(1) 4.466(0)	5.253(0) 5.388(1)	4.470(1) 4.804(0)
	5.059(1) 5.412(1)	5.921(0) 6.387(1)	4.548(1) 5.134(1)	5.718(0) 6.067(1)	4.849(1) 5.530(1)
	5.419(0) 6.319(1)	7.358(0) 7.456(1)	5.137(0) 5.942(1)	6.516(0) 7.021(1)	5.706(0) 6.268(1)
	6.426(1) 6.513(0)	7.766(1) 7.942(1)	6.108(1) 6.160(1)	7.207(1) 7.362(1)	6.528(1) 6.647(1)
	6.676(1) 7.238(0)	8.006(2) 8.153(1)	6.222(0) 6.568(0)	7.584(2) 7.683(1)	6.751(0) 7.173(1)
	7.248(1) 7.398(1)	8.518(0) 8.670(1)	6.720(1) 6.747(1)	7.814(0) 7.971(1)	7.271(0) 7.359(1)
	7.664(1) 8.092(1)	8.892(2) 9.179(1)	6.998(1) 7.363(2)	8.432(0) 8.453(2)	7.624(1) 7.762(2)
	8.214(0) 8.312(2)	9.367(0) 9.617(1)	7.463(1) 7.505(0)	8.651(1) 8.727(1)	8.052(1) 8.411(0)
	8.526(1) 8.800(1)	10.375(1)10.449(2)	7.880(1) 8.100(2)	9.531(1) 9.691(1)	8.595(1) 8.616(2)
	8.860(2) 9.399(1)	10.619(1)11.122(0)	8.196(1) 8.494(1)	9.948(2) 9.958(0)	8.997(1) 9.505(1)
	10.204(2)11.038(2)	11.361(1)11.371(2)	9.290(2) 9.934(1)	10.270(1)10.696(2)	9.686(2)10.789(2)
	11.318(1)12.768(2)	13.927(2)14.022(1)	10.205(2)11.587(2)	12.498(1)12.765(2)	11.204(1)12.412(2)
	16.003(3)	14.842(3)	14.313(3)	14.040(3)	15.099(3)
5+	0.355(0) 1.242(0)	0.326(0) 1.607(0)	0.0 (0) 0.887(0)	0.798(0) 1.642(0)	0.0 (0) 1.061(0)
	2.715(C) 3.593(0)	3.278(0) 3.810(1)	2.332(0) 3.144(1)	3.034(0) 3.750(1)	2.638(0) 3.355(1)
	3.810(1) 4.309(0)	4.761(0) 5.205(1)	3.179(0) 4.069(0)	4.371(0) 5.145(1)	3.612(0) 4.415(0)
	4.715(0) 4.860(1)	5.679(0) 6.096(1)	4.257(0) 4.315(1)	5.396(0) 5.853(0)	4.688(1) 4.779(0)
	5.487(0) 5.585(1)	6.352(0) 6.526(1)	4.890(1) 5.114(0)	5.915(1) 6.101(1)	5.297(1) 5.595(0)
	5.970(1) 6.227(0)	7.070(0) 7.543(1)	5.303(1) 5.556(0)	6.603(0) 6.985(1)	5.633(1) 6.220(0)
	6.383(0) 6.516(1)	7.791(0) 7.840(1)	5.768(1) 6.111(0)	7.247(0) 7.264(1)	6.393(1) 6.633(0)
	6.795(1) 7.151(1)	8.034(2) 8.244(0)	6.242(1) 6.345(0)	7.499(0) 7.640(1)	6.665(1) 6.906(1)
	7.157(0) 7.300(0)	8.383(1) 8.699(1)	6.437(1) 6.698(0)	7.776(2) 8.001(1)	7.052(0) 7.380(0)
	7.631(1) 7.829(1)	8.760(2) 9.037(1)	6.953(1) 7.193(1)	8.183(0) 8.336(2)	7.598(1) 7.780(1)
	8.015(1) 8.253(1)	9.078(0) 9.337(1)	7.318(1) 7.440(2)	8.468(1) 8.590(1)	7.919(1) 7.958(2)
	8.525(2) 8.828(0)	9.620(0) 9.707(1)	7.638(1) 7.857(0)	8.673(0) 8.968(1)	8.278(1) 8.537(2)
	9.016(2) 9.467(1)	10.693(2)11.120(2)	7.992(2) 8.543(1)	9.587(2)10.240(0)	8.847(0) 9.446(1)
	10.264(2)10.444(1)	11.415(1)11.572(0)	9.221(2) 9.243(1)	10.318(2)10.323(1)	9.877(2)10.268(1)
	10.856(2)12.154(2)	12.519(1)12.876(2)	9.772(2)10.950(2)	11.233(1)11.847(2)	10.353(2)11.924(2)
	13.437(2)	14.659(2)	11.836(2)	13.296(2)	12.986(2)
6+	0.903(0) 3.154(1)	0.905(0) 3.010(1)	0.455(0) 2.460(1)	1.156(0) 2.895(1)	0.555(0) 2.734(1)
	3.797(1) 4.176(0)	4.112(1) 4.586(1)	3.198(1) 3.727(0)	3.699(1) 4.442(1)	3.469(1) 4.130(0)
	4.506(0) 4.621(1)	5.188(0) 5.326(0)	3.835(1) 3.841(0)	4.717(0) 4.987(0)	4.278(1) 4.333(0)
	5.051(0) 5.581(0)	6.054(1) 6.176(0)	4.427(0) 4.946(1)	5.685(1) 5.735(0)	4.926(0) 5.366(1)
	5.696(1) 5.777(1)	6.459(1) 6.788(1)	5.193(0) 5.254(1)	6.097(1) 6.282(1)	5.690(1) 5.752(0)
	6.250(0) 6.302(1)	7.020(0) 7.543(1)	5.439(1) 5.667(0)	6.401(0) 7.051(1)	5.889(1) 6.221(0)
	6.570(1) 6.709(0)	7.754(1) 7.770(2)	5.961(1) 6.033(0)	7.154(0) 7.195(1)	6.614(1) 6.650(0)
	6.987(1) 7.226(1)	7.949(0) 8.284(1)	6.175(1) 6.415(1)	7.285(2) 7.584(1)	6.825(1) 7.140(1)
	7.851(1) 8.009(1)	8.424(0) 8.539(1)	6.961(1) 7.128(1)	7.640(0) 7.886(1)	7.613(1) 7.762(2)
	8.076(0) 8.279(2)	9.088(1) 9.870(1)	7.150(2) 7.208(0)	8.436(1) 8.966(1)	7.808(1) 8.090(0)
	8.535(1) 8.767(1)	9.940(2)10.161(1)	7.658(1) 7.827(1)	9.150(1) 9.218(0)	8.372(1) 8.796(1)
	9.021(0) 9.070(1)	10.214(0)10.767(1)	7.827(0) 8.260(1)	9.524(2) 9.776(1)	8.909(0) 8.984(1)
	9.656(1)10.146(2)	11.244(2)11.360(1)	8.586(1) 9.036(2)	10.067(0)10.192(1)	9.614(1) 9.733(2)
	10.732(1)11.078(2)	11.398(0)12.341(2)	9.357(1) 9.948(2)	10.510(2)11.407(2)	10.531(2)10.551(1)
	11.890(2)16.423(3)	12.899(1)15.318(3)	10.637(2)14.527(3)	11.452(1)14.370(3)	11.462(2)15.388(3)
7+	1.139(0) 3.208(0)	1.176(0) 3.512(0)	0.574(0) 2.411(0)	1.012(0) 3.187(0)	0.852(0) 2.839(0)
	3.757(0) 4.639(0)	4.669(0) 5.426(1)	3.221(0) 4.045(0)	4.222(0) 5.186(1)	3.748(0) 4.486(0)
	5.439(1) 5.535(1)	5.436(0) 5.699(1)	4.464(1) 4.523(1)	5.189(0) 5.502(1)	4.829(1) 5.010(1)
	5.550(0) 6.018(0)	6.205(1) 6.875(0)	4.811(0) 5.093(1)	5.890(1) 6.194(0)	5.495(0) 5.639(1)
	6.119(1) 6.407(0)	7.131(0) 7.424(1)	5.121(0) 5.623(0)	6.472(0) 6.917(1)	5.794(0) 6.318(0)
	6.915(0) 6.964(1)	7.830(0) 7.884(1)	5.965(1) 6.277(1)	7.205(0) 7.289(1)	6.556(1) 6.832(1)
	7.232(1) 7.316(0)	8.594(0) 8.779(1)	6.283(0) 6.615(0)	7.851(0) 8.073(1)	7.012(0) 7.416(0)
	7.816(0) 7.980(1)	8.904(2) 9.239(1)	6.892(0) 6.961(1)	8.169(2) 8.330(0)	7.639(0) 7.702(1)
	8.177(1) 8.514(1)	9.448(0) 9.533(0)	7.324(1) 7.678(1)	8.422(1) 8.529(0)	7.970(1) 8.431(1)
	8.958(1) 9.277(0)	9.880(1)10.198(1)	7.821(1) 7.914(0)	8.969(1) 9.284(1)	8.616(1) 8.809(2)
	9.319(2) 9.494(1)	10.336(2)11.097(1)	8.071(2) 8.423(1)	9.773(2)10.013(1)	9.064(0) 9.427(1)
	10.087(1)10.703(2)	11.426(2)11.590(1)	8.702(1) 9.221(2)	10.245(0)10.387(1)	9.621(1) 9.943(2)
	11.626(2)13.137(2)	11.784(0)13.856(2)	10.160(2)11.445(2)	10.578(2)12.606(2)	10.977(2)12.658(2)
8+	3.026(0) 4.257(0)	2.967(0) 4.501(1)	2.093(0) 3.635(0)	2.758(0) 4.308(1)	2.514(0) 4.148(0)
	4.867(1) 5.431(0)	5.126(0) 5.702(1)	3.699(1) 4.625(1)	4.640(0) 5.440(1)	4.209(1) 5.019(1)
	5.686(1) 6.442(1)	6.664(1) 6.730(0)	4.845(0) 5.343(1)	6.044(1) 6.138(0)	5.454(0) 5.941(1)
	6.705(0) 6.950(1)	7.052(1) 7.497(1)	5.658(0) 5.785(1)	6.399(1) 6.939(1)	6.491(1) 6.501(0)
	7.134(1) 7.632(1)	7.784(0) 8.241(1)	5.970(1) 6.274(0)	7.170(0) 7.453(1)	6.752(1) 7.207(0)
	7.665(0) 7.756(1)	8.604(1) 8.810(0)	6.600(1) 6.760(1)	7.693(1) 7.800(0)	7.384(1) 7.634(1)
	8.255(C) 8.490(1)	8.927(1) 9.440(2)	7.160(1) 7.216(0)	8.052(1) 8.810(2)	8.005(1) 8.155(0)
	8.542(1) 9.206(1)	9.613(1)10.363(0)	7.576(1) 7.943(1)	8.862(1) 9.213(0)	8.262(1) 8.972(1)
	9.968(1)10.151(2)	10.388(1)11.100(1)	8.406(1) 8.488(2)	9.390(1) 9.903(1)	9.287(2) 9.440(1)
	11.091(1)11.597(2)	11.121(2)12.097(2)	9.408(1) 9.874(2)	10.234(2)11.134(2)	10.755(2)10.844(1)
	11.913(2)	12.903(1)	10.556(2)	11.428(1)	11.323(2)
9+	2.809(0) 5.591(0)	2.667(0) 6.323(0)	1.766(0) 4.391(0)	2.384(0) 5.561(0)	2.274(0) 5.208(0)
	6.173(C) 6.381(0)	6.499(1) 6.674(C)	4.944(0) 5.098(0)	5.857(0) 5.902(1)	5.726(0) 5.767(1)
	6.492(1) 7.106(0)	7.061(0) 7.312(1)	5.208(1) 5.859(1)	6.478(0) 6.662(1)	5.898(0) 6.662(1)
	7.262(1) 7.405(1)	7.605(1) 7.923(0)	5.931(0) 5.971(1)	7.019(1) 7.102(0)	6.741(0) 6.766(1)
	7.532(0) 8.316(0)	8.756(1) 8.823(0)	6.234(0) 6.932(0)	7.681(0) 7.969(1)	7.188(0) 7.962(0)
	8.351(1) 8.741(1)	9.446(1) 9.619(0)	7.127(1) 7.459(1)	8.564(0) 8.579(1)	8.030(1) 8.368(1)
	9.721(1)10.065(0)	10.395(2)10.472(1)	8.092(1) 8.383(0)	9.368(1) 9.740(2)	9.111(1) 9.712(0)
	10.659(1)11.074(2)	11.854(2)12.057(1)	8.695(1) 9.280(2)	10.695(1)10.719(0)	9.918(1)10.175(2)
	12.268(2)	12.337(0)	10.348(2)	10.867(2)	11.378(2)
10+	5.348(C) 5.998(0)	5.581(0) 5.760(1)	4.081(0) 4.217(0)	5.000(0) 5.222(0)	4.819(0) 4.996(0)
	6.325(1) 6.827(0)	5.871(0) 6.685(1)	4.707(1) 5.419(1)	5.334(1) 6.064(1)	5.516(1) 6.159(1)
	7.110(1) 7.729(1)	7.754(1) 7.816(0)	5.661(0) 6.203(1)	6.467(0) 7.022(1)	6.528(0) 7.059(1)
	8.398(0) 8.436(1)	8.781(1) 9.315(0)	6.607(0) 6.872(1)	7.922(1) 8.134(0)	7.753(0) 7.979(1)
	9.131(1) 9.275(1)	9.543(1) 9.929(1)	7.704(1) 7.898(1)	8.639(1) 8.925(1)	8.534(1) 8.898(1)
	10.927(1)12.507(2)	11.962(2)11.994(1)	8.985(1)10.371(2)	10.588(1)10.839(2)	10.470(1)11.412(2)
11+	4.658(0) 6.587(0)	4.405(0) 6.810(0)	3.091(0) 5.022(0)	3.798(0) 6.087(0)	3.908(0) 5.990(0)
	7.377(1) 7.847(0)	7.009(1) 8.487(0)	5.562(1) 5.967(0)	6.126(1) 7.488(0)	6.479(1) 7.105(0)
	9.107(0) 9.175(1)	9.634(1)10.269(0)	7.277(1) 7.359(0)	8.047(1) 8.928(0)	8.404(1) 8.599(2)
	10.274(1)12.911(2)	10.546(1)12.211(2)	8.132(1)10.652(2)	9.336(1)11.044(2)	9.268(1)11.923(2)
12+	7.958(0) 8.013(1)	7.405(1) 7.915(0)	5.931(1) 5.954(0)	6.511(1) 6.869(0)	7.094(1) 7.106(0)
	8.311(0) 9.984(1)	8.908(0) 9.614(1)	6.645(0) 7.734(1)	7.468(0) 8.471(1)	7.780(0) 8.902(1)
	10.837(1)	11.083(1)	8.472(1)	9.689(1)	9.987(1)
13+	7.089(0) 9.851(0)	6.510(0) 9.847(1)	4.805(0) 7.321(0)	5.728(0) 8.664(1)	5.942(0) 8.872(0)
	10.220(1)	10.404(0)	7.814(1)	8.822(0)	8.942(1)
14+	10.509(1)	9.653(1)	7.684(1)	8.385(1)	9.244(1)
15+	9.043(0)	8.216(0)	6.082(0)	6.882(0)	7.642(0)

ENERGY LEVELS

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*  47V  - 49CR  *
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J	42SC-INT ENERGY(T) (KEV)	54CO-INT ENERGY(T) (KEV)	48SC-INT ENERGY(T) (KEV)	42SC*-INT ENERGY(T) (KEV)	48SC*-INT ENERGY(T) (KEV)
1/2-	2.682(1/2) 4.003(1/2)	3.480(1/2) 4.772(1/2)	2.693(1/2) 3.828(1/2)	3.483(1/2) 4.390(1/2)	2.808(1/2) 4.213(1/2)
	4.739(1/2) 5.548(3/2)	5.574(3/2) 6.062(1/2)	4.721(1/2) 5.272(3/2)	5.582(1/2) 5.722(3/2)	5.094(1/2) 5.460(3/2)
	6.704(1/2) 7.100(1/2)	8.229(3/2) 8.242(1/2)	6.562(1/2) 6.782(1/2)	7.603(3/2) 7.619(1/2)	7.047(1/2) 7.329(1/2)
	7.626(3/2) 7.789(1/2)	9.062(1/2) 10.112(3/2)	7.112(3/2) 7.535(1/2)	8.299(1/2) 9.119(1/2)	7.756(3/2) 8.223(1/2)
	8.992(3/2) 10.858(3/2)	10.143(1/2) 12.622(3/2)	8.737(3/2) 10.133(3/2)	9.394(3/2) 11.612(3/2)	9.151(3/2) 10.929(3/2)
	12.262(1/2) 13.509(5/2)	12.980(5/2) 16.157(1/2)	11.005(1/2) 12.225(5/2)	12.226(5/2) 14.145(1/2)	12.481(1/2) 13.009(5/2)
3/2-	1.194(1/2) 2.451(1/2)	1.288(1/2) 3.048(1/2)	1.097(1/2) 2.252(1/2)	1.268(1/2) 3.097(1/2)	1.204(1/2) 2.476(1/2)
	3.342(1/2) 4.197(1/2)	4.369(1/2) 4.507(3/2)	3.417(1/2) 4.143(1/2)	4.104(1/2) 4.427(3/2)	3.699(1/2) 4.500(3/2)
	4.857(3/2) 4.905(1/2)	5.397(1/2) 6.206(3/2)	4.326(3/2) 4.920(1/2)	4.949(1/2) 5.673(3/2)	4.502(1/2) 5.251(1/2)
	5.852(1/2) 6.032(3/2)	6.317(1/2) 7.055(1/2)	5.608(3/2) 5.645(1/2)	5.094(1/2) 6.616(1/2)	5.978(3/2) 6.137(1/2)
	6.187(1/2) 6.578(3/2)	7.121(3/2) 7.893(1/2)	5.935(1/2) 6.431(1/2)	6.646(3/2) 7.165(1/2)	6.496(1/2) 6.798(3/2)
	6.622(1/2) 7.067(1/2)	8.159(1/2) 8.536(3/2)	6.445(3/2) 6.700(1/2)	7.635(1/2) 7.985(1/2)	6.966(1/2) 7.310(1/2)
	7.745(3/2) 7.979(1/2)	8.931(1/2) 10.154(3/2)	7.408(3/2) 7.638(1/2)	8.161(3/2) 9.180(1/2)	7.898(3/2) 8.344(1/2)
	8.889(3/2) 9.458(3/2)	10.242(1/2) 10.928(3/2)	8.657(3/2) 9.122(3/2)	9.360(3/2) 9.991(3/2)	9.223(3/2) 9.568(3/2)
	9.797(1/2) 10.265(3/2)	11.293(5/2) 11.394(3/2)	9.282(1/2) 9.379(3/2)	10.411(3/2) 10.725(5/2)	10.117(3/2) 10.306(1/2)
	11.031(3/2) 11.929(5/2)	13.123(3/2) 13.169(1/2)	10.370(3/2) 10.842(5/2)	11.558(1/2) 11.773(3/2)	11.188(3/2) 11.431(5/2)
	13.266(5/2) 13.492(3/2)	13.289(5/2) 16.354(3/2)	12.277(3/2) 12.378(5/2)	12.292(5/2) 14.485(3/2)	12.903(5/2) 13.731(3/2)
5/2-	0.0 (1/2) 2.587(1/2)	0.0 (1/2) 2.850(1/2)	0.0 (1/2) 2.255(1/2)	0.173(1/2) 3.053(1/2)	0.0 (1/2) 2.436(1/2)
	3.530(1/2) 3.871(1/2)	3.873(3/2) 4.311(1/2)	3.339(1/2) 3.657(1/2)	3.818(3/2) 3.959(1/2)	3.657(1/2) 3.973(1/2)
	4.158(3/2) 4.215(1/2)	4.608(1/2) 5.302(1/2)	3.788(3/2) 4.227(1/2)	4.331(1/2) 4.979(1/2)	4.043(3/2) 4.537(1/2)
	4.938(1/2) 5.420(1/2)	5.690(3/2) 6.190(1/2)	4.675(1/2) 5.185(1/2)	5.491(3/2) 5.615(1/2)	5.110(1/2) 5.528(3/2)
	5.460(3/2) 5.738(1/2)	6.676(1/2) 6.943(3/2)	5.230(3/2) 5.589(1/2)	6.162(1/2) 6.588(1/2)	5.670(1/2) 6.000(1/2)
	6.056(1/2) 6.132(1/2)	6.966(1/2) 7.756(1/2)	5.977(1/2) 6.157(1/2)	6.715(3/2) 7.005(1/2)	6.464(1/2) 6.631(1/2)
	6.679(1/2) 6.957(3/2)	8.023(3/2) 8.051(1/2)	6.350(3/2) 6.453(1/2)	7.331(1/2) 7.342(3/2)	6.801(3/2) 7.017(1/2)
	7.339(1/2) 7.436(3/2)	8.535(1/2) 8.785(1/2)	6.957(3/2) 7.072(1/2)	7.760(1/2) 8.018(1/2)	7.470(3/2) 7.626(1/2)
	7.692(1/2) 7.973(3/2)	8.849(3/2) 9.372(3/2)	7.254(1/2) 7.592(3/2)	8.244(3/2) 8.695(1/2)	7.988(1/2) 8.130(3/2)
	8.397(1/2) 8.642(3/2)	9.664(1/2) 9.825(3/2)	7.967(1/2) 8.141(3/2)	8.778(3/2) 9.100(3/2)	8.473(3/2) 8.791(1/2)
	9.022(1/2) 9.405(3/2)	10.810(1/2) 11.088(3/2)	8.549(1/2) 8.996(3/2)	9.659(1/2) 9.907(3/2)	9.235(3/2) 9.402(1/2)
	9.638(3/2) 9.797(3/2)	11.274(3/2) 11.433(3/2)	9.093(3/2) 9.339(3/2)	10.343(3/2) 10.413(3/2)	9.773(3/2) 10.024(3/2)
	10.062(3/2) 10.805(1/2)	11.537(5/2) 11.727(1/2)	9.496(3/2) 9.905(1/2)	10.450(1/2) 11.016(5/2)	10.224(3/2) 11.150(1/2)
	11.914(3/2) 12.044(5/2)	13.696(5/2) 14.127(3/2)	10.963(3/2) 11.109(5/2)	12.457(1/2) 12.601(3/2)	11.737(5/2) 12.098(3/2)
	13.591(5/2) 15.801(5/2)	14.198(1/2) 16.710(5/2)	12.689(5/2) 14.415(5/2)	12.757(5/2) 15.224(5/2)	13.292(5/2) 15.646(5/2)
7/2-	0.045(1/2) 2.370(1/2)	0.113(1/2) 2.856(1/2)	0.024(1/2) 2.209(1/2)	C.0 (1/2) 2.843(1/2)	0.123(1/2) 2.415(1/2)
	3.096(1/2) 3.596(1/2)	3.797(3/2) 3.8C7(1/2)	2.952(1/2) 3.208(1/2)	3.439(3/2) 3.551(1/2)	3.236(1/2) 3.528(1/2)
	4.032(3/2) 4.228(1/2)	4.602(1/2) 5.117(1/2)	3.640(3/2) 4.049(1/2)	3.832(1/2) 4.620(1/2)	3.936(3/2) 4.454(1/2)
	4.362(1/2) 4.965(1/2)	5.211(1/2) 5.927(1/2)	4.119(1/2) 4.568(1/2)	4.936(1/2) 5.429(1/2)	4.518(1/2) 5.039(1/2)
	5.051(1/2) 5.406(1/2)	6.425(3/2) 6.520(1/2)	4.973(1/2) 5.092(1/2)	5.845(1/2) 6.138(3/2)	5.342(1/2) 5.610(1/2)
	5.828(1/2) 6.121(1/2)	6.760(1/2) 6.876(3/2)	5.671(1/2) 5.863(3/2)	6.230(1/2) 6.533(3/2)	6.141(1/2) 6.295(1/2)
	6.315(3/2) 6.652(3/2)	7.263(1/2) 7.656(1/2)	5.898(1/2) 6.129(3/2)	6.632(1/2) 6.970(1/2)	6.431(1/2) 6.567(3/2)
	6.717(1/2) 6.964(1/2)	7.714(1/2) 8.032(3/2)	6.311(1/2) 6.455(1/2)	7.122(1/2) 7.532(3/2)	6.879(1/2) 7.022(1/2)
	7.369(1/2) 7.610(1/2)	8.141(3/2) 8.262(1/2)	7.121(1/2) 7.173(3/2)	7.570(1/2) 7.793(3/2)	7.509(3/2) 7.749(3/2)
	7.727(1/2) 7.769(3/2)	9.347(1/2) 9.459(3/2)	7.208(3/2) 7.213(1/2)	8.344(1/2) 8.521(1/2)	7.843(1/2) 7.918(1/2)
	7.889(1/2) 8.013(3/2)	9.472(1/2) 9.751(1/2)	7.345(1/2) 7.486(1/2)	8.662(1/2) 8.755(3/2)	8.081(1/2) 8.129(1/2)
	8.243(1/2) 8.716(3/2)	9.868(3/2) 9.889(1/2)	7.749(1/2) 8.091(3/2)	9.026(3/2) 9.057(1/2)	8.424(1/2) 8.746(3/2)
	8.848(3/2) 9.175(3/2)	9.906(5/2) 9.944(3/2)	8.444(3/2) 8.563(3/2)	9.115(5/2) 9.305(3/2)	9.057(3/2) 9.092(3/2)
	9.510(3/2) 9.619(1/2)	10.361(1/2) 10.519(3/2)	8.924(3/2) 8.955(1/2)	9.325(1/2) 9.637(3/2)	9.561(3/2) 9.935(1/2)
	9.866(1/2) 10.320(3/2)	11.896(3/2) 12.295(3/2)	9.048(1/2) 9.663(5/2)	10.782(3/2) 10.946(1/2)	10.078(1/2) 10.354(5/2)
	10.611(5/2) 10.630(3/2)	12.461(1/2) 12.475(5/2)	9.678(3/2) 9.979(3/2)	11.168(3/2) 11.216(1/2)	10.593(3/2) 10.747(3/2)
	11.038(3/2) 12.666(3/2)	12.599(3/2) 12.745(1/2)	10.178(3/2) 11.520(3/2)	11.440(3/2) 11.768(5/2)	11.235(3/2) 12.490(5/2)
	12.922(5/2) 14.686(5/2)	14.931(3/2) 15.064(5/2)	11.833(5/2) 13.413(5/2)	13.327(3/2) 13.815(5/2)	12.869(3/2) 14.444(5/2)
	19.429(7/2)	17.610(7/2)	17.550(7/2)	16.569(7/2)	18.467(7/2)
9/2-	1.681(1/2) 2.163(1/2)	1.613(1/2) 2.303(1/2)	1.332(1/2) 1.938(1/2)	1.665(1/2) 2.396(1/2)	1.489(1/2) 2.108(1/2)
	2.947(1/2) 3.777(1/2)	3.424(1/2) 4.5C8(1/2)	2.650(1/2) 3.526(1/2)	3.198(1/2) 4.339(1/2)	3.016(1/2) 3.853(1/2)
	4.440(1/2) 4.822(1/2)	5.280(3/2) 5.359(1/2)	4.170(1/2) 4.429(1/2)	4.801(1/2) 5.091(3/2)	4.631(1/2) 4.898(1/2)
	4.852(1/2) 5.604(1/2)	5.600(1/2) 5.882(3/2)	4.514(1/2) 4.962(3/2)	5.234(1/2) 5.433(1/2)	4.938(1/2) 5.395(3/2)
	5.668(3/2) 5.742(1/2)	5.891(1/2) 6.493(1/2)	5.173(1/2) 5.272(1/2)	5.501(3/2) 5.871(1/2)	5.677(1/2) 5.731(1/2)
	5.946(1/2) 6.048(3/2)	6.646(3/2) 6.691(1/2)	5.420(3/2) 5.828(1/2)	6.219(1/2) 6.269(3/2)	5.869(3/2) 6.347(3/2)
	6.364(1/2) 6.580(3/2)	7.646(3/2) 7.680(1/2)	5.967(3/2) 6.119(1/2)	6.841(1/2) 6.967(3/2)	6.427(1/2) 6.701(1/2)
	6.712(1/2) 6.991(1/2)	7.880(1/2) 8.113(1/2)	6.373(1/2) 6.445(1/2)	7.164(1/2) 7.466(1/2)	6.980(1/2) 7.084(1/2)
	7.048(1/2) 7.292(3/2)	8.161(3/2) 8.596(1/2)	6.685(3/2) 6.776(1/2)	7.625(3/2) 7.721(1/2)	7.252(1/2) 7.364(1/2)
	7.542(1/2) 7.769(3/2)	8.623(1/2) 8.797(3/2)	7.011(3/2) 7.095(1/2)	7.789(1/2) 8.288(3/2)	7.595(3/2) 7.800(1/2)
	8.064(1/2) 8.156(1/2)	9.090(3/2) 9.298(1/2)	7.708(1/2) 7.716(1/2)	8.396(1/2) 8.450(3/2)	8.331(3/2) 8.465(3/2)
	8.509(3/2) 8.679(3/2)	9.747(3/2) 10.070(3/2)	7.773(3/2) 7.874(3/2)	8.970(3/2) 9.103(1/2)	8.507(1/2) 8.559(1/2)
	8.868(1/2) 8.959(3/2)	10.224(1/2) 10.654(1/2)	8.259(1/2) 8.484(3/2)	9.231(3/2) 9.264(1/2)	9.054(3/2) 9.103(3/2)
	9.226(1/2) 9.446(3/2)	11.008(3/2) 11.213(3/2)	8.557(1/2) 8.571(3/2)	10.005(3/2) 10.034(1/2)	9.293(3/2) 9.523(1/2)
	9.923(3/2) 10.185(3/2)	11.223(1/2) 11.687(1/2)	9.236(3/2) 9.281(3/2)	10.203(3/2) 10.375(1/2)	9.913(3/2) 10.076(3/2)
	10.471(3/2) 10.983(1/2)	11.748(3/2) 11.824(5/2)	9.556(3/2) 9.751(1/2)	10.593(3/2) 11.028(5/2)	10.482(3/2) 11.077(1/2)
	11.270(3/2) 11.862(3/2)	13.044(3/2) 13.495(5/2)	10.464(3/2) 10.789(3/2)	11.721(3/2) 12.178(1/2)	11.445(3/2) 11.954(3/2)
	12.579(5/2) 13.645(5/2)	13.690(3/2) 13.863(1/2)	11.271(5/2) 12.572(5/2)	12.255(3/2) 12.519(5/2)	12.051(5/2) 13.288(5/2)
	15.576(5/2)	16.041(5/2)	13.993(5/2)	14.626(5/2)	15.299(5/2)
11/2-	1.422(1/2) 3.141(1/2)	1.312(1/2) 3.367(1/2)	1.052(1/2) 2.708(1/2)	1.284(1/2) 3.130(1/2)	1.259(1/2) 3.083(1/2)
	3.309(1/2) 3.835(1/2)	3.732(1/2) 4.286(1/2)	2.894(1/2) 3.354(1/2)	3.429(1/2) 3.868(1/2)	3.246(1/2) 3.771(1/2)
	4.356(1/2) 5.099(1/2)	4.693(1/2) 4.843(3/2)	3.699(1/2) 4.518(3/2)	4.191(1/2) 4.565(3/2)	4.167(1/2) 4.912(3/2)
	5.290(1/2) 5.307(3/2)	5.784(1/2) 6.287(1/2)	4.589(1/2) 4.929(1/2)	5.355(1/2) 5.640(1/2)	5.109(1/2) 5.457(1/2)
	5.704(1/2) 5.872(1/2)	6.403(3/2) 6.546(1/2)	5.194(1/2) 5.383(1/2)	5.853(3/2) 5.960(1/2)	5.734(1/2) 6.001(1/2)
	6.006(1/2) 6.381(3/2)	7.035(3/2) 7.087(1/2)	5.579(1/2) 5.721(3/2)	6.389(1/2) 6.563(3/2)	6.098(1/2) 6.294(3/2)
	6.649(1/2) 6.921(1/2)	7.298(1/2) 7.909(3/2)	6.148(1/2) 6.274(3/2)	6.789(1/2) 7.159(3/2)	6.684(3/2) 6.800(1/2)
	6.953(3/2) 7.114(1/2)	7.912(1/2) 8.165(1/2)	6.421(1/2) 6.596(1/2)	7.310(1/2) 7.404(1/2)	7.125(1/2) 7.298(1/2)
	7.458(1/2) 7.571(1/2)	8.345(3/2) 8.452(1/2)	6.812(1/2) 6.890(3/2)	7.665(1/2) 7.752(3/2)	7.496(1/2) 7.543(3/2)
	7.678(3/2) 7.924(1/2)	8.976(1/2) 9.159(3/2)	7.085(1/2) 7.167(1/2)	7.958(1/2) 8.302(1/2)	7.799(3/2) 7.919(1/2)
	7.974(1/2) 8.181(3/2)	9.300(1/2) 9.352(3/2)	7.343(3/2) 7.523(1/2)	8.438(3/2) 8.508(1/2)	7.970(1/2) 8.262(1/2)
	8.426(1/2) 8.619(3/2)	9.541(1/2) 9.9C8(1/2)	7.724(1/2) 7.876(3/2)	8.673(3/2) 8.857(1/2)	8.493(1/2) 8.670(3/2)
	9.164(3/2) 9.193(1/2)	10.070(3/2) 10.403(1/2)	8.223(1/2) 8.269(3/2)	9.105(3/2) 9.272(1/2)	8.981(3/2) 9.176(1/2)
	9.511(3/2) 9.634(1/2)	10.540(3/2) 10.902(3/2)	8.606(3/2) 8.881(1/2)	9.634(3/2) 9.795(1/2)	9.328(3/2) 9.685(3/2)
	9.634(3/2) 10.107(3/2)	11.013(1/2) 11.045(5/2)	8.943(3/2) 9.089(3/2)	9.809(3/2) 10.502(3/2)	9.904(3/2) 9.962(1/2)
	10.244(3/2) 10.439(1/2)	11.546(3/2) 12.392(1/2)	9.297(1/2) 9.503(3/2)	10.519(5/2) 10.842(1/2)	10.253(3/2) 10.522(1/2)
	11.273(3/2) 11.584(3/2)	12.568(3/2) 12.891(3/2)	10.166(3/2) 10.342(3/2)	11.350(3/2) 11.443(1/2)	11.163(3/2) 11.384(3/2)
	12.054(5/2) 12.980(3/2)	13.030(5/2) 13.030(3/2)	10.718(5/2) 11.481(3/2)	11.551(3/2) 12.068(5/2)	11.529(5/2) 12.877(5/2)
	13.590(5/2) 14.038(5/2)	13.872(5/2) 14.967(3/2)	12.124(5/2) 12.905(5/2)	12.818(5/2) 13.271(3/2)	13.021(3/2) 13.715(5/2)

ENERGY LEVELS

47V - 49CR

J	42SC-INT	54CO-INT	48SC-INT	42SC*-INT	48SC*-INT
	ENERGY(T) (MEV)	ENERGY(T) (MEV)	ENERGY(T) (MEV)	ENERGY(T) (MEV)	ENERGY(T) (MEV)
13/2-	2.760(1/2) 2.849(1/2)	2.615(1/2) 2.677(1/2)	2.149(1/2) 2.198(1/2)	2.631(1/2) 2.638(1/2)	2.477(1/2) 2.485(1/2)
	3.995(1/2) 4.312(1/2)	4.184(1/2) 4.841(1/2)	3.320(1/2) 3.700(1/2)	3.872(1/2) 4.254(1/2)	3.790(1/2) 4.271(1/2)
	4.570(1/2) 5.221(1/2)	5.144(1/2) 5.914(1/2)	4.104(1/2) 4.694(1/2)	4.880(1/2) 5.300(1/2)	4.560(1/2) 5.236(1/2)
	5.818(1/2) 6.177(1/2)	6.559(1/2) 6.9C3(1/2)	5.109(1/2) 5.378(1/2)	6.045(1/2) 6.202(1/2)	5.728(1/2) 6.067(1/2)
	6.438(1/2) 6.805(1/2)	6.914(3/2) 7.142(3/2)	5.878(1/2) 6.197(3/2)	6.419(3/2) 6.688(3/2)	6.508(1/2) 6.706(3/2)
	6.906(1/2) 7.250(3/2)	7.644(1/2) 7.871(1/2)	6.220(1/2) 6.387(1/2)	6.850(1/2) 7.137(1/2)	6.941(1/2) 7.011(3/2)
	7.395(1/2) 7.419(3/2)	8.083(3/2) 8.238(1/2)	6.413(3/2) 6.657(1/2)	7.384(1/2) 7.416(3/2)	7.159(1/2) 7.393(1/2)
	7.565(1/2) 7.637(1/2)	8.288(3/2) 8.602(1/2)	6.943(1/2) 7.031(1/2)	7.744(1/2) 7.838(3/2)	7.638(1/2) 7.733(1/2)
	8.000(3/2) 8.095(1/2)	8.887(1/2) 9.025(3/2)	7.052(3/2) 7.188(1/2)	7.897(1/2) 8.173(1/2)	7.868(1/2) 7.990(1/2)
	8.147(3/2) 8.598(3/2)	9.235(1/2) 9.460(1/2)	7.350(3/2) 7.686(1/2)	8.334(3/2) 8.431(1/2)	8.000(3/2) 8.494(3/2)
	8.672(1/2) 8.773(1/2)	9.779(3/2) 10.238(1/2)	7.727(3/2) 8.081(1/2)	9.015(3/2) 9.088(1/2)	8.654(1/2) 9.042(1/2)
	9.060(1/2) 9.422(3/2)	10.395(3/2) 10.790(3/2)	8.228(1/2) 8.399(3/2)	9.544(3/2) 9.612(1/2)	9.132(1/2) 9.141(1/2)
	9.878(1/2) 10.049(3/2)	10.836(1/2) 11.171(1/2)	8.750(1/2) 8.914(3/2)	9.679(1/2) 9.840(3/2)	9.739(3/2) 9.923(1/2)
	10.167(3/2) 10.327(3/2)	11.309(3/2) 12.051(1/2)	9.290(3/2) 9.419(3/2)	10.278(3/2) 10.680(1/2)	10.067(3/2) 10.344(3/2)
	11.119(3/2) 11.518(3/2)	12.174(3/2) 12.518(3/2)	9.849(3/2) 9.995(1/2)	10.918(3/2) 11.220(3/2)	10.903(3/2) 11.271(3/2)
	11.537(1/2) 12.144(3/2)	12.587(5/2) 13.535(5/2)	10.163(3/2) 10.830(3/2)	11.753(5/2) 12.182(3/2)	11.331(1/2) 12.089(3/2)
	13.484(5/2) 14.292(5/2)	13.745(3/2) 14.326(1/2)	11.779(5/2) 12.657(5/2)	12.465(1/2) 12.503(5/2)	12.591(5/2) 13.656(5/2)
15/2-	2.711(1/2) 3.601(1/2)	2.388(1/2) 3.469(1/2)	1.948(1/2) 2.820(1/2)	2.321(1/2) 3.036(1/2)	2.319(1/2) 3.325(1/2)
	4.125(1/2) 4.986(1/2)	4.560(1/2) 5.302(1/2)	3.455(1/2) 4.148(1/2)	3.898(1/2) 4.752(1/2)	4.045(1/2) 4.755(1/2)
	5.662(1/2) 5.942(1/2)	6.006(3/2) 6.247(1/2)	4.970(1/2) 5.087(1/2)	5.467(3/2) 5.574(1/2)	5.618(1/2) 5.773(1/2)
	6.086(1/2) 6.516(1/2)	6.507(1/2) 6.761(1/2)	5.279(1/2) 5.401(3/2)	5.841(1/2) 6.058(1/2)	5.990(1/2) 6.069(3/2)
	6.578(3/2) 7.088(1/2)	7.142(3/2) 7.473(1/2)	5.667(1/2) 6.139(1/2)	6.484(3/2) 6.592(1/2)	6.407(1/2) 6.814(3/2)
	7.382(3/2) 7.517(1/2)	7.608(3/2) 8.124(1/2)	6.264(3/2) 6.541(1/2)	6.739(3/2) 7.375(1/2)	7.054(1/2) 7.399(3/2)
	7.718(1/2) 7.744(3/2)	8.523(1/2) 8.788(3/2)	6.687(3/2) 6.822(1/2)	7.518(1/2) 7.955(1/2)	7.422(1/2) 7.618(1/2)
	7.766(1/2) 8.105(1/2)	8.956(1/2) 9.212(1/2)	7.271(1/2) 7.386(1/2)	8.051(3/2) 8.225(1/2)	8.011(1/2) 8.243(1/2)
	8.604(3/2) 9.006(1/2)	9.430(3/2) 9.680(1/2)	7.574(3/2) 7.998(1/2)	8.590(3/2) 8.636(1/2)	8.324(3/2) 8.939(1/2)
	9.252(1/2) 9.254(3/2)	9.734(3/2) 10.615(1/2)	8.172(1/2) 8.200(3/2)	8.862(3/2) 9.376(1/2)	9.055(3/2) 9.210(1/2)
	9.789(3/2) 9.888(1/2)	10.838(3/2) 10.935(3/2)	8.496(3/2) 8.515(1/2)	9.663(3/2) 9.803(1/2)	9.344(3/2) 9.674(1/2)
	9.965(3/2) 10.085(3/2)	11.034(1/2) 11.345(3/2)	9.037(3/2) 9.129(3/2)	9.816(3/2) 10.131(1/2)	9.914(3/2) 9.986(3/2)
	10.800(3/2) 11.220(3/2)	11.503(1/2) 11.982(3/2)	9.669(3/2) 9.810(1/2)	10.265(3/2) 10.813(3/2)	10.639(3/2) 10.977(3/2)
	11.413(1/2) 12.206(3/2)	12.103(5/2) 13.423(3/2)	9.884(3/2) 10.633(3/2)	11.152(5/2) 11.932(3/2)	11.177(1/2) 11.939(3/2)
	13.178(5/2) 14.370(5/2)	13.545(5/2) 13.919(1/2)	11.412(5/2) 12.599(5/2)	12.071(1/2) 12.378(5/2)	12.374(5/2) 13.645(5/2)
17/2-	4.069(1/2) 4.474(1/2)	3.881(1/2) 4.488(1/2)	3.084(1/2) 3.506(1/2)	3.464(1/2) 3.933(1/2)	3.674(1/2) 4.137(1/2)
	5.502(1/2) 5.821(1/2)	5.852(1/2) 5.956(1/2)	4.703(1/2) 4.765(1/2)	5.202(1/2) 5.437(1/2)	5.371(1/2) 5.456(1/2)
	6.369(1/2) 6.586(1/2)	6.877(1/2) 7.082(3/2)	5.326(1/2) 5.607(1/2)	6.137(1/2) 6.424(1/2)	6.112(1/2) 6.435(1/2)
	7.000(1/2) 7.593(3/2)	7.203(1/2) 7.612(1/2)	5.875(1/2) 6.254(3/2)	6.449(3/2) 6.719(1/2)	6.731(1/2) 7.001(3/2)
	7.617(1/2) 8.001(1/2)	8.595(1/2) 8.865(3/2)	6.579(1/2) 7.051(1/2)	7.662(1/2) 8.011(1/2)	7.524(1/2) 8.033(1/2)
	8.202(1/2) 8.676(1/2)	9.027(1/2) 9.568(1/2)	7.211(1/2) 7.482(1/2)	8.113(3/2) 8.200(1/2)	8.059(1/2) 8.507(1/2)
	9.129(1/2) 9.179(3/2)	9.829(1/2) 9.878(3/2)	7.783(3/2) 7.816(1/2)	8.706(1/2) 8.946(1/2)	8.622(3/2) 8.873(1/2)
	9.678(1/2) 9.790(3/2)	10.235(1/2) 10.330(3/2)	8.213(1/2) 8.469(3/2)	8.967(3/2) 9.317(3/2)	9.296(3/2) 9.423(1/2)
	10.163(1/2) 10.268(3/2)	10.807(3/2) 11.096(1/2)	8.681(1/2) 8.727(3/2)	9.547(3/2) 9.817(1/2)	9.845(1/2) 9.862(3/2)
	10.483(3/2) 10.671(3/2)	11.249(3/2) 11.751(1/2)	9.057(3/2) 9.542(3/2)	10.127(3/2) 10.256(1/2)	10.094(3/2) 10.486(3/2)
	11.306(3/2) 12.703(3/2)	11.783(3/2) 13.253(5/2)	9.783(3/2) 10.925(3/2)	10.540(3/2) 12.181(3/2)	10.956(3/2) 12.465(3/2)
	14.241(5/2)	13.812(3/2)	12.319(5/2)	12.208(5/2)	13.368(5/2)
19/2-	3.930(1/2) 5.723(1/2)	3.489(1/2) 5.749(1/2)	2.758(1/2) 4.587(1/2)	2.990(1/2) 5.150(1/2)	3.415(1/2) 5.329(1/2)
	6.043(1/2) 7.144(1/2)	5.959(1/2) 7.494(1/2)	4.761(1/2) 5.787(1/2)	5.294(1/2) 6.524(1/2)	5.558(1/2) 6.741(1/2)
	7.413(1/2) 7.909(1/2)	7.586(3/2) 8.155(1/2)	6.319(1/2) 6.676(3/2)	6.769(3/2) 7.045(1/2)	7.279(1/2) 7.575(3/2)
	8.118(1/2) 8.231(3/2)	8.477(3/2) 8.554(1/2)	6.757(1/2) 6.889(1/2)	7.546(1/2) 7.602(3/2)	7.685(1/2) 7.873(1/2)
	8.314(1/2) 8.840(1/2)	8.770(1/2) 9.422(1/2)	7.085(1/2) 7.380(3/2)	7.847(1/2) 8.142(1/2)	8.151(1/2) 8.338(3/2)
	8.953(1/2) 8.960(3/2)	9.543(3/2) 9.823(1/2)	7.635(1/2) 7.720(1/2)	8.665(1/2) 8.729(3/2)	8.696(1/2) 8.738(1/2)
	9.611(1/2) 9.785(3/2)	10.120(1/2) 10.518(3/2)	7.925(1/2) 8.233(3/2)	8.817(1/2) 9.308(1/2)	9.072(1/2) 9.198(1/2)
	10.658(3/2) 10.738(1/2)	10.611(1/2) 11.097(3/2)	8.962(1/2) 9.088(3/2)	9.481(3/2) 9.913(3/2)	10.088(3/2) 10.374(1/2)
	11.164(3/2) 11.627(3/2)	11.987(3/2) 12.309(1/2)	9.425(3/2) 9.746(3/2)	10.658(1/2) 10.664(3/2)	10.597(3/2) 11.077(3/2)
	15.045(5/2)	14.C68(5/2)	13.023(5/2)	12.799(5/2)	14.298(5/2)
21/2-	6.319(1/2) 6.584(1/2)	6.093(1/2) 6.437(1/2)	4.748(1/2) 5.079(1/2)	5.234(1/2) 5.622(1/2)	5.699(1/2) 5.996(1/2)
	7.154(1/2) 7.760(1/2)	7.156(1/2) 8.296(1/2)	5.598(1/2) 6.473(1/2)	6.285(1/2) 7.387(1/2)	6.621(1/2) 7.452(1/2)
	8.521(1/2) 9.059(1/2)	8.925(3/2) 9.329(1/2)	7.104(1/2) 7.563(1/2)	8.056(1/2) 8.056(3/2)	8.233(1/2) 8.691(1/2)
	9.718(3/2) 9.725(1/2)	9.877(1/2) 10.248(3/2)	7.766(3/2) 7.999(1/2)	8.509(1/2) 9.208(3/2)	8.854(3/2) 9.288(1/2)
	10.476(1/2) 10.586(3/2)	10.678(3/2) 10.685(1/2)	8.496(1/2) 8.784(3/2)	9.375(1/2) 9.398(3/2)	9.779(3/2) 9.927(1/2)
	11.042(3/2) 12.581(3/2)	11.472(1/2) 12.954(3/2)	9.087(3/2) 10.469(3/2)	9.917(1/2) 11.406(3/2)	10.234(3/2) 12.067(3/2)
23/2-	5.835(1/2) 7.503(1/2)	5.151(1/2) 7.255(1/2)	4.082(1/2) 5.70C(1/2)	4.438(1/2) 6.189(1/2)	5.036(1/2) 6.795(1/2)
	7.595(1/2) 9.013(1/2)	7.766(1/2) 9.337(3/2)	6.030(1/2) 7.542(1/2)	6.597(1/2) 8.287(3/2)	7.161(1/2) 8.764(1/2)
	9.583(1/2) 10.171(3/2)	9.654(1/2) 9.818(1/2)	7.606(1/2) 8.055(3/2)	8.396(1/2) 8.516(1/2)	8.860(1/2) 9.301(3/2)
	11.348(1/2) 11.358(3/2)	10.826(3/2) 11.412(3/2)	8.971(1/2) 9.146(3/2)	9.474(3/2) 10.049(3/2)	10.364(3/2) 10.537(1/2)
	11.653(3/2)	12.342(1/2)	9.707(3/2)	10.609(1/2)	11.081(3/2)
25/2-	8.148(1/2) 9.273(1/2)	7.816(1/2) 8.987(1/2)	5.993(1/2) 7.142(1/2)	6.598(1/2) 7.760(1/2)	7.310(1/2) 8.432(1/2)
	9.635(1/2) 11.206(1/2)	9.316(1/2) 11.097(3/2)	7.392(1/2) 8.741(1/2)	8.063(1/2) 9.770(3/2)	8.751(1/2) 10.334(1/2)
	11.862(3/2)	11.833(1/2)	9.385(3/2)	10.089(1/2)	10.869(3/2)
27/2-	7.976(1/2) 9.927(1/2)	7.133(1/2) 9.825(1/2)	5.611(1/2) 7.666(1/2)	5.967(1/2) 8.374(1/2)	6.944(1/2) 9.107(1/2)
	12.417(3/2)	11.537(3/2)	9.754(3/2)	10.001(3/2)	11.402(3/2)
29/2-	11.064(1/2)	10.570(1/2)	8.077(1/2)	8.925(1/2)	9.843(1/2)
31/2-	10.836(1/2)	9.754(1/2)	7.691(1/2)	8.142(1/2)	9.457(1/2)

ENERGY LEVELS

48V - 48V

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
0+	2.968(2) 5.203(1)	2.599(2) 6.442(1)	2.893(2) 5.123(1)	2.007(2) 5.709(1)	2.985(2) 5.469(1)
	5.990(1) 7.589(2)	7.736(2) 7.955(1)	6.078(1) 7.233(2)	7.184(1) 7.312(2)	6.565(1) 7.518(2)
	11.116(2)20.602(4)	12.795(2)18.066(4)	10.393(2)18.667(4)	11.406(2)16.914(4)	11.291(2)19.392(4)
1+	0.452(1) 1.991(1)	0.390(1) 2.199(1)	0.301(1) 1.809(1)	0.651(1) 2.171(1)	0.283(1) 1.815(1)
	2.457(1) 3.224(1)	3.423(1) 4.294(1)	2.597(1) 3.481(1)	2.980(1) 3.892(1)	2.698(1) 3.462(1)
	3.892(1) 4.435(1)	5.084(1) 5.698(1)	3.758(1) 4.272(1)	4.363(1) 4.841(1)	3.926(1) 4.651(1)
	4.921(1) 5.540(1)	6.214(1) 6.400(2)	5.112(1) 5.500(1)	5.723(1) 6.138(2)	5.335(1) 5.687(1)
	6.032(1) 6.632(2)	6.948(1) 7.688(1)	5.737(1) 6.187(2)	6.218(1) 6.817(1)	6.174(1) 6.544(2)
	6.762(1) 8.237(1)	8.812(1)10.517(2)	6.496(1) 7.747(1)	7.690(1) 9.454(1)	7.073(1) 8.431(1)
	9.542(2)15.966(3)	10.888(1)16.079(3)	9.086(2)14.506(3)	9.510(2)14.604(3)	9.644(2)15.582(3)
2+	0.0 (1) 1.674(1)	0.082(1) 1.889(1)	0.067(1) 1.574(1)	0.110(1) 1.548(1)	0.042(1) 1.687(1)
	2.220(1) 2.986(1)	2.615(1) 3.719(2)	2.054(1) 3.073(1)	2.355(1) 3.281(1)	2.301(1) 3.374(1)
	3.264(1) 3.715(1)	3.820(1) 4.308(1)	3.458(1) 3.557(1)	3.359(2) 3.919(1)	3.644(1) 3.657(1)
	3.983(1) 4.231(2)	4.517(1) 4.594(2)	3.792(1) 3.884(2)	4.003(1) 4.217(1)	3.955(1) 4.053(2)
	4.468(1) 4.982(2)	4.709(1) 5.940(1)	4.486(1) 4.663(2)	4.292(2) 5.303(1)	4.610(1) 4.851(2)
	5.614(1) 5.638(1)	6.361(2) 6.958(1)	5.292(1) 5.655(1)	5.823(2) 6.182(1)	5.707(1) 6.039(1)
	6.135(1) 6.640(2)	7.483(1) 8.013(1)	5.916(1) 6.043(2)	6.431(1) 7.104(1)	6.370(2) 6.512(1)
	7.061(1) 7.531(1)	8.022(2) 9.299(1)	6.785(1) 7.038(1)	7.378(2) 8.086(1)	7.488(1) 7.703(2)
	7.834(2) 8.741(2)	9.465(2) 9.792(2)	7.376(2) 8.382(2)	8.553(2) 8.604(1)	7.781(1) 8.824(2)
	9.075(2)10.402(2)	9.937(1)11.896(2)	8.568(2) 9.782(2)	8.804(2)10.558(2)	8.919(2)10.538(2)
	12.589(2)13.905(3)	13.566(3)14.646(2)	11.381(2)13.131(3)	12.480(3)12.875(2)	12.602(2)13.614(3)
3+	0.927(1) 1.056(1)	0.998(1) 1.199(1)	0.880(1) 0.913(1)	1.067(1) 1.260(1)	0.826(1) 0.911(1)
	1.664(1) 2.927(1)	2.121(1) 3.499(1)	1.521(1) 2.806(1)	1.693(1) 2.968(1)	1.669(1) 2.979(1)
	3.139(1) 3.252(1)	3.515(1) 3.745(1)	2.831(1) 2.911(1)	3.099(1) 3.534(1)	3.043(1) 3.146(1)
	3.426(1) 3.899(1)	4.338(1) 4.919(1)	3.360(1) 3.717(1)	3.930(1) 4.315(1)	3.560(1) 3.977(1)
	4.037(1) 4.460(1)	5.346(1) 5.531(2)	4.120(1) 4.700(1)	4.623(1) 5.426(2)	4.445(1) 4.911(1)
	4.993(1) 5.138(1)	5.960(1) 6.116(1)	4.813(1) 5.036(1)	5.469(1) 5.602(1)	5.158(1) 5.352(1)
	5.602(1) 5.718(1)	6.467(1) 6.716(1)	5.402(1) 5.492(2)	5.693(1) 5.863(1)	5.622(2) 5.745(1)
	5.929(1) 6.043(2)	6.892(1) 7.254(1)	5.508(1) 5.797(1)	6.034(1) 6.539(1)	5.912(1) 6.213(1)
	6.100(1) 6.400(1)	7.754(2) 7.914(1)	6.013(1) 6.112(1)	6.973(1) 7.069(1)	6.458(1) 6.615(1)
	6.980(1) 7.884(2)	8.057(1) 8.706(2)	6.590(1) 7.173(1)	7.319(2) 7.866(2)	7.313(1) 7.537(2)
	8.024(1) 8.338(2)	8.979(1) 9.414(2)	7.228(2) 7.788(2)	7.953(1) 8.481(2)	7.966(1) 8.180(2)
	8.432(1) 9.140(2)	10.001(1)11.223(1)	7.793(1) 8.360(2)	8.733(1) 9.609(1)	8.701(1) 8.875(2)
	10.407(1)10.715(2)	11.539(2)12.849(3)	9.292(1) 9.556(2)	10.372(2)11.395(2)	10.276(1)10.440(2)
	11.224(2)13.979(3)	12.984(2)13.660(1)	10.417(2)12.610(3)	11.707(1)12.005(3)	11.366(2)13.232(3)
4+	0.155(1) 0.432(1)	0.0 (1) 0.243(1)	0.0 (1) 0.228(1)	0.0 (1) 0.097(1)	0.0 (1) 0.228(1)
	2.051(1) 2.447(1)	2.466(1) 2.478(1)	1.892(1) 2.056(1)	2.141(1) 2.202(1)	2.079(1) 2.208(1)
	2.693(1) 3.550(1)	3.209(1) 3.905(1)	2.622(1) 3.362(1)	3.045(1) 3.657(1)	2.638(1) 3.457(1)
	3.653(1) 3.824(1)	4.638(1) 4.795(1)	3.643(1) 3.657(1)	4.024(1) 4.129(1)	3.934(1) 4.019(1)
	4.500(1) 5.092(1)	4.835(2) 5.258(1)	4.074(1) 4.783(1)	4.405(2) 4.697(1)	4.578(1) 4.990(2)
	5.099(1) 5.489(2)	5.752(2) 6.280(1)	4.798(2) 4.874(1)	5.056(2) 5.558(1)	5.192(1) 5.270(1)
	5.796(1) 5.820(1)	6.411(1) 7.081(1)	5.478(1) 5.518(2)	5.715(1) 6.183(1)	5.848(2) 6.063(1)
	6.056(1) 6.070(2)	7.119(1) 7.133(2)	5.533(1) 5.769(1)	6.301(1) 6.440(1)	6.068(1) 6.220(1)
	6.228(1) 6.643(1)	7.255(2) 7.360(1)	5.891(1) 6.277(1)	6.475(1) 6.487(2)	6.276(1) 6.775(1)
	6.938(2) 7.206(1)	7.669(1) 7.714(2)	6.590(2) 6.755(2)	6.648(2) 7.284(2)	6.978(2) 7.182(2)
	7.306(1) 7.663(2)	8.347(2) 8.529(1)	6.770(1) 6.939(1)	7.471(1) 7.689(2)	7.428(2) 7.576(1)
	7.795(2) 8.015(2)	9.274(1) 9.298(2)	7.149(2) 7.594(2)	7.941(1) 8.260(1)	7.593(1) 7.929(2)
	8.566(1) 9.171(2)	9.443(1)10.267(2)	7.740(1) 8.338(2)	8.434(2) 9.267(2)	8.715(1) 8.926(2)
	9.417(2) 9.680(1)	10.963(1)11.025(2)	8.755(1) 9.104(2)	9.545(1) 9.671(2)	9.518(2) 9.994(2)
	10.201(2)11.077(2)	12.346(2)12.561(3)	9.171(2)10.037(2)	10.824(1)10.993(2)	10.125(1)10.901(2)
	13.699(3)	12.728(1)	12.240(3)	11.438(3)	12.886(3)
5+	0.762(1) 1.092(1)	0.424(1) 0.911(1)	0.428(1) 0.783(1)	0.424(1) 0.883(1)	0.410(1) 0.810(1)
	1.451(1) 2.775(1)	1.754(1) 2.936(1)	1.287(1) 2.408(1)	1.256(1) 2.530(1)	1.445(1) 2.643(1)
	2.879(1) 3.412(1)	3.199(1) 3.810(1)	2.483(1) 3.029(1)	2.930(1) 3.228(1)	2.743(1) 3.289(1)
	3.667(1) 4.152(1)	4.353(1) 4.805(1)	3.321(1) 3.734(1)	3.876(1) 4.236(1)	3.651(1) 4.123(1)
	4.163(1) 4.513(1)	5.116(1) 5.561(1)	3.965(1) 4.177(1)	4.473(1) 4.797(1)	4.330(1) 4.632(1)
	5.036(1) 5.245(1)	5.595(1) 5.806(1)	4.511(1) 4.772(1)	4.818(1) 5.195(1)	4.882(1) 5.190(1)
	5.421(1) 5.848(1)	6.385(1) 6.800(2)	4.976(1) 5.262(1)	5.629(1) 5.959(1)	5.404(1) 5.799(1)
	5.876(1) 5.969(1)	6.817(1) 7.244(1)	5.402(1) 5.867(1)	6.150(2) 6.339(1)	5.988(1) 6.416(1)
	6.484(1) 6.586(1)	7.573(1) 7.785(2)	6.145(1) 6.238(1)	6.584(1) 7.207(2)	6.643(1) 6.749(1)
	6.991(1) 7.236(2)	8.261(1) 8.439(1)	6.367(2) 6.488(1)	7.237(1) 7.269(1)	6.884(2) 6.976(1)
	7.633(1) 7.768(2)	8.531(1) 9.210(2)	6.864(1) 7.123(2)	7.446(1) 8.214(2)	7.546(2) 7.728(1)
	8.072(1) 8.267(1)	9.264(2) 9.586(1)	7.590(1) 7.611(1)	8.223(1) 8.263(2)	8.243(1) 8.436(1)
	8.875(2) 9.109(2)	10.376(1)10.382(2)	8.146(2) 8.249(2)	8.976(1) 9.070(1)	8.739(2) 8.778(2)
	9.823(2) 9.859(2)	10.542(2)10.674(1)	8.819(1) 8.881(2)	9.241(2) 9.584(2)	9.584(2) 9.720(2)
	9.954(1)10.945(2)	12.095(2)12.305(3)	9.029(2) 9.866(2)	10.639(2)10.889(1)	9.787(1)10.910(2)
	13.664(3)	12.733(1)	12.120(3)	11.449(3)	12.732(3)
6+	0.620(1) 1.763(1)	0.289(1) 1.854(1)	0.228(1) 1.436(1)	0.069(1) 1.432(1)	0.334(1) 1.609(1)
	2.519(1) 2.929(1)	2.753(1) 3.137(1)	2.253(1) 2.535(1)	2.526(1) 2.678(1)	2.382(1) 2.894(1)
	3.500(1) 4.303(1)	3.889(1) 4.732(1)	3.120(1) 3.689(1)	3.400(1) 4.037(1)	3.518(1) 4.127(1)
	4.712(1) 5.141(1)	5.487(1) 5.576(2)	4.217(1) 4.509(1)	4.769(1) 4.860(1)	4.752(1) 4.926(1)
	5.147(1) 5.468(1)	5.647(1) 5.709(1)	4.572(1) 5.030(1)	5.005(2) 5.046(2)	5.080(1) 5.498(1)
	5.532(1) 5.996(1)	5.829(2) 6.409(1)	5.140(1) 5.298(2)	5.071(1) 5.603(1)	5.527(1) 5.798(1)
	6.112(1) 6.182(1)	6.551(1) 6.938(1)	5.448(2) 5.483(1)	5.732(1) 6.271(1)	5.819(2) 6.096(1)
	6.245(2) 6.262(2)	7.278(1) 7.316(2)	5.628(1) 5.733(1)	6.287(1) 6.372(1)	6.172(1) 6.417(1)
	6.552(1) 6.737(1)	7.367(1) 7.943(1)	5.979(1) 6.335(1)	6.596(2) 6.807(1)	6.660(1) 6.806(1)
	7.483(1) 7.543(1)	8.156(1) 8.594(2)	6.494(1) 6.817(1)	7.051(1) 7.607(1)	7.224(2) 7.288(1)
	7.667(2) 8.416(1)	8.687(1) 9.293(2)	6.826(2) 7.396(1)	7.885(2) 8.165(1)	7.612(1) 8.273(1)
	8.527(1) 8.818(2)	9.340(1) 9.446(2)	7.472(1) 7.814(2)	8.301(2) 8.440(2)	8.311(2) 8.514(1)
	9.287(2) 9.440(2)	10.166(1)10.426(2)	8.175(2) 8.494(2)	8.809(1) 8.912(1)	8.894(2) 9.213(2)
	9.501(2)10.265(2)	10.465(1)10.700(2)	9.036(2) 9.149(2)	9.272(2) 9.531(2)	9.749(2) 9.838(2)
	11.731(2)13.575(3)	12.114(3)12.811(2)	10.423(2)11.988(3)	11.163(3)11.265(2)	11.550(2)12.736(3)
7+	1.332(1) 3.002(1)	0.945(1) 2.808(1)	0.761(1) 2.313(1)	0.556(1) 2.525(1)	0.963(1) 2.630(1)
	3.362(1) 3.741(1)	3.230(1) 3.791(1)	2.677(1) 2.964(1)	2.824(1) 3.137(1)	2.973(1) 3.339(1)
	3.846(1) 4.003(1)	4.217(1) 4.316(1)	3.295(1) 3.354(1)	3.558(1) 3.721(1)	3.760(1) 3.819(1)
	4.169(1) 4.533(1)	4.576(1) 4.785(1)	3.474(1) 3.881(1)	3.987(1) 4.263(1)	3.992(1) 4.270(1)
	5.259(1) 5.549(1)	5.736(1) 5.905(1)	4.536(1) 4.770(1)	5.029(1) 5.247(1)	5.089(1) 5.369(1)
	6.000(1) 6.303(1)	7.090(1) 7.259(1)	5.303(1) 5.638(1)	6.073(1) 6.392(1)	5.952(1) 6.179(1)
	6.352(1) 6.566(1)	7.506(1) 7.736(2)	5.685(1) 5.872(1)	6.398(1) 6.759(1)	6.247(1) 6.556(1)
	6.861(1) 7.375(1)	7.750(1) 8.104(1)	6.070(1) 6.573(1)	6.781(1) 7.017(2)	6.715(1) 7.334(1)
	7.576(1) 7.679(1)	8.275(2) 8.744(1)	6.624(1) 6.933(1)	7.567(1) 7.638(2)	7.516(1) 7.615(2)
	8.261(2) 8.288(1)	8.913(1) 9.116(2)	7.066(2) 7.178(1)	7.648(1) 8.067(2)	7.748(1) 8.015(1)
	8.629(2) 9.238(1)	9.468(1) 9.775(1)	7.542(2) 8.014(1)	8.070(1) 8.376(1)	8.179(2) 8.849(2)
	9.345(2)10.361(2)	10.563(2)10.775(2)	8.178(2) 8.925(2)	9.467(2) 9.475(2)	8.974(1) 9.965(2)
	10.471(2)14.765(3)	11.214(1)13.419(3)	9.190(2)13.083(3)	9.616(1)12.258(3)	10.068(2)13.966(3)

ENERGY LEVELS

48V - 48V

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (KEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
8+	2.474(1) 3.992(1)	2.040(1) 3.398(1)	1.631(1) 2.788(1)	1.631(1) 2.789(1)	2.008(1) 3.201(1)
	3.677(1) 3.870(1)	3.555(1) 3.849(1)	2.793(1) 3.130(1)	2.878(1) 3.459(1)	3.247(1) 3.497(1)
	4.710(1) 4.773(1)	5.135(1) 5.676(1)	4.080(1) 4.191(1)	4.396(1) 4.480(1)	4.596(1) 4.891(1)
	6.098(1) 6.349(1)	6.639(2) 6.680(1)	5.069(1) 5.436(1)	5.750(1) 5.769(1)	5.738(1) 6.128(1)
	6.365(1) 6.482(1)	6.767(1) 7.179(1)	5.495(1) 6.111(1)	5.950(2) 6.335(1)	6.145(1) 6.768(1)
	6.733(1) 7.560(2)	7.401(2) 7.900(1)	6.185(2) 6.264(1)	6.687(2) 6.775(1)	6.795(2) 7.008(1)
	7.919(1) 7.984(1)	7.941(1) 8.615(1)	6.614(1) 6.784(1)	6.814(1) 7.410(1)	7.415(1) 7.497(1)
	8.130(2) 8.299(1)	8.922(2) 9.433(1)	6.818(2) 7.025(1)	7.915(2) 7.968(1)	7.759(1) 7.991(1)
	8.483(1) 9.076(2)	9.502(1) 9.526(2)	7.126(1) 7.857(2)	8.241(1) 8.390(2)	8.228(1) 8.497(2)
	9.847(2) 10.068(2)	9.645(2) 9.937(1)	8.543(2) 8.646(2)	8.418(1) 8.450(2)	9.338(2) 9.485(2)
	11.687(2)	12.159(2)	10.050(2)	10.649(2)	11.246(2)
9+	2.825(1) 4.198(1)	2.197(1) 4.096(1)	1.759(1) 3.263(1)	1.751(1) 3.341(1)	2.200(1) 3.809(1)
	4.821(1) 5.197(1)	4.926(1) 5.356(1)	3.667(1) 4.035(1)	4.057(1) 4.367(1)	4.376(1) 4.793(1)
	5.486(1) 5.916(1)	5.604(1) 6.584(1)	4.519(1) 5.031(1)	5.004(1) 5.560(1)	5.193(1) 5.734(1)
	6.429(1) 6.644(1)	6.632(1) 6.746(1)	5.356(1) 5.373(1)	5.656(1) 5.851(1)	6.081(1) 6.115(1)
	7.141(1) 7.355(1)	7.359(1) 8.133(1)	5.982(1) 6.097(1)	6.344(1) 6.649(1)	6.662(1) 7.005(1)
	7.654(1) 7.928(1)	8.498(2) 8.555(1)	6.360(1) 6.587(1)	7.390(1) 7.412(1)	7.335(1) 7.665(1)
	8.755(1) 9.267(2)	8.782(1) 9.201(2)	7.171(1) 7.575(2)	7.540(2) 8.154(2)	8.188(1) 8.420(2)
	9.859(1) 9.931(2)	9.789(1) 10.165(2)	8.074(1) 8.244(2)	8.274(1) 8.891(2)	9.087(2) 9.188(1)
	10.180(2)	11.390(1)	8.963(2)	9.631(1)	9.880(2)
10+	4.594(1) 4.717(1)	4.130(1) 4.448(1)	3.240(1) 3.479(1)	3.408(1) 3.522(1)	3.962(1) 4.252(1)
	5.656(1) 6.472(1)	5.290(1) 6.846(1)	4.237(1) 5.324(1)	4.489(1) 5.748(1)	4.919(1) 6.122(1)
	6.595(1) 7.027(1)	7.099(1) 7.568(1)	5.535(1) 6.090(1)	6.223(1) 6.427(1)	6.267(1) 6.812(1)
	7.387(1) 8.132(1)	8.083(1) 8.394(1)	6.178(1) 6.462(1)	6.742(1) 7.192(1)	6.990(1) 7.507(1)
	9.113(1) 9.487(2)	8.472(2) 9.051(2)	7.452(1) 7.683(2)	7.440(2) 8.048(2)	8.625(2) 8.701(1)
	9.898(2) 10.750(2)	10.641(2) 10.351(1)	8.024(2) 8.952(2)	8.596(1) 8.806(2)	9.064(2) 9.979(2)
11+	4.576(1) 5.500(1)	3.791(1) 5.314(1)	2.977(1) 4.132(1)	2.991(1) 4.155(1)	3.732(1) 4.982(1)
	7.384(1) 7.400(1)	7.343(1) 7.720(1)	5.538(1) 5.838(1)	6.075(1) 6.405(1)	6.589(1) 6.902(1)
	7.609(1) 8.032(1)	7.827(1) 8.248(1)	6.101(1) 6.514(1)	6.502(1) 6.984(1)	7.165(1) 7.427(1)
	9.668(1) 10.434(2)	9.622(2) 10.517(1)	7.655(1) 8.431(2)	8.249(2) 8.800(1)	8.839(1) 9.594(2)
12+	6.972(1) 7.327(1)	6.414(1) 6.682(1)	5.068(1) 5.340(1)	5.444(1) 5.458(1)	6.129(1) 6.423(1)
	8.026(1) 8.361(1)	7.467(1) 8.404(1)	5.965(1) 6.258(1)	6.204(1) 6.901(1)	7.048(1) 7.561(1)
	11.327(2)	10.408(2)	9.169(2)	9.001(2)	10.415(2)
13+	6.884(1) 8.145(1)	5.903(1) 7.545(1)	4.665(1) 6.002(1)	4.813(1) 6.318(1)	5.722(1) 7.192(1)
	9.534(1)	9.461(1)	7.108(1)	7.838(1)	8.462(1)
14+	8.775(1)	8.203(1)	6.354(1)	6.551(1)	7.842(1)
15+	9.495(1)	8.414(1)	6.600(1)	6.752(1)	8.088(1)

48CR - 48CR

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (KEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (KEV)
0+	0.0 (0) 5.891(0)	0.0 (0) 6.089(0)	0.0 (0) 5.039(0)	0.0 (0) 5.958(0)	0.0 (0) 5.363(0)
	6.215(0) 6.601(0)	7.414(2) 7.833(0)	6.275(0) 6.551(0)	6.932(2) 7.656(0)	6.677(0) 6.798(0)
	7.989(2) 8.485(0)	8.305(0) 10.175(0)	7.284(2) 7.652(0)	7.867(0) 9.335(0)	7.808(2) 8.530(0)
	10.224(1) 11.011(1)	11.257(1) 12.552(2)	9.514(1) 10.028(0)	10.634(1) 12.109(1)	9.822(1) 10.885(1)
	11.024(0) 12.610(2)	12.770(1) 13.422(0)	10.468(1) 11.623(2)	12.133(0) 12.237(2)	10.890(0) 12.106(2)
	16.137(2) 25.623(4)	17.610(2) 22.821(4)	14.784(2) 23.057(4)	16.331(2) 21.840(4)	16.060(2) 24.074(4)
1+	5.473(1) 7.012(1)	5.205(1) 7.015(1)	4.691(1) 6.199(1)	5.576(1) 7.097(1)	4.863(1) 6.613(1)
	7.478(1) 7.783(0)	8.238(1) 9.049(0)	6.988(1) 7.274(0)	7.905(1) 8.645(0)	7.539(1) 7.838(0)
	8.245(1) 8.913(1)	9.110(1) 9.899(1)	7.871(1) 8.148(1)	8.818(1) 9.288(1)	8.346(1) 8.971(1)
	9.031(0) 9.253(0)	10.513(1) 10.899(0)	8.474(0) 8.663(1)	9.766(1) 10.648(1)	9.036(0) 9.396(1)
	9.457(1) 9.942(1)	11.029(1) 11.215(2)	8.864(0) 9.502(1)	10.665(0) 10.698(0)	9.504(0) 10.024(1)
	10.561(1) 11.053(1)	11.658(0) 11.764(1)	9.890(1) 10.128(1)	11.063(2) 11.143(1)	10.508(1) 10.759(1)
	11.653(2) 11.783(1)	12.504(1) 13.627(1)	10.577(2) 10.806(1)	11.742(1) 12.615(1)	11.143(2) 11.786(1)
	13.258(1) 14.583(2)	15.332(2) 15.703(1)	12.137(1) 13.476(2)	14.379(1) 14.436(2)	13.344(1) 14.229(2)
	20.987(3)	20.894(3)	18.897(3)	19.529(3)	20.313(3)
2+	1.207(0) 3.160(0)	1.125(0) 3.142(0)	0.985(0) 2.696(0)	1.298(0) 3.225(0)	1.021(0) 2.844(0)
	5.021(1) 5.792(0)	4.898(1) 6.705(1)	4.457(1) 5.332(0)	5.035(1) 6.473(1)	4.527(1) 5.769(0)
	6.208(0) 6.695(1)	6.752(0) 7.359(0)	5.859(0) 5.964(1)	6.683(0) 7.280(1)	6.228(0) 6.277(1)
	7.030(0) 7.241(1)	7.430(1) 8.274(0)	6.383(0) 6.444(1)	7.310(0) 7.766(0)	6.708(1) 6.902(0)
	7.532(0) 7.907(0)	8.534(2) 8.636(1)	7.206(0) 7.463(1)	8.206(1) 8.284(2)	7.772(1) 7.778(0)
	8.007(1) 8.267(0)	9.123(1) 9.272(0)	7.505(0) 7.838(0)	8.634(0) 8.844(1)	7.986(0) 8.342(1)
	8.286(1) 8.736(1)	9.332(1) 9.410(2)	7.848(1) 7.947(1)	8.928(1) 9.069(0)	8.370(0) 8.597(1)
	8.979(0) 9.004(1)	9.523(0) 9.525(1)	8.182(1) 8.274(2)	9.104(0) 9.142(1)	8.783(1) 8.809(2)
	9.252(2) 9.469(0)	9.720(0) 9.879(0)	8.427(0) 8.491(0)	9.217(2) 9.413(0)	8.988(0) 9.123(0)
	9.489(1) 9.522(0)	10.756(1) 11.147(0)	8.876(1) 9.053(2)	10.228(1) 10.436(0)	9.534(1) 9.663(2)
	10.003(2) 10.300(0)	11.176(2) 11.773(1)	9.104(0) 9.414(0)	10.749(2) 11.044(0)	9.827(0) 10.349(0)
	10.633(1) [illegible](1)	12.025(0) 12.298(1)	9.683(1) 10.045(1)	11.107(1) 11.356(1)	10.419(1) 10.687(1)
	11.156(1) 11.273(0)	12.820(0) 12.828(1)	10.306(1) 10.433(2)	11.542(0) 12.029(1)	10.798(1) 11.032(2)
	11.661(2) 12.082(1)	12.837(2) 14.114(1)	10.543(0) 11.176(1)	12.303(2) 12.912(0)	11.464(0) 11.852(1)
	12.553(1) 12.856(2)	14.115(0) 14.280(2)	11.428(1) 11.767(2)	13.011(1) 13.478(2)	12.313(2) 12.541(1)
	13.742(2) 14.096(2)	14.607(2) 14.752(1)	12.772(2) 12.958(2)	13.529(1) 13.729(2)	13.369(2) 13.557(2)
	15.423(2) 17.610(2)	16.711(2) 18.381(3)	14.172(2) 15.772(2)	15.483(2) 17.405(3)	15.241(2) 17.453(2)
	18.926(3)	19.461(2)	17.521(3)	17.800(2)	18.226(3)

ENERGY LEVELS

46CR - 48CA

J	42SC-INT	54CO-INT	48SC-INT	42SC*-INT	48SC*-INT
J	ENERGY(T) (MEV)	ENERGY(T) (MEV)	ENERGY(T) (MEV)	ENERGY(T) (MEV)	ENERGY(T) (MEV)
3+	5.625(0) 5.921(0)	5.813(1) 5.982(0)	4.953(0) 5.271(1)	5.973(0) 5.993(1)	5.239(0) 5.392(1)
	5.948(1) 6.076(1)	6.014(1) 6.844(0)	5.304(1) 5.479(0)	6.185(1) 6.552(0)	5.617(1) 5.885(0)
	6.425(0) 6.684(1)	6.936(1) 7.455(0)	5.911(1) 5.930(0)	6.617(1) 7.394(0)	6.322(0) 6.372(1)
	7.333(0) 7.788(0)	8.314(1) 8.330(1)	6.659(0) 6.943(0)	7.893(1) 8.024(1)	7.198(0) 7.582(0)
	7.948(1) 8.160(1)	8.398(0) 8.560(1)	7.197(1) 7.221(1)	8.042(0) 8.459(1)	7.728(1) 7.760(1)
	8.272(1) 8.447(1)	8.889(0) 9.154(1)	7.301(1) 7.750(1)	8.519(0) 8.855(1)	7.907(1) 8.246(1)
	8.561(0) 8.921(1)	9.734(1)10.148(0)	7.862(0) 8.108(1)	9.240(1) 9.450(0)	8.530(0) 8.926(1)
	9.058(1) 9.193(0)	10.161(1)10.347(2)	8.510(1) 8.513(0)	9.548(1)10.074(0)	8.971(1) 9.171(0)
	9.481(1)10.013(1)	10.652(0)10.775(1)	9.090(1) 9.204(1)	10.351(2)10.394(1)	9.654(1) 9.725(1)
	10.159(1)10.623(1)	10.931(1)11.282(1)	9.427(1) 9.792(1)	10.527(1)10.618(1)	10.280(1)10.350(2)
	10.739(1)10.912(0)	11.531(1)11.707(1)	9.882(2) 9.898(1)	10.788(1)10.959(1)	10.438(1)10.452(1)
	10.951(1)11.064(2)	12.069(1)12.570(2)	9.996(0)10.033(0)	11.464(1)11.898(1)	10.826(1)10.960(0)
	11.121(1)11.156(0)	12.729(1)12.872(1)	10.187(1)10.403(1)	11.994(1)12.144(0)	11.077(1)11.095(0)
	11.421(1)12.001(1)	13.313(0)13.521(2)	10.502(1)10.980(1)	12.244(2)12.405(0)	11.342(1)11.746(1)
	12.905(2)13.045(1)	13.689(0)13.794(1)	11.563(1)11.618(2)	12.792(2)12.878(1)	12.139(2)12.763(1)
	13.360(2)13.453(1)	14.229(2)14.816(1)	12.178(2)12.183(1)	13.406(2)13.659(1)	12.796(2)13.466(1)
	14.160(2)15.429(1)	16.038(1)16.354(2)	12.751(2)13.682(1)	14.535(1)15.297(2)	13.491(2)15.149(2)
	15.736(2)16.246(2)	17.664(3)17.800(2)	13.947(2)14.807(2)	16.321(2)16.632(1)	15.446(1)15.823(2)
	18.999(3)	18.475(1)	17.000(3)	16.929(3)	17.905(3)
4+	2.231(0) 3.050(0)	2.045(0) 3.018(0)	1.749(0) 2.508(0)	2.348(0) 3.016(0)	1.868(0) 2.770(0)
	4.894(0) 5.176(1)	4.815(1) 5.058(1)	4.311(0) 4.390(1)	4.925(1) 5.022(1)	4.593(1) 4.631(0)
	5.454(1) 5.539(0)	5.137(0) 6.141(0)	4.619(1) 4.952(0)	5.288(0) 6.049(0)	4.911(1) 5.350(0)
	6.035(0) 6.684(0)	7.000(0) 7.272(0)	5.582(0) 5.764(0)	6.925(0) 6.937(0)	5.958(0) 6.286(0)
	7.072(1) 7.332(0)	7.281(1) 7.294(1)	6.282(1) 6.446(1)	7.066(1) 7.128(1)	6.620(1) 6.878(1)
	7.468(1) 7.683(0)	8.024(1) 8.220(0)	6.514(0) 6.892(0)	7.643(0) 7.971(1)	7.144(0) 7.520(1)
	7.713(1) 7.714(0)	8.720(1) 9.128(0)	7.012(1) 7.065(0)	8.524(0) 8.582(1)	7.604(0) 7.685(0)
	8.476(0) 8.571(1)	9.176(0) 9.453(1)	7.752(1) 7.803(0)	8.650(0) 8.949(1)	8.316(1) 8.499(0)
	8.674(1) 8.845(1)	9.611(1) 9.651(2)	8.033(1) 8.048(1)	9.053(1) 9.203(0)	8.558(1) 8.615(1)
	9.038(0) 9.348(0)	9.995(0)10.073(0)	8.299(0) 8.464(1)	9.329(2) 9.482(0)	9.055(0) 9.064(1)
	9.521(1) 9.538(0)	10.073(1)10.567(2)	8.497(0) 9.062(0)	9.622(1) 9.942(0)	9.135(0) 9.591(2)
	9.675(0)10.112(1)	10.644(0)11.095(1)	9.174(1) 9.189(2)	9.981(2)10.483(1)	9.793(0) 9.864(1)
	10.120(1)10.509(2)	11.226(1)11.414(0)	9.215(0) 9.264(1)	10.641(1)10.694(0)	9.885(0) 9.986(1)
	10.816(1)10.818(0)	11.696(0)11.896(1)	9.834(0) 9.869(1)	10.757(0)11.108(1)	10.550(1)10.577(1)
	10.840(1)11.077(1)	11.935(1)11.948(2)	9.908(2) 9.923(1)	11.227(1)11.365(1)	10.616(2)10.764(0)
	11.091(2)11.216(0)	12.070(2)12.176(1)	10.159(1)10.282(1)	11.399(1)11.411(2)	10.765(1)11.043(1)
	11.249(1)11.664(1)	12.484(1)12.529(2)	10.408(0)10.667(1)	11.573(2)12.208(2)	11.273(0)11.651(2)
	11.960(2)12.217(0)	13.145(0)13.162(2)	10.980(2)11.110(0)	12.339(0)12.397(1)	11.730(1)11.764(2)
	12.227(1)12.328(1)	13.344(1)13.780(0)	11.146(2)11.160(1)	12.614(2)12.689(0)	12.067(1)12.105(2)
	12.684(2)12.817(2)	14.089(1)14.113(2)	11.330(1)11.539(2)	12.866(1)13.185(1)	12.281(1)12.399(0)
	13.036(2)13.587(1)	14.259(1)15.082(2)	11.984(2)12.131(1)	13.360(2)13.771(0)	12.699(2)13.425(1)
	14.191(2)14.438(2)	15.544(0)15.778(1)	12.671(0)12.728(2)	14.192(2)14.470(1)	13.518(2)14.124(1)
	14.478(0)14.702(1)	15.840(2)17.161(2)	13.145(1)13.494(2)	14.596(2)15.750(1)	14.141(1)14.261(2)
	15.222(2)16.098(2)	17.376(3)17.543(1)	13.561(2)14.427(2)	15.919(2)16.082(0)	14.660(2)15.721(2)
	18.720(3)	17.985(0)	16.630(3)	16.363(3)	17.547(3)
5+	4.297(0) 5.402(0)	4.405(0) 5.239(1)	3.581(0) 4.664(0)	4.185(0) 5.349(1)	3.984(0) 5.030(0)
	5.782(1) 6.113(1)	5.634(0) 5.726(1)	4.818(1) 5.174(1)	5.808(1) 5.876(0)	5.202(1) 5.465(1)
	6.457(0) 6.472(1)	6.570(1) 7.609(0)	5.677(1) 5.908(0)	6.181(1) 7.088(0)	6.161(1) 6.426(0)
	6.773(0) 7.206(0)	7.635(0) 7.752(1)	5.951(0) 6.508(0)	7.423(0) 7.455(1)	6.473(0) 7.134(0)
	7.796(1) 7.868(0)	8.015(1) 8.312(0)	6.798(1) 6.873(1)	7.772(0) 7.855(1)	7.342(1) 7.536(1)
	7.900(1) 8.433(1)	8.625(1) 8.887(0)	7.082(0) 7.419(1)	8.153(1) 8.281(0)	7.677(0) 8.010(1)
	8.442(0) 8.657(0)	9.169(1) 9.310(0)	7.706(0) 7.711(1)	8.720(0) 8.801(1)	8.292(1) 8.354(0)
	8.688(1) 9.172(1)	9.620(1) 9.836(0)	7.968(0) 8.125(1)	9.161(1) 9.398(1)	8.502(0) 8.870(1)
	9.185(1) 9.421(0)	9.932(1)10.376(1)	8.356(1) 8.538(0)	9.477(0) 9.722(1)	8.983(1) 9.316(1)
	9.534(1) 9.702(0)	10.411(1)10.622(1)	8.568(1) 8.768(0)	9.743(1)10.119(1)	9.386(3) 9.478(0)
	10.056(1)10.266(1)	10.733(0)11.008(0)	8.901(1) 9.163(1)	10.173(0)10.235(0)	9.697(1) 9.730(1)
	10.442(1)10.855(0)	11.201(1)11.616(2)	9.366(1) 9.529(0)	10.554(1)10.884(1)	10.107(1)10.447(1)
	10.870(1)10.898(1)	11.632(1)12.059(1)	9.652(1) 9.793(1)	11.076(2)11.264(1)	10.475(1)10.655(0)
	10.990(1)11.504(1)	12.388(1)12.600(2)	10.257(1)10.535(1)	11.509(1)11.616(0)	11.073(1)11.458(2)
	11.607(1)12.011(1)	13.003(0)13.076(1)	10.629(1)10.758(2)	12.132(2)12.163(1)	11.469(1)11.541(1)
	12.258(2)12.327(0)	13.254(1)13.346(1)	10.879(1)10.939(0)	12.194(1)12.371(1)	11.666(1)12.093(0)
	12.654(1)12.789(2)	14.025(2)14.079(2)	11.255(1)11.514(2)	13.140(2)13.150(1)	12.134(2)12.403(1)
	13.093(1)13.289(1)	14.401(1)14.779(0)	11.980(1)12.001(1)	13.188(2)13.468(0)	13.104(1)13.220(1)
	13.897(2)14.130(2)	15.192(1)15.197(2)	12.536(2)12.639(2)	13.901(1)13.996(1)	13.254(2)13.431(2)
	14.844(2)14.880(2)	15.357(2)15.489(1)	13.210(1)13.272(2)	14.166(2)14.509(2)	14.252(2)14.411(2)
	14.974(1)15.967(2)	16.910(2)17.120(3)	13.419(2)14.256(2)	15.565(2)15.814(1)	14.984(1)15.441(2)
	18.684(3)	17.548(1)	16.510(3)	16.375(3)	17.401(3)
6+	3.484(0) 5.025(0)	3.269(0) 4.795(0)	2.706(0) 4.039(0)	3.386(0) 4.946(0)	2.991(0) 4.410(0)
	5.533(0) 5.640(1)	5.104(1) 6.116(0)	4.618(1) 4.863(0)	4.994(1) 5.800(0)	5.093(1) 5.331(0)
	6.496(0) 6.696(0)	6.670(1) 6.893(0)	5.509(0) 5.713(0)	6.357(1) 6.570(0)	6.113(0) 6.252(0)
	6.784(1) 6.977(0)	7.144(0) 7.544(0)	5.826(1) 6.176(0)	6.985(0) 7.083(0)	6.355(1) 6.744(0)
	7.540(1) 7.708(0)	7.568(1) 7.953(1)	6.643(1) 6.701(0)	7.451(1) 7.604(1)	7.177(1) 7.330(1)
	7.924(0) 7.949(1)	8.363(0) 8.704(1)	6.865(0) 6.925(1)	7.878(0) 8.312(0)	7.353(0) 7.646(0)
	8.521(1) 8.642(0)	8.894(0) 9.548(1)	7.510(1) 7.583(0)	8.324(1) 8.795(0)	7.896(1) 8.356(2)
	8.954(0) 9.097(0)	9.552(0)10.125(0)	7.816(0) 8.079(1)	8.962(1) 9.322(0)	8.674(0) 8.871(1)
	9.324(1) 9.615(0)	10.257(0)10.303(1)	8.280(0) 8.607(1)	9.693(1) 9.757(0)	8.957(0) 9.364(1)
	9.733(1)10.162(1)	10.392(2)10.463(1)	8.843(0) 8.900(1)	9.785(1) 9.930(2)	9.468(1) 9.561(0)
	10.168(1)10.302(0)	10.524(1)10.644(2)	8.963(1) 9.421(1)	9.971(2) 9.996(1)	9.678(1)10.097(1)
	10.393(0)10.490(1)	11.197(0)11.224(1)	9.531(1) 9.540(0)	10.418(0)10.527(1)	10.135(1)10.223(2)
	10.554(1)11.017(1)	11.366(1)11.753(1)	9.547(0) 9.688(2)	10.657(1)11.197(1)	10.245(0)10.643(0)
	11.133(1)11.203(1)	12.093(1)12.131(2)	9.838(2) 9.874(1)	11.213(1)11.298(1)	10.702(2)10.717(1)
	11.266(2)11.283(2)	12.182(1)12.309(0)	9.877(0)10.005(0)	11.373(0)11.464(0)	10.760(1)10.908(0)
	11.338(0)11.366(0)	12.646(0)12.758(1)	10.018(1)10.123(1)	11.521(2)11.732(1)	10.914(1)11.169(0)
	11.573(1)11.759(1)	12.849(0)12.971(1)	10.369(1)10.726(1)	11.779(0)11.978(1)	11.296(1)11.616(1)
	12.504(1)12.564(1)	13.409(2)13.502(1)	10.884(1)11.207(1)	12.180(0)12.532(1)	11.954(1)12.131(2)
	12.688(2)12.915(0)	13.792(0)14.109(2)	11.217(2)11.446(0)	12.811(2)13.090(1)	12.407(1)12.635(0)
	13.436(1)13.549(1)	14.155(1)14.261(2)	11.786(1)11.863(1)	13.226(2)13.364(2)	12.907(1)13.020(2)
	13.839(2)14.307(2)	14.982(1)15.242(2)	12.204(2)12.565(2)	13.734(1)13.838(1)	13.141(1)13.519(2)
	14.460(2)14.523(2)	15.280(1)15.515(2)	12.884(2)13.427(2)	14.080(0)14.197(2)	13.846(2)14.393(2)
	15.285(2)16.752(2)	15.567(0)16.929(3)	13.539(2)14.813(2)	14.456(2)16.084(3)	14.614(2)16.388(2)
	18.557(3)	17.626(2)	16.378(3)	16.190(2)	17.405(3)

ENERGY LEVELS

48CR - 48CR

J	42SC-INT ENERGY(T) (MEV)	54CO-INT ENERGY(T) (MEV)	48SC-INT ENERGY(T) (MEV)	42SC*-INT ENERGY(T) (MEV)	48SC*-INT ENERGY(T) (MEV)
7+	5.953(0) 6.323(0)	5.718(0) 5.760(1)	4.749(0) 5.151(1)	5.481(1) 5.721(0)	5.249(0) 5.715(1)
	6.353(1) 7.917(0)	6.899(0) 7.623(1)	5.516(0) 6.632(0)	6.558(0) 7.450(1)	6.077(0) 7.235(1)
	7.949(0) 8.023(1)	8.045(1) 8.606(1)	6.703(1) 7.013(0)	7.749(1) 7.828(0)	7.486(0) 7.730(1)
	8.383(1) 8.762(1)	8.617(0) 8.838(0)	7.067(1) 7.354(1)	8.062(1) 8.373(0)	7.749(0) 8.013(1)
	8.844(0) 8.867(1)	9.032(1) 9.131(1)	7.663(0) 7.685(1)	8.483(1) 8.646(1)	8.400(1) 8.487(1)
	9.017(0) 9.023(1)	9.391(1) 9.600(1)	7.744(1) 7.864(1)	8.913(1) 9.139(0)	8.504(0) 8.606(1)
	9.190(1) 9.555(1)	9.859(0)10.143(0)	7.869(0) 8.271(1)	9.180(1) 9.274(0)	8.713(0) 9.056(1)
	9.625(0) 9.813(0)	10.354(0)10.551(1)	8.583(0) 8.926(0)	9.675(0) 9.954(1)	9.352(0) 9.733(0)
	10.280(1)10.570(1)	10.721(1)11.267(0)	8.927(1) 9.161(1)	10.172(1)10.222(0)	9.809(1) 9.825(1)
	10.839(0)11.020(1)	11.905(1)12.074(1)	9.577(0) 9.693(1)	10.999(1)11.317(1)	10.545(1)10.561(0)
	11.323(1)11.351(0)	12.322(1)12.552(2)	10.028(1)10.075(1)	11.323(1)11.672(0)	11.078(1)11.104(1)
	11.374(1)11.586(1)	12.555(0)12.565(1)	10.198(0)10.263(1)	11.684(1)11.706(1)	11.231(1)11.338(0)
	11.882(1)12.396(1)	12.920(1)13.090(2)	10.460(1)10.569(0)	11.942(2)12.103(0)	11.436(1)11.883(0)
	12.475(0)12.597(1)	13.559(1)13.556(0)	10.964(1)11.019(1)	12.492(1)12.562(2)	11.975(1)12.100(1)
	12.701(1)13.283(2)	13.725(1)13.932(2)	11.323(1)11.457(2)	12.573(1)12.950(0)	12.281(2)12.451(1)
	13.308(1)13.650(2)	14.132(0)14.283(1)	11.568(1)11.932(2)	12.993(2)12.996(1)	12.729(2)12.847(1)
	14.259(1)14.367(2)	14.591(1)15.378(2)	12.405(1)12.568(2)	13.300(1)14.392(2)	13.461(2)14.089(1)
	15.382(2)15.492(2)	15.590(2)16.029(1)	13.315(2)13.580(2)	14.401(2)14.541(1)	14.645(2)14.785(2)
	19.785(3)	18.234(3)	17.474(3)	17.183(3)	18.673(3)
8+	5.002(0) 6.200(0)	4.573(0) 5.883(0)	3.796(0) 4.918(0)	4.679(0) 5.804(0)	4.245(0) 5.467(0)
	6.645(0) 7.110(0)	6.348(0) 6.856(1)	5.284(0) 6.021(1)	5.992(0) 6.556(1)	5.943(0) 6.687(1)
	7.495(1) 7.515(0)	7.859(0) 7.990(0)	6.035(0) 6.235(0)	7.003(0) 7.536(0)	6.863(0) 6.994(0)
	8.301(0) 8.375(0)	8.213(1) 8.371(1)	6.863(0) 7.179(1)	7.714(1) 7.752(0)	7.678(0) 7.868(1)
	8.613(1) 8.698(1)	8.392(0) 8.665(1)	7.183(1) 7.232(0)	7.803(1) 8.384(1)	7.961(1) 8.143(0)
	8.891(1) 9.543(0)	9.411(0) 9.950(1)	7.521(1) 8.415(0)	8.474(0) 9.321(1)	8.290(1) 9.285(1)
	9.732(1) 9.794(1)	10.492(1)10.930(0)	8.470(1) 8.581(1)	9.406(1) 9.974(0)	9.381(0) 9.388(1)
	9.802(0) 9.930(0)	10.949(0)11.455(2)	8.652(0) 8.933(0)	10.162(0)10.429(0)	9.518(0) 9.983(0)
	10.245(0)10.843(0)	11.495(1)11.522(0)	9.244(0) 9.459(1)	10.675(1)10.694(1)	10.147(0)10.435(0)
	11.120(1)11.370(1)	11.582(1)11.721(0)	9.560(0) 9.827(1)	10.875(2)10.896(0)	10.465(1)10.714(1)
	11.386(1)11.502(1)	11.994(1)12.005(0)	9.886(1) 9.909(0)	11.061(0)11.260(1)	10.742(1)11.207(0)
	11.559(0)11.753(1)	12.216(2)12.715(1)	10.501(1)10.575(2)	11.613(2)11.701(1)	11.391(1)11.404(1)
	12.581(2)12.940(1)	12.756(1)13.431(1)	10.655(1)11.004(1)	11.739(1)11.984(0)	11.503(2)12.203(2)
	13.006(1)13.152(2)	13.516(0)13.737(2)	11.174(1)11.209(2)	12.335(1)12.841(2)	12.283(1)12.532(1)
	13.319(1)13.422(0)	14.248(1)14.318(1)	11.297(0)11.419(1)	12.893(1)13.166(1)	12.711(1)12.744(0)
	13.504(1)14.097(2)	14.341(2)14.460(2)	11.516(1)12.248(2)	13.316(2)13.343(1)	12.787(1)13.067(2)
	14.867(2)15.090(2)	14.752(1)15.405(0)	12.933(2)13.036(2)	13.374(2)13.834(0)	13.965(2)14.206(2)
	16.768(2)	16.974(2)	14.440(2)	15.574(2)	16.046(2)
9+	6.986(0) 7.438(0)	6.600(0) 7.012(1)	5.407(0) 5.850(0)	6.232(0) 6.676(0)	6.147(0) 6.631(0)
	7.846(1) 8.484(0)	7.113(0) 8.911(1)	6.149(1) 7.207(0)	6.676(1) 8.266(1)	6.890(1) 8.072(0)
	9.218(1) 9.842(1)	9.049(0) 9.741(1)	7.653(1) 8.058(1)	8.444(0) 8.983(1)	8.577(1) 8.993(1)
	9.939(0) 9.974(0)	10.171(1)10.419(1)	8.173(0) 8.425(1)	9.292(1) 9.495(0)	9.293(0) 9.397(1)
	10.218(1)10.507(1)	10.681(0)11.032(0)	8.706(0) 8.909(1)	9.929(1)10.285(0)	9.606(1) 9.617(0)
	10.937(1)11.369(0)	11.399(1)11.447(1)	9.421(1) 9.699(0)	10.485(1)10.581(1)	10.379(1)10.705(1)
	11.449(1)11.665(1)	11.562(1)12.174(1)	9.746(1) 9.764(1)	10.776(1)11.269(1)	10.868(1)10.887(0)
	11.783(0)12.069(0)	12.274(0)12.949(1)	10.068(0)10.094(0)	11.278(0)11.775(1)	11.321(0)11.412(0)
	12.162(1)12.376(1)	13.117(0)13.314(2)	10.373(1)10.487(1)	12.029(0)12.075(0)	11.563(1)11.747(1)
	12.675(1)12.949(1)	13.370(1)13.598(1)	10.750(1)10.977(1)	12.316(1)12.338(1)	11.881(1)12.142(1)
	13.776(1)14.289(2)	13.768(0)14.016(2)	11.561(1)11.965(2)	12.465(2)13.079(2)	12.969(1)13.008(2)
	14.880(1)14.952(2)	14.604(1)14.981(2)	12.464(1)12.635(2)	13.199(1)13.816(2)	13.777(2)14.357(1)
	15.201(2)	16.205(1)	13.353(2)	14.556(1)	14.403(2)
10+	6.442(0) 7.616(0)	5.807(0) 7.235(0)	4.761(0) 5.912(0)	5.682(0) 6.543(0)	5.469(0) 6.839(0)
	8.412(0) 8.890(0)	8.865(0) 8.945(1)	6.801(0) 7.254(0)	7.886(0) 8.333(1)	7.847(0) 8.288(0)
	9.616(1) 9.738(1)	9.067(0) 9.263(1)	7.630(1) 7.869(1)	8.386(0) 8.448(1)	8.453(1) 8.773(1)
	10.109(0)10.677(1)	10.106(1)10.830(0)	8.570(0) 8.628(1)	9.414(1) 9.890(0)	9.671(0) 9.717(1)
	10.677(0)11.125(0)	11.107(0)11.661(1)	8.856(0) 9.356(0)	9.950(0)10.674(1)	9.907(0)10.648(0)
	11.493(1)11.616(1)	11.914(1)12.213(0)	9.714(1) 9.869(0)	10.803(0)11.147(1)	10.755(1)10.983(1)
	11.967(0)12.048(1)	12.383(1)12.637(0)	9.925(1)10.480(1)	11.352(1)11.533(0)	11.178(0)11.795(1)
	12.407(1)13.153(1)	12.898(1)13.209(1)	10.569(1)10.852(1)	11.667(1)12.117(1)	11.801(1)12.223(1)
	14.134(1)14.183(0)	13.288(2)13.866(2)	11.557(0)11.842(1)	12.365(2)12.973(2)	13.052(1)13.233(0)
	14.508(2)14.919(2)	14.857(2)15.167(1)	12.074(2)12.414(2)	13.521(1)13.731(2)	13.333(2)13.557(2)
	15.770(2)	15.883(0)	13.342(2)	14.127(0)	14.764(2)
11+	8.613(0) 9.597(1)	8.074(0) 8.606(1)	6.595(0) 7.367(1)	7.336(0) 7.917(1)	7.636(0) 8.446(1)
	10.409(0)10.522(1)	10.130(1)10.828(0)	8.522(1) 8.605(0)	9.080(1)10.215(0)	9.678(0) 9.736(1)
	11.096(0)12.247(0)	11.789(0)12.159(1)	9.048(0) 9.789(0)	10.378(0)11.000(1)	10.427(0)11.226(0)
	12.405(1)12.421(1)	12.535(1)12.609(0)	9.928(1)10.228(1)	11.330(1)11.427(1)	11.358(1)11.366(1)
	12.630(1)13.053(1)	12.643(1)13.063(1)	10.491(1)10.904(1)	11.450(0)11.909(1)	11.646(1)12.302(1)
	14.688(1)15.455(2)	14.437(2)15.333(1)	12.045(1)12.822(2)	13.174(2)13.726(1)	13.949(1)14.208(2)
12+	7.874(0)10.265(0)	7.113(0)10.027(0)	5.696(0) 8.063(0)	6.369(0) 8.917(0)	6.783(0) 9.391(0)
	10.882(0)11.190(0)	10.998(0)11.229(1)	8.675(0) 8.880(0)	9.977(0)10.170(0)	10.080(0)10.163(0)
	11.992(1)12.348(1)	11.498(1)11.562(0)	9.458(1) 9.730(1)	10.369(1)10.383(1)	10.532(1)11.078(1)
	13.046(1)13.226(0)	12.282(1)13.219(1)	10.356(1)10.585(0)	11.129(1)11.826(1)	11.791(1)12.117(1)
	13.382(1)16.348(2)	13.914(0)15.223(2)	10.648(1)13.560(2)	12.376(0)13.926(2)	12.188(0)15.180(2)
13+	11.549(0)11.879(0)	10.718(1)11.292(0)	9.056(1) 9.166(0)	9.738(1)10.187(0)	10.556(1)10.603(0)
	11.905(1)13.166(1)	11.920(0)12.360(1)	9.285(0)10.392(1)	10.339(0)11.243(1)	10.786(0)11.843(1)
	14.555(1)	14.276(1)	11.498(1)	12.763(1)	13.431(1)
14+	10.237(0)13.796(1)	9.232(0)13.018(1)	7.337(0)10.569(0)	8.044(0)11.477(1)	8.837(0)12.245(1)
	14.067(0)	13.907(0)	10.744(1)	12.281(0)	12.516(0)
15+	14.516(1)	13.229(1)	10.990(1)	11.677(1)	12.937(1)
16+	13.551(0)	12.275(0)	9.796(0)	10.714(0)	11.743(0)

4.3. *E2 and M1 matrix elements (moments).* – *Table VII.*

Symbols for table VII:

EP = effective charge of the proton (e_p),

EN = effective charge of the neutron (e_n),

GP = effective g-factor of the proton [$g_p(j)$],

GN = effective g-factor of the neutron [$g_n(j)$],

J = spin of the state. The number in parenthesis indicates the lowest (1) or second-lowest (2) state of each spin.

$E2$ M.E. = $E2$ matrix element (moment) for the proton (XP) and the neutron (XN) in units of fm^2 defined by

$$\mathrm{XP} = \frac{1}{\sqrt{2J+1}}(JJ20|JJ)\langle J\| \sum_{i=1}^{n_p} \sqrt{\frac{16\pi}{5}}\, r_i^2\, Y^{(2)}(\theta_i\varphi_i)\|J\rangle\,,$$

$$\mathrm{XN} = \frac{1}{\sqrt{2J+1}}(JJ20|JJ)\langle J\| \sum_{i=1}^{n_n} \sqrt{\frac{16\pi}{5}}\, r_i^2\, Y^{(2)}(\theta_i\varphi_i)\|J\rangle\,,$$

where the suffix i runs only over the proton co-ordinate in XP and the neutron co-ordinate in XN,

Q = quadrupole moment in units of $e\,fm^2$ calculated with $EP = 1.9e$ and $EN = 0.9e$,

$M1$ M.E. = $M1$ matrix element (moment) for the proton (XP) and for the neutron (XN) defined by

$$\mathrm{XP} = \frac{1}{\sqrt{2J+1}}(JJ10|JJ)\langle J\| \sum_{i=1}^{n_p} j_i \|J\rangle\,,$$

$$\mathrm{XN} = \frac{1}{\sqrt{2J+1}}(JJ10|JJ)\langle J\| \sum_{i=1}^{n_n} j_i \|J\rangle\,.$$

G FACTOR = g-factor of the state (μ/J) in units of n.m. calculated with GP = 1.456 n.m. and GN = – 0.377 n.m.

The quadrupole moments of the lighter nucleus of each cross-conjugate pair are calculated with XP and XN by the equation

$$Q = \mathrm{XP}\cdot e_p + \mathrm{XN}\cdot e_n\,.$$

Since the expectation value of r^2 is proportional to $A^{1/3}$ (see eq. (25)) and the particle-hole relation gives $\langle j^{-1}\|E2\|j^{-1}\rangle = -\langle j\|E2\|j\rangle$, the $E2$ moment of the heavier nucleus of each cross-conjugate pair, Q', is obtained by the equation

$$Q' = [(-\mathrm{XN})\cdot e_p + (-\mathrm{XP})\cdot e_n]\left(\frac{A'}{A}\right)^{1/3},$$

where $A' = 56 - n_p - n_n$ and $A = 40 + n_p + n_n$.

The g-factors of the lighter nucleus are calculated with XP and XN by the equation

$$g \equiv \frac{\mu}{J} = \mathrm{XP}\cdot g_p(j) + \mathrm{XN}\cdot g_n(j)\,.$$

The g-factor of the corresponding state of the heavier nucleus, g', is obtained by the equation

$$g' = \mathrm{XN}\cdot g_p(j) + \mathrm{XP}\cdot g_n(j)\,.$$

E2 AND M1 MATRIX ELEMENTS (MOMENTS)   EP = 1.900 EN = C.900   GP = 1.456 GN = -0.377   (42SC-INT)

	J	E2 M.E.		Q		M1 M.E.		G FACTOR	
		XP	XN	(E FM**2)		XP	XN	(N.M.)	
41CA - 55CO		41CA	41CA	41CA	55CO	41CA	41CA	41CA	55CO
	7/2-(1)	0	-10.47	-9.43	21.95	0	1.000	-0.377	1.456
42CA - 54FE		42CA	42CA	42CA	54FE	42CA	42CA	42CA	54FE
	2+(1)	0	6.89	6.21	-14.25	0	1.000	-0.377	1.456
	4+(1)	0	1.10	0.99	-2.27	0	1.000	-0.377	1.456
	6+(1)	0	-12.07	-10.86	24.93	0	1.000	-0.377	1.456
43CA - 53MN		43CA	43CA	43CA	53MN	43CA	43CA	43CA	53MN
	3/2-(1)	0	6.38	5.75	-13.01	0	1.000	-0.377	1.456
	5/2-(1)	0	-9.88	-8.89	20.13	0	1.000	-0.377	1.456
	7/2-(1)	0	-3.55	-3.19	7.23	0	1.000	-0.377	1.456
	9/2-(1)	0	4.84	4.35	-9.85	0	1.000	-0.377	1.456
	11/2-(1)	0	-1.09	-0.98	2.21	0	1.000	-0.377	1.456
	15/2-(1)	0	-7.60	-6.84	15.48	0	1.000	-0.377	1.456
44CA - 52CR		44CA	44CA	44CA	52CR	44CA	44CA	44CA	52CR
	2+(1)	0	0	0	0	0	1.000	-0.377	1.456
	4+(1)	0	0	0	0	0	1.000	-0.377	1.456
	5+(1)	0	0	0	0	0	1.000	-0.377	1.456
	6+(1)	0	0	0	0	0	1.000	-0.377	1.456
	8+(1)	0	0	0	0	0	1.000	-0.377	1.456
	2+(2)	0	0	0	0	0	1.000	-0.377	1.456
	4+(2)	0	0	0	0	0	1.000	-0.377	1.456
45CA - 51V		45CA	45CA	45CA	51V	45CA	45CA	45CA	51V
	3/2-(1)	0	-6.48	-5.83	12.84	0	1.000	-0.377	1.456
	5/2-(1)	0	10.03	9.03	-19.87	0	1.000	-0.377	1.456
	7/2-(1)	0	3.60	3.24	-7.13	0	1.000	-0.377	1.456
	9/2-(1)	0	-4.91	-4.42	9.73	0	1.000	-0.377	1.456
	11/2-(1)	0	1.10	0.99	-2.18	0	1.000	-0.377	1.456
	15/2-(1)	0	7.72	6.95	-15.29	0	1.000	-0.377	1.456
46CA - 50TI		46CA	46CA	46CA	50TI	46CA	46CA	46CA	50TI
	2+(1)	0	-7.11	-6.40	13.88	0	1.000	-0.377	1.456
	4+(1)	0	-1.13	-1.02	2.21	0	1.000	-0.377	1.456
	6+(1)	0	12.44	11.19	-24.30	0	1.000	-0.377	1.456
47CA - 49SC		47CA	47CA	47CA	49SC	47CA	47CA	47CA	49SC
	7/2-(1)	0	10.96	9.87	-21.12	0	1.000	-0.377	1.456

E2 AND M1 MATRIX ELEMENTS (MOMENTS) EP = 1.900 EN = 0.900 GP = 1.456 GN = -0.377 (42SC-INT)

	J	E2 M.E.		Q		M1 M.E.		G FACTOR	
		XP	XN	(E FM**2)		XP	XN	(N.M.)	
* 41SC - 55NI *		41SC	41SC	41SC	55NI	41SC	41SC	41SC	55NI
	7/2-(1)	-10.47	0	-19.90	10.40	1.000	0	1.456	-0.377
* 42SC - 54CO *		42SC	42SC	42SC	54CO	42SC	42SC	42SC	54CO
	1+(1)	3.02	3.02	8.45	-9.18	0.500	0.500	0.540	0.540
	2+(1)	3.45	3.45	9.65	-10.50	0.500	0.500	0.540	0.540
	3+(1)	2.51	2.51	7.04	-7.65	0.500	0.500	0.540	0.540
	4+(1)	0.55	0.55	1.54	-1.67	0.500	0.500	0.540	0.540
	5+(1)	-2.32	-2.32	-6.50	7.06	0.500	0.500	0.540	0.540
	6+(1)	-6.03	-6.03	-16.89	18.37	0.500	0.500	0.540	0.540
	7+(1)	-10.56	-10.56	-29.56	32.15	0.500	0.500	0.540	0.540
* 43SC - 53FE *		43SC	43SC	43SC	53FE	43SC	43SC	43SC	53FE
	1/2-(1)					-2.334	3.334	-4.654	5.733
	3/2-(1)	-2.74	-3.04	-7.94	8.83	1.400	-0.400	2.189	-1.110
	5/2-(1)	-2.30	-8.69	-12.18	19.91	-0.367	1.367	-1.050	2.129
	7/2-(1)	-7.94	-11.21	-25.18	30.51	0.889	0.111	1.252	-0.173
	9/2-(1)	-6.07	-3.05	-14.28	12.07	0.656	0.344	0.826	0.253
	11/2-(1)	-7.07	1.14	-12.41	4.50	0.546	0.454	0.624	0.455
	13/2-(1)	-5.58	0.08	-10.52	5.22	0.452	0.549	0.451	0.628
	15/2-(1)	-8.26	-1.85	-17.35	11.73	0.427	0.573	0.407	0.673
	17/2-(1)	-4.88	-9.92	-18.20	24.92	0.337	0.663	0.242	0.838
	19/2-(1)	-10.64	-12.16	-31.16	35.04	0.368	0.632	0.298	0.781
	3/2-(2)	2.13	4.26	7.87	-10.72	0.333	0.667	0.234	0.845
	5/2-(2)	2.55	3.98	8.43	-10.57	0.348	0.652	0.261	0.818
	7/2-(2)	-2.84	4.25	-1.57	-5.91	0.548	0.452	0.628	0.452
	9/2-(2)	4.46	-4.60	4.33	5.06	0.091	0.909	-0.210	1.289
	11/2-(2)	0.63	1.52	2.57	-3.71	0.331	0.670	0.229	0.850
	13/2-(2)	3.22	-5.86	0.85	8.82	0.236	0.764	0.055	1.024
	15/2-(2)	-2.53	-5.07	-9.37	12.77	0.333	0.667	0.234	0.845
* 44SC - 52MN *		44SC	44SC	44SC	52MN	44SC	44SC	44SC	52MN
	1+(1)	-1.00	-3.01	-4.61	7.00	1.814	-0.814	2.948	-1.869
	2+(1)	1.27	4.77	6.72	-10.80	0.757	0.243	1.011	0.068
	3+(1)	0.65	6.68	7.24	-14.03	0.589	0.411	0.702	0.377
	4+(1)	-0.26	0.13	-0.37	-0.02	0.490	0.510	0.521	0.558
	5+(1)	-1.70	-1.37	-4.46	4.37	0.462	0.538	0.470	0.609
	6+(1)	-7.21	-16.75	-28.77	40.50	0.510	0.490	0.557	0.522
	7+(1)	-9.66	-6.01	-23.76	21.26	0.481	0.519	0.504	0.575
	8+(1)	-5.30	-4.31	-13.95	13.70	0.358	0.643	0.278	0.801
	9+(1)	-10.28	-1.66	-21.01	13.10	0.383	0.617	0.325	0.754
	10+(1)	-4.46	-6.68	-14.48	17.67	0.282	0.718	0.140	0.940
	11+(1)	-10.72	-7.66	-27.27	25.59	0.318	0.682	0.206	0.873
	1+(2)	1.74	2.07	5.18	-5.82	0.858	0.142	1.196	-0.117
	2+(2)	-0.31	3.19	2.27	-6.11	-0.145	1.145	-0.643	1.722
	3+(2)	-2.73	-4.80	-9.51	12.24	0.777	0.223	1.047	0.032
	4+(2)	-4.62	2.26	-6.74	-0.15	0.650	0.350	0.815	0.264
	5+(2)	-6.12	-8.74	-19.50	23.39	0.585	0.415	0.696	0.383
	6+(2)	-4.59	-2.24	-10.73	8.87	0.423	0.577	0.398	0.681
	7+(2)	-2.45	-2.56	-6.96	7.48	0.355	0.645	0.274	0.805
	8+(2)	-6.23	3.10	-9.04	-0.30	0.358	0.642	0.279	0.800
	9+(2)	0.17	-5.30	-4.46	10.50	0.239	0.761	0.062	1.017
* 45SC - 51CR *		45SC	45SC	45SC	51CR	45SC	45SC	45SC	51CR
	1/2-(1)					-2.334	3.334	-4.654	5.733
	3/2-(1)	-3.78	-4.33	-11.09	12.13	1.614	-0.613	2.581	-1.501
	5/2-(1)	-0.94	-7.31	-8.37	15.37	0.624	0.376	0.766	0.313
	7/2-(1)	-9.07	-10.33	-26.54	28.98	0.939	0.061	1.344	-0.265
	9/2-(1)	-4.56	-4.66	-12.84	13.50	0.601	0.399	0.725	0.354
	11/2-(1)	-6.35	-4.54	-16.16	14.95	0.531	0.469	0.596	0.483
	13/2-(1)	-3.18	0.53	-5.56	1.93	0.389	0.611	0.336	0.743
	15/2-(1)	-7.28	-12.84	-25.38	32.26	0.407	0.593	0.369	0.710
	17/2-(1)	-5.09	-3.80	-13.10	12.31	0.335	0.665	0.237	0.843
	19/2-(1)	-10.51	-0.29	-20.24	10.44	0.365	0.635	0.291	0.788
	21/2-(1)	-4.36	0	-8.29	4.09	0.267	0.733	0.113	0.967
	23/2-(1)	-10.80	0	-20.53	10.14	0.304	0.696	0.181	0.898
	1/2-(2)					-2.334	3.334	-4.654	5.733
	3/2-(2)	2.71	5.70	10.27	-13.83	-0.024	1.024	-0.421	1.500
	5/2-(2)	2.59	6.07	10.38	-14.45	0.200	0.800	-0.011	1.090
	7/2-(2)	-1.90	-1.15	-4.65	4.06	0.609	0.391	0.740	0.339
	9/2-(2)	1.75	4.15	7.06	-9.87	0.305	0.695	0.182	0.897
	11/2-(2)	-3.00	-0.32	-5.99	3.45	0.430	0.570	0.412	0.667
	13/2-(2)	-4.53	-5.45	-13.52	15.05	0.421	0.579	0.395	0.685
	15/2-(2)	-6.88	3.20	-10.18	0.11	0.401	0.599	0.359	0.720
	17/2-(2)	-9.59	2.65	-15.83	3.74	0.394	0.606	0.345	0.734
	19/2-(2)	0.53	0.29	1.27	-1.07	0.222	0.778	0.030	1.050

E2 AND M1 MATRIX ELEMENTS (MOMENTS) EP = 1.900 EN = 0.900 GP = 1.456 GA = -0.377 (42SC-INT)

	J	E2 M.E. XP	E2 M.E. XN	Q (E FM**2)	Q (E FM**2)	M1 M.E. XP	M1 M.E. XN	G FACTOR (N.M.)	G FACTOR (N.M.)
* 46SC - 50V *		46SC	46SC	46SC	50V	46SC	46SC	46SC	50V
	1+(1)	0.30	-2.21	-1.42	4.05	1.372	-0.372	2.138	-1.059
	2+(1)	2.40	-1.26	3.42	0.25	0.633	0.367	0.783	0.296
	3+(1)	0.38	1.58	2.15	-3.44	0.635	0.365	0.798	0.292
	4+(1)	-2.01	6.59	2.12	-11.02	0.595	0.405	0.713	0.366
	5+(1)	-4.03	-10.93	-17.49	25.09	0.534	0.466	0.601	0.478
	6+(1)	-6.36	-5.14	-16.72	15.93	0.497	0.503	0.535	0.545
	7+(1)	-10.12	1.82	-17.50	5.80	0.487	0.513	0.516	0.563
	8+(1)	-5.39	-4.77	-14.53	14.30	0.353	0.647	0.271	0.808
	9+(1)	-9.01	1.18	-16.05	6.03	0.364	0.637	0.289	0.790
	10+(1)	-4.52	6.78	-2.49	-9.07	0.282	0.718	0.140	0.940
	11+(1)	-10.88	7.77	-13.68	-5.12	0.318	0.682	0.206	0.873
	1+(2)	-0.42	-0.15	-0.93	0.68	-0.943	1.943	-2.105	3.184
	2+(2)	-4.92	-1.73	-10.91	7.93	1.264	-0.264	1.939	-0.860
	3+(2)	1.80	-1.57	2.00	1.41	0.390	0.610	0.337	0.742
	4+(2)	-1.05	-11.12	-12.00	22.69	0.535	0.465	0.604	0.479
	5+(2)	-4.51	7.19	-2.10	-9.88	0.542	0.458	0.617	0.462
	6+(2)	-6.80	9.46	-4.40	-12.19	0.493	0.507	0.527	0.552
	7+(2)	0.03	-2.50	-2.19	4.86	0.289	0.712	0.152	0.927
	8+(2)	-7.42	0.12	-13.99	6.63	0.380	0.620	0.319	0.760
	9+(2)	-1.26	5.88	2.91	-10.33	0.259	0.741	0.097	0.982
* 47SC - 49TI *		47SC	47SC	47SC	49TI	47SC	47SC	47SC	49TI
	1/2-(1)					-2.334	3.334	-4.654	5.733
	3/2-(1)	-4.67	-2.02	-10.69	8.16	1.794	-0.794	2.911	-1.032
	5/2-(1)	-3.76	2.82	-4.61	-2.00	1.004	-0.004	1.463	-0.383
	7/2-(1)	-10.15	-6.11	-24.78	21.03	0.973	0.027	1.407	-0.320
	9/2-(1)	-4.79	-4.87	-13.48	13.76	0.608	0.392	0.737	0.342
	11/2-(1)	-9.65	-8.35	-25.85	24.90	0.608	0.392	0.738	0.341
	13/2-(1)	1.06	3.26	4.95	-7.26	0.290	0.711	0.154	0.925
	15/2-(1)	-4.56	3.36	-5.65	-2.31	0.365	0.636	0.291	0.788
	17/2-(1)	-5.03	10.22	-0.35	-15.10	0.337	0.663	0.242	0.838
	19/2-(1)	-10.96	12.53	-9.55	-14.13	0.368	0.632	0.298	0.781
	3/2-(2)	4.04	0.77	8.37	-5.17	-0.060	1.060	-0.488	1.567
	5/2-(2)	2.05	0.81	4.62	-3.43	-0.127	1.127	-0.610	1.689
	7/2-(2)	-1.28	-0.59	-2.96	2.30	0.604	0.397	0.729	0.350
	9/2-(2)	1.15	2.82	4.72	-6.49	0.312	0.688	0.195	0.884
	11/2-(2)	5.10	4.05	13.33	-12.45	0.159	0.841	-0.086	1.165
	13/2-(2)	-3.49	2.69	-4.21	-1.99	0.398	0.602	0.352	0.727
	15/2-(2)	-6.55	3.76	-9.06	-1.27	0.396	0.604	0.349	0.730
* 48SC - 48SC *		48SC	48SC	48SC	48SC	48SC	48SC	48SC	48SC
	1+(1)	3.15	-3.15	3.15	3.15	0.500	0.500	0.540	0.540
	2+(1)	3.60	-3.60	3.60	3.60	0.500	0.500	0.540	0.540
	3+(1)	2.63	-2.63	2.63	2.63	0.500	0.500	0.540	0.540
	4+(1)	0.57	-0.57	0.57	0.57	0.500	0.500	0.540	0.540
	5+(1)	-2.43	2.43	-2.43	-2.43	0.5C	0.500	0.540	0.540
	6+(1)	-6.31	6.31	-6.31	-6.31	0.500	0.500	0.540	0.540
	7+(1)	-11.04	11.04	-11.04	-11.04	0.500	0.500	0.540	0.540
* 42TI - 54NI *		42TI	42TI	42TI	54NI	42TI	42TI	42TI	54NI
	2+(1)	6.89	0	13.10	-6.75	1.000	0	1.456	-0.377
	4+(1)	1.10	0	2.08	-1.07	1.000	0	1.456	-0.377
	6+(1)	-12.07	0	-22.93	11.81	1.000	0	1.456	-0.377
* 43TI - 53CO *		43TI	43TI	43TI	53CO	43TI	43TI	43TI	53CO
	1/2-(1)					3.334	-2.334	5.733	-4.654
	3/2-(1)	-3.04	-2.74	-8.24	8.51	-0.400	1.400	-1.110	2.189
	5/2-(1)	-8.69	-2.30	-18.57	13.06	1.367	-0.367	2.129	-1.050
	7/2-(1)	-11.21	-7.94	-28.45	27.00	0.111	0.889	-0.173	1.252
	9/2-(1)	-3.05	-6.07	-11.26	15.31	0.344	0.656	0.253	0.826
	11/2-(1)	1.14	-7.07	-4.20	13.30	0.454	0.546	0.455	0.674
	13/2-(1)	0.08	-5.58	-4.87	11.28	0.549	0.452	0.628	0.451
	15/2-(1)	-1.05	-8.26	-10.94	18.60	0.573	0.427	0.673	0.497
	17/2-(1)	-9.92	-4.88	-23.24	19.52	0.663	0.337	0.838	0.242
	19/2-(1)	-12.16	-10.64	-32.68	33.41	0.632	0.368	0.781	0.798
	3/2-(2)	4.26	2.13	10.00	-8.44	0.667	0.333	0.845	0.234
	5/2-(2)	3.98	2.55	9.86	-9.03	0.652	0.348	0.818	0.261
	7/2-(2)	4.25	-2.84	5.51	1.69	0.452	0.548	0.452	0.628
	9/2-(2)	-4.60	4.46	-4.72	-4.65	0.909	0.091	1.289	-0.210
	11/2-(2)	1.52	0.63	3.46	-2.76	0.670	0.331	0.850	0.229
	13/2-(2)	-5.86	3.22	-8.23	-0.91	0.764	0.236	1.024	0.055
	15/2-(2)	-5.07	-2.53	-11.91	10.05	0.667	0.333	0.845	0.234

E2 AND M1 MATRIX ELEMENTS (MOMENTS) EP = 1.900 EN = 0.900 GP = 1.456 GN = -0.377 (42SC-INT)

	J	E2 M.E. XP	E2 M.E. XN	Q (E FM**2)	Q (E FM**2)	M1 M.E. XP	M1 M.E. XN	G FACTOR (N.M.)	G FACTOR (N.M.)
* 44TI - 52FE *		44TI	44TI	44TI	52FE	44TI	44TI	44TI	52FE
	1+(1)	-2.00	-2.00	-5.61	5.93	0.500	0.500	0.540	0.540
	2+(1)	6.45	6.45	18.05	-19.08	0.500	0.500	0.540	0.540
	3+(1)	-1.91	-1.91	-5.36	5.67	0.500	0.500	0.540	0.540
	4+(1)	4.95	4.95	13.85	-14.65	0.500	0.500	0.540	0.540
	5+(1)	-2.12	-2.12	-5.92	6.26	0.500	0.500	0.540	0.540
	6+(1)	-6.89	-6.89	-19.28	20.38	0.500	0.500	0.540	0.540
	7+(1)	-6.86	-6.86	-19.20	20.30	0.500	0.500	0.540	0.540
	8+(1)	-3.02	-3.02	-8.47	8.95	0.500	0.500	0.540	0.540
	9+(1)	-4.60	-4.60	-12.87	13.60	0.500	0.500	0.540	0.540
	10+(1)	-5.86	-5.86	-16.40	17.34	0.500	0.500	0.540	0.540
	11+(1)	-9.19	-9.19	-25.74	27.21	0.500	0.500	0.540	0.540
	12+(1)	-12.25	-12.25	-34.31	36.28	0.500	0.500	0.540	0.540
	1+(2)	1.91	1.91	5.34	-5.64	0.500	0.500	0.540	0.540
	2+(2)	-4.90	-4.90	-13.73	14.52	0.500	0.500	0.540	0.540
	3+(2)	3.66	3.66	10.26	-10.84	0.500	0.500	0.540	0.540
	4+(2)	0.35	0.35	0.98	-1.03	0.500	0.500	0.540	0.540
	5+(2)	-1.53	-1.53	-4.29	4.54	0.500	0.500	0.540	0.540
	6+(2)	-0.59	-0.59	-1.64	1.74	0.500	0.500	0.540	0.540
	7+(2)	-7.83	-7.83	-21.93	23.19	0.500	0.500	0.540	0.540
	8+(2)	-1.16	-1.16	-3.25	3.44	0.500	0.500	0.540	0.540
	9+(2)	-5.97	-5.97	-16.70	17.66	0.500	0.500	0.540	0.540
	10+(2)	-6.13	-6.13	-17.17	18.15	0.500	0.500	0.540	0.540
* 45TI - 51MN *		45TI	45TI	45TI	51MN	45TI	45TI	45TI	51MN
	1/2-(1)					2.313	-1.312	3.862	-2.783
	3/2-(1)	4.92	3.70	12.68	-11.95	-0.120	1.120	-0.596	1.675
	5/2-(1)	-7.15	-9.69	-22.30	25.89	0.046	0.954	-0.292	1.371
	7/2-(1)	0.81	-4.52	-2.53	8.20	0.119	0.881	-0.159	1.238
	9/2-(1)	2.64	2.55	7.32	-7.53	0.316	0.684	0.203	0.876
	11/2-(1)	5.46	-1.55	8.97	-2.05	0.268	0.732	0.114	0.966
	13/2-(1)	1.02	4.81	6.27	-10.49	0.460	0.540	0.467	0.612
	15/2-(1)	1.99	-2.50	1.46	3.24	0.390	0.610	0.337	0.742
	17/2-(1)	-10.82	-17.54	-36.33	44.89	0.673	0.327	0.856	0.223
	19/2-(1)	-10.02	-6.93	-25.27	23.12	0.575	0.425	0.677	0.402
	21/2-(1)	-9.64	-4.54	-22.40	18.05	0.526	0.474	0.587	0.492
	23/2-(1)	-10.19	-3.16	-22.20	15.82	0.488	0.512	0.517	0.562
	25/2-(1)	-8.92	-6.34	-22.65	20.94	0.436	0.564	0.421	0.658
	27/2-(1)	-12.35	-7.72	-30.40	26.87	0.444	0.556	0.438	0.641
	1/2-(2)					1.309	-0.309	2.022	-0.943
	3/2-(2)	-3.83	-4.15	-11.01	11.81	0.062	0.938	-0.264	1.343
	5/2-(2)	0.20	1.23	1.48	-2.62	0.457	0.543	0.461	0.619
	7/2-(2)	3.98	6.81	13.70	-17.23	0.303	0.697	0.178	0.901
	9/2-(2)	-1.38	-0.64	-3.19	2.56	0.448	0.552	0.444	0.635
	11/2-(2)	-3.39	2.67	-4.04	-2.11	0.458	0.543	0.462	0.617
	13/2-(2)	-3.16	-8.08	-13.27	18.97	0.669	0.331	0.849	0.230
	15/2-(2)	-6.05	-2.63	-13.87	10.88	0.386	0.614	0.330	0.749
	17/2-(2)	-6.19	0.95	-10.91	3.92	0.485	0.515	0.511	0.568
	19/2-(2)	1.44	-4.38	-1.21	7.33	0.391	0.609	0.340	0.740
	21/2-(2)	-6.65	1.36	-11.40	3.54	0.461	0.540	0.467	0.612
	23/2-(2)	0.37	-7.14	-5.73	13.81	0.371	0.629	0.304	0.775
* 46TI - 50CR *		46TI	46TI	46TI	50CR	46TI	46TI	46TI	50CR
	1+(1)	-1.84	-1.34	-4.70	4.31	0.546	0.454	0.623	0.456
	2+(1)	5.38	3.30	13.19	-11.43	0.484	0.516	0.510	0.569
	3+(1)	0.75	2.86	4.00	-6.29	0.370	0.630	0.301	0.778
	4+(1)	4.92	2.33	11.44	-9.10	0.291	0.709	0.156	0.923
	5+(1)	-1.01	-3.63	-5.19	8.03	0.127	0.873	-0.144	1.223
	6+(1)	1.18	-4.90	-2.16	8.47	0.402	0.598	0.360	0.719
	7+(1)	0.40	0.59	1.29	-1.52	0.332	0.668	0.232	0.847
	8+(1)	2.66	-1.81	3.42	1.08	0.364	0.636	0.290	0.789
	9+(1)	-6.76	0.34	-12.53	5.58	0.530	0.470	0.594	0.485
	10+(1)	-8.79	-9.92	-25.63	27.52	0.534	0.467	0.601	0.478
	11+(1)	-9.19	-4.87	-21.85	18.03	0.488	0.512	0.518	0.561
	12+(1)	-11.59	-0.51	-22.48	11.73	0.487	0.513	0.516	0.563
	13+(1)	-8.88	0	-16.88	8.22	0.418	0.582	0.388	0.691
	14+(1)	-12.44	0	-23.63	11.51	0.429	0.571	0.409	0.670
	1+(2)	-1.33	0.74	-1.86	-0.22	0.485	0.515	0.513	0.566
	2+(2)	-2.27	3.28	-1.35	-4.31	0.387	0.613	0.332	0.747
	3+(2)	-4.39	-4.94	-12.79	13.72	0.046	0.954	-0.293	1.373
	4+(2)	-6.03	-5.88	-16.75	17.07	0.062	0.938	-0.263	1.342
	5+(2)	1.69	2.43	5.40	-6.31	0.394	0.606	0.346	0.734
	6+(2)	-4.98	-8.77	-17.37	21.75	0.622	0.378	0.763	0.316
	7+(2)	-7.08	-7.56	-20.26	21.32	0.703	0.297	0.912	0.167
	8+(2)	-5.52	-5.81	-15.72	16.46	0.559	0.441	0.648	0.431
	9+(2)	-6.14	-10.57	-21.18	26.33	0.554	0.446	0.638	0.441
	10+(2)	-1.86	-4.72	-7.78	10.95	0.434	0.566	0.419	0.660
	11+(2)	-10.18	1.96	-17.57	5.59	0.495	0.505	0.530	0.550
	12+(2)	1.10	-0.14	1.96	-0.75	0.345	0.655	0.255	0.824

E2 AND M1 MATRIX ELEMENTS (MOMENTS) EP = 1.900 EN = 0.900 GP = 1.456 GN = -0.377 (42SC-INT)

	J	E2 M.E. XP	E2 M.E. XN	Q (E FM**2)	Q (E FM**2)	M1 M.E. XP	M1 M.E. XN	G FACTOR (N.M.)	G FACTOR (N.M.)
* 47TI - 49V *		47TI	47TI	47TI	49V	47TI	47TI	47TI	49V
	1/2-(1)					-0.954	1.954	-2.126	3.205
	3/2-(1)	-2.71	-6.71	-11.20	15.41	-0.184	1.184	-0.714	1.793
	5/2-(1)	2.82	9.43	13.86	-20.75	0.034	0.966	-0.314	1.394
	7/2-(1)	4.24	2.70	10.48	-9.07	0.061	0.939	-0.266	1.345
	9/2-(1)	5.95	13.82	23.74	-32.05	0.430	0.570	0.412	0.667
	11/2-(1)	6.60	1.54	13.93	-9.00	0.292	0.708	0.158	0.921
	13/2-(1)	-3.24	-3.13	-8.97	8.99	0.643	0.357	0.801	0.278
	15/2-(1)	0.94	-3.57	-1.42	6.02	0.467	0.533	0.479	0.600
	17/2-(1)	-9.86	-6.71	-24.77	21.93	0.649	0.351	0.812	0.267
	19/2-(1)	-8.98	0.92	-16.24	6.43	0.571	0.429	0.669	0.410
	21/2-(1)	-9.79	-5.78	-23.81	20.07	0.522	0.478	0.579	0.500
	23/2-(1)	-10.26	1.76	-17.91	5.98	0.487	0.513	0.515	0.564
	25/2-(1)	-9.05	6.44	-11.40	-4.15	0.436	0.564	0.421	0.658
	27/2-(1)	-12.53	7.83	-16.76	-3.65	0.444	0.556	0.438	0.641
	1/2-(2)					2.623	-1.623	4.431	-3.352
	3/2-(2)	2.00	6.05	9.25	-13.49	0.003	0.997	-0.372	1.451
	5/2-(2)	-1.57	-6.99	-9.26	14.89	0.276	0.724	0.130	0.949
	7/2-(2)	1.69	6.21	8.80	-13.51	0.337	0.663	0.240	0.839
	9/2-(2)	0.82	-4.11	-2.14	7.18	0.336	0.664	0.239	0.840
	11/2-(2)	-0.06	0.41	0.26	-0.74	0.343	0.657	0.252	0.827
	13/2-(2)	-0.64	5.00	3.28	-9.05	0.520	0.480	0.575	0.504
	15/2-(2)	0.32	-2.99	-2.09	5.47	0.377	0.623	0.314	0.766
	17/2-(2)	-4.16	5.35	-3.09	-6.51	0.485	0.515	0.512	0.567
	19/2-(2)	1.21	2.98	4.98	-6.85	0.383	0.617	0.324	0.755
	21/2-(2)	-5.71	2.31	-8.77	0.76	0.472	0.528	0.489	0.590
	23/2-(2)	-3.77	5.85	-1.89	-7.84	0.415	0.585	0.383	0.696
* 48TI - 48TI *		48TI	48TI	48TI	48TI	48TI	48TI	48TI	48TI
	1+(1)	-2.23	2.23	-2.23	-2.23	0.500	0.500	0.540	0.540
	2+(1)	3.48	-3.48	3.48	3.48	0.500	0.500	0.540	0.539
	3+(1)	0.74	-0.74	0.74	0.74	0.500	0.500	0.540	0.540
	4+(1)	4.25	-4.25	4.25	4.25	0.500	0.500	0.540	0.540
	5+(1)	-0.35	0.35	-0.35	-0.35	0.500	0.500	0.540	0.540
	6+(1)	-0.42	0.42	-0.42	-0.42	0.500	0.500	0.540	0.540
	7+(1)	-1.10	1.10	-1.10	-1.10	0.500	0.500	0.540	0.540
	8+(1)	-0.71	0.71	-0.71	-0.70	0.500	0.500	0.540	0.540
	9+(1)	-2.64	2.64	-2.64	-2.64	0.500	0.500	0.540	0.540
	10+(1)	-5.73	5.73	-5.73	-5.73	0.500	0.500	0.540	0.540
	11+(1)	-9.46	9.46	-9.46	-9.46	0.500	0.500	0.540	0.540
	12+(1)	-12.62	12.62	-12.62	-12.62	0.500	0.500	0.540	0.540
	1+(2)	0.44	-0.44	0.44	0.44	0.500	0.500	0.540	0.540
	2+(2)	-1.67	1.66	-1.67	-1.66	0.500	0.500	0.539	0.540
	3+(2)	-1.97	1.97	-1.97	-1.97	0.500	0.500	0.540	0.539
	4+(2)	-0.60	0.60	-0.60	-0.60	0.500	0.500	0.539	0.540
	5+(2)	-3.19	3.19	-3.19	-3.19	0.500	0.500	0.540	0.540
	6+(2)	-1.61	1.61	-1.61	-1.61	0.500	0.500	0.540	0.540
	7+(2)	-2.49	2.49	-2.49	-2.49	0.500	0.500	0.540	0.540
	8+(2)	-1.79	1.79	-1.79	-1.79	0.500	0.500	0.540	0.540
	9+(2)	-4.73	4.73	-4.73	-4.73	0.500	0.500	0.540	0.540
	10+(2)	-5.60	5.60	-5.60	-5.60	0.500	0.500	0.540	0.540
* 46V - 50MN *		46V	46V	46V	50MN	46V	46V	46V	50MN
	1+(1)	4.69	4.69	13.13	-13.50	0.500	0.500	0.540	0.540
	2+(1)	4.34	4.34	12.15	-12.50	0.500	0.500	0.540	0.540
	3+(1)	9.16	9.16	25.64	-26.36	0.500	0.500	0.540	0.540
	4+(1)	1.67	1.67	4.67	-4.81	0.500	0.500	0.540	0.540
	5+(1)	-14.97	-14.97	-41.91	43.09	0.500	0.500	0.540	0.540
	6+(1)	-7.65	-7.65	-21.42	22.02	0.500	0.500	0.540	0.540
	7+(1)	-3.63	-3.63	-10.15	10.44	0.500	0.500	0.540	0.540
	8+(1)	-0.73	-0.73	-2.04	2.10	0.500	0.500	0.540	0.540
	9+(1)	-1.78	-1.78	-5.00	5.14	0.500	0.500	0.540	0.540
	10+(1)	-11.94	-11.94	-33.42	34.36	0.500	0.500	0.540	0.540
	11+(1)	-4.43	-4.43	-12.39	12.74	0.500	0.500	0.540	0.540
	12+(1)	-5.11	-5.11	-14.32	14.72	0.500	0.500	0.540	0.540
	13+(1)	-4.68	-4.68	-13.10	13.47	0.500	0.500	0.539	0.540
	14+(1)	-6.22	-6.22	-17.41	17.90	0.500	0.500	0.540	0.540
	15+(1)	-7.77	-7.77	-21.77	22.38	0.500	0.500	0.540	0.540
	1+(2)	-2.98	-2.98	-8.34	8.58	0.500	0.500	0.539	0.540
	2+(2)	0.51	0.51	1.42	-1.46	0.500	0.500	0.539	0.540
	3+(2)	-4.12	-4.12	-11.53	11.85	0.500	0.500	0.540	0.540
	4+(2)	3.62	3.62	10.14	-10.43	0.500	0.500	0.540	0.540
	5+(2)	4.88	4.88	13.66	-14.05	0.500	0.500	0.540	0.540
	6+(2)	-1.86	-1.86	-5.20	5.34	0.500	0.500	0.540	0.540
	7+(2)	4.66	4.66	13.04	-13.41	0.500	0.500	0.540	0.540
	8+(2)	-8.58	-8.58	-24.02	24.69	0.500	0.500	0.540	0.540
	9+(2)	-3.57	-3.57	-10.00	10.28	0.500	0.500	0.540	0.540
	10+(2)	0.01	0.01	0.03	-0.03	0.500	0.500	0.540	0.540
	11+(2)	-4.38	-4.38	-12.27	12.61	0.500	0.500	0.540	0.540
	12+(2)	-6.05	-6.05	-16.95	17.42	0.540	0.500	0.540	0.539
	13+(2)	-4.54	-4.54	-12.72	13.08	0.500	0.500	0.540	0.540

E2 AND M1 MATRIX ELEMENTS (MOMENTS) EP = 1.900 EN = 0.900 GP = 1.456 GN = -0.377 (42SC-INT)

	J	E2 M.E.		Q		M1 M.E.		G FACTOR	
		XP	XN	(E FM**2)		XP	XN	(N.M.)	
* 47V - 49CR *		47V	47V	47V	49CR	47V	47V	47V	49CR
	1/2-(1)					-0.083	1.083	-0.529	1.609
	3/2-(1)	6.27	4.62	16.07	-14.62	1.033	-0.032	1.516	-0.496
	5/2-(1)	-8.85	-7.65	-23.71	22.82	0.873	0.127	1.223	-0.144
	7/2-(1)	-1.87	-4.85	-7.92	11.05	0.829	0.171	1.143	-0.064
	9/2-(1)	2.29	2.15	6.27	-6.22	0.612	0.388	0.744	0.335
	11/2-(1)	-0.03	-2.53	-2.33	4.91	0.653	0.347	0.820	0.259
	13/2-(1)	-4.21	-2.19	-9.97	8.07	0.446	0.555	0.440	0.643
	15/2-(1)	-2.87	-4.42	-9.43	11.13	0.513	0.487	0.563	0.516
	17/2-(1)	3.88	-2.12	5.46	0.55	0.367	0.633	0.295	0.784
	19/2-(1)	-2.00	-1.08	-4.78	3.91	0.432	0.568	0.415	0.664
	21/2-(1)	4.31	-0.61	7.64	-2.76	0.427	0.573	0.406	0.673
	23/2-(1)	-2.27	-0.60	-4.85	3.23	0.462	0.538	0.471	0.608
	25/2-(1)	-6.47	-4.22	-16.09	14.04	0.551	0.449	0.634	0.445
	27/2-(1)	-6.12	-0.42	-12.02	6.40	0.511	0.489	0.560	0.519
	29/2-(1)	-6.21	0	-11.80	5.67	0.482	0.518	0.506	0.573
	31/2-(1)	-7.83	0	-14.88	7.15	0.484	0.516	0.510	0.569
	1/2-(2)					-1.619	2.619	-3.344	4.423
	3/2-(2)	-6.04	-4.24	-15.29	13.67	0.228	0.772	0.041	1.038
	5/2-(2)	-0.03	-2.61	-2.41	5.05	0.150	0.850	-0.102	1.181
	7/2-(2)	-8.87	-7.70	-23.79	22.93	0.606	0.394	0.734	0.345
	9/2-(2)	-11.94	-6.20	-28.27	22.84	0.539	0.461	0.611	0.468
	11/2-(2)	-4.57	1.05	-7.74	2.15	0.576	0.424	0.679	0.400
	13/2-(2)	-6.45	-4.60	-16.39	14.75	0.399	0.601	0.355	0.724
	15/2-(2)	-3.09	1.42	-4.60	0.08	0.460	0.540	0.466	0.613
	17/2-(2)	-6.47	-0.07	-12.36	6.04	0.439	0.561	0.427	0.652
	19/2-(2)	-2.48	-1.15	-5.75	4.48	0.580	0.420	0.686	0.393
	21/2-(2)	-2.20	2.12	-2.27	-2.08	0.457	0.543	0.461	0.618
	23/2-(2)	-5.75	-10.54	-20.41	25.55	0.571	0.429	0.669	0.410
	25/2-(2)	-5.75	0.90	-10.12	3.52	0.511	0.489	0.559	0.520
	27/2-(2)	-1.79	-0.62	-3.97	2.84	0.449	0.551	0.446	0.633
* 48V - 48V *		48V	48V	48V	48V	48V	48V	48V	48V
	1+(1)	0.81	-0.81	0.81	0.81	0.500	0.500	0.540	0.540
	2+(1)	-1.49	1.49	-1.49	-1.49	0.500	0.500	0.540	0.540
	3+(1)	-3.69	3.69	-3.69	-3.69	0.500	0.500	0.540	0.540
	4+(1)	1.52	-1.52	1.52	1.52	0.500	0.500	0.540	0.540
	5+(1)	-2.60	2.60	-2.60	-2.60	0.500	0.500	0.540	0.540
	6+(1)	3.57	-3.57	3.57	3.57	0.500	0.500	0.540	0.540
	7+(1)	-2.00	2.00	-2.00	-2.00	0.500	0.500	0.540	0.540
	8+(1)	4.04	-4.04	4.04	4.04	0.500	0.500	0.540	0.540
	9+(1)	-1.20	1.20	-1.20	-1.20	0.500	0.500	0.540	0.540
	10+(1)	1.45	-1.45	1.45	1.45	0.500	0.500	0.540	0.540
	11+(1)	-2.62	2.62	-2.62	-2.62	0.500	0.500	0.540	0.540
	12+(1)	-1.80	1.80	-1.80	-1.80	0.500	0.500	0.540	0.540
	13+(1)	-4.51	4.51	-4.51	-4.51	0.500	0.500	0.540	0.540
	14+(1)	-6.31	6.31	-6.31	-6.31	0.500	0.500	0.540	0.540
	15+(1)	-7.88	7.88	-7.88	-7.88	0.500	0.500	0.540	0.540
	1+(2)	-1.61	1.61	-1.61	-1.61	0.500	0.500	0.540	0.540
	2+(2)	2.87	-2.87	2.87	2.87	0.500	0.500	0.539	0.540
	3+(2)	3.07	-3.07	3.07	3.07	0.500	0.500	0.540	0.540
	4+(2)	-0.77	0.77	-0.77	-0.77	0.500	0.500	0.540	0.540
	5+(2)	-2.52	2.52	-2.52	-2.52	0.500	0.500	0.540	0.540
	6+(2)	-5.84	5.84	-5.84	-5.84	0.500	0.500	0.540	0.540
	7+(2)	-2.61	2.61	-2.60	-2.61	0.500	0.500	0.540	0.540
	8+(2)	-0.74	0.74	-0.74	-0.74	0.500	0.500	0.540	0.540
	9+(2)	-3.89	3.89	-3.89	-3.89	0.500	0.500	0.540	0.540
	10+(2)	0.35	-0.35	0.35	0.35	0.500	0.500	0.540	0.539
	11+(2)	-4.50	4.50	-4.50	-4.50	0.500	0.500	0.540	0.540
	12+(2)	0.51	-0.51	0.51	0.51	0.500	0.500	0.540	0.540
	13+(2)	-3.65	3.65	-3.65	-3.65	0.500	0.500	0.540	0.540

E2 AND M1 MATRIX ELEMENTS (MOMENTS)   EP = 1.900 EN = 0.900   GP = 1.456 GN = -0.377   (42SC-INT)

****************** * *48CR - 48CR * ******************	J	E2 M.E. XP	E2 M.E. XN	Q (E FM**2)	Q (E FM**2)	M1 M.E. XP	M1 M.E. XN	G FACTOR (N.M.)	G FACTOR (N.M.)
		48CR	48CR	48CR	48CR	48CR	48CR	48CR	48CR
	1+(1)	0	0	0	0	0.500	0.500	0.540	0.540
	2+(1)	0	0	0	0	0.500	0.500	0.540	0.540
	3+(1)	0	0	0	0	0.500	0.500	0.540	0.539
	4+(1)	0	0	0	0	0.500	0.500	0.540	0.540
	5+(1)	0	0	0	0	0.500	0.500	0.540	0.540
	6+(1)	0	0	0	0	0.500	0.500	0.540	0.540
	7+(1)	0	0	0	0	0.500	0.500	0.540	0.540
	8+(1)	0	0	0	0	0.500	0.500	0.540	0.540
	9+(1)	0	0	0	0	0.500	0.500	0.540	0.540
	10+(1)	0	0	0	0	0.500	0.500	0.540	0.540
	11+(1)	0	0	0	0	0.500	0.500	0.540	0.540
	12+(1)	0	0	0	0	0.500	0.500	0.540	0.540
	13+(1)	0	0	0	0	0.500	0.500	0.540	0.540
	14+(1)	0	0	0	0	0.500	0.500	0.540	0.540
	15+(1)	0	0	0	0	0.500	0.500	0.540	0.540
	16+(1)	0	0	0	0	0.500	0.500	0.540	0.540
	1+(2)	0	0	0	0	0.500	0.500	0.540	0.540
	2+(2)	0	0	0	0	0.500	0.500	0.540	0.540
	3+(2)	0	0	0	0	0.500	0.500	0.540	0.540
	4+(2)	0	0	0	0	0.500	0.500	0.540	0.540
	5+(2)	0	0	0	0	0.500	0.500	0.540	0.540
	6+(2)	0	0	0	0	0.500	0.500	0.540	0.540
	7+(2)	0	0	0	0	0.500	0.500	0.539	0.540
	8+(2)	0	0	0	0	0.500	0.500	0.540	0.540
	9+(2)	0	0	0	0	0.500	0.500	0.540	0.540
	10+(2)	0	0	0	0	0.500	0.500	0.540	0.540
	11+(2)	0	0	0	0	0.500	0.500	0.540	0.540
	12+(2)	0	0	0	0	0.500	0.500	0.540	0.540
	13+(2)	0	0	0	0	0.500	0.500	0.540	0.540
	14+(2)	0	0	0	0	0.500	0.500	0.540	0.540

4'4. *E2 and M1 matrix elements (transitions).* – *Table VIII.*

Symbols for table VIII:

JI = spin of the initial state (J_i),

JF = spin of the final state (J_f). The number in parenthesis indicates the lowest (1) or second-lowest (2) state of each spin.

*E*2 M.E. = *E*2 matrix element (transition) for proton (XP) and neutron (XN) in units of fm² defined by

$$\text{XP} = \frac{1}{\sqrt{2J_i+1}} \langle J_f \| \sum_{k=1}^{n_p} r_k^2 Y^{(2)}(\theta_k \varphi_k) \| J_i \rangle \,,$$

$$\text{XN} = \frac{1}{\sqrt{2J_i+1}} \langle J_f \| \sum_{k=1}^{n_n} r_k^2 Y^{(2)}(\theta_k \varphi_k) \| J_i \rangle \,.$$

B(*E*2) = reduced transition probability $B(E2;\, J_i \rightarrow J_f)$ in units of $e^2\,\text{fm}^4$ calculated with EP $= 1.9e$ and EN $= 0.9e$,

*M*1 M.E. = *M*1 matrix element (transition) for proton (XP) and for neutron (XN) in units of n.m. defined by

$$\text{XP} = \frac{1}{\sqrt{2J_i+1}} \langle J_f \| \sum_{k=1}^{n_p} \sqrt{\frac{3}{4\pi}}\, j_k \| J_i \rangle \,,$$

$$\text{XN} = \frac{1}{\sqrt{2J_i+1}} \langle J_f \| \sum_{k=1}^{n_n} \sqrt{\frac{3}{4\pi}}\, j_k \| J_i \rangle = -\,\text{XP}\,.$$

B(M1) = reduced transition probability $B(M1;\, J_i \rightarrow J_f)$ in units of (n.m.)² calculated with GP $= 1.456$ n.m. and GN $=$ $= -\,0.377$ n.m.,

DELTA/ENERGY = energy-independent mixing ratio $\delta(E2/M1)/E\gamma$ (MeV), where δ is given by eq. (32). The special cases $\delta = 0$ and $\delta = \infty$ are indicated by the symbols « *M*1 » and « *E*2 », respectively, and it is also indicated if the transition is both *M*1 and *E*2 forbidden.

The $B(E2;\, J_i \rightarrow J_f)$ in the lighter nucleus of each cross-conjugate pair (with nuclear mass *A*) is calculated by the equation

$$B(E2;\, J_i \rightarrow J_f) = (\text{XP} \cdot e_p + \text{XN} \cdot e_n)^2$$

and the corresponding value of the heavier nucleus with nuclear mass *A'*,

$B'(E2; J_i \to J_f)$, can be obtained by

$$B'(E2; J_i \to J_f) = (\mathrm{XN} \cdot e_p + \mathrm{XP} \cdot e_n)^2 \left(\frac{A'}{A}\right)^{2/3} .$$

The $B(M1; J_i \to J_f)$ in the lighter nucleus of each cross-conjugate pair is obtained by

$$B(M1; J_i \to J_f) = [\mathrm{XP} \cdot g_p(j) + \mathrm{XN} \cdot g_n(j)]^2 = (\mathrm{XP})^2 \cdot [g_p(j) - g_n(j)]^2$$

and the corresponding value, $B'(M1; J_i \to J_f)$, of the heavier nucleus is the same as $B(M1; J_i \to J_f)$:

$$B'(M1; J_i \to J_f) = B(M1; J_i \to J_f) .$$

E2 AND M1 MATRIX ELEMENTS (TRANSITIONS)   EP = 1.900 EN = 0.900   GP = 1.456 GN = -0.377   (42SC-INT)

*** 42CA - 54FE ***

JI	JF	E2 M.E. XP	E2 M.E. XN	B(E2) (E**2 FM**4)	B(E2) (E**2 FM**4)	M1 M.E. XP,-XN	B(M1) (N.M.**2)	DELTA/ENERGY (MEV**-1)	DELTA/ENERGY (MEV**-1)
		42CA	42CA	42CA	54FE	BOTH	BOTH	42CA	54FE
2+(1)	0+(1)	0	-4.36	15.40	81.13				
4+(1)	2+(1)	0	-4.35	15.36	80.95				
6+(1)	4+(1)	0	-2.94	7.00	36.88				

WEISSKOPF ESTIMATES   42CA B(E2) = 8.67 E**2 FM**4   54FE B(E2) = 12.12 E**2 FM**4
B(M1) = 1.79 N.M.**2   B(M1) = 1.79 N.M.**2

*** 43CA - 53MN ***

JI	JF	E2 M.E. XP	E2 M.E. XN	B(E2)	B(E2)	M1 M.E.	B(M1)	DELTA/ENERGY	DELTA/ENERGY
		43CA	43CA	43CA	53MN	BOTH	BOTH	43CA	53MN
5/2-(1)	3/2-(1)	0	-2.84	6.55	33.58	0	0	F2	E2
7/2-(1)	3/2-(1)	0	2.88	6.70	34.34				
7/2-(1)	5/2-(1)	0	-5.95	28.67	146.90	0	0	F2	E2
9/2-(1)	5/2-(1)	0	-2.73	6.05	31.00				
9/2-(1)	7/2-(1)	0	-2.82	6.45	33.07	0	0	F2	E2
11/2-(1)	7/2-(1)	0	4.63	17.38	89.03				
11/2-(1)	9/2-(1)	0	3.69	11.06	56.66	0	0	F2	E2
15/2-(1)	11/2-(1)	0	-3.57	12.77	65.41				

WEISSKOPF ESTIMATES   43CA B(E2) = 8.95 E**2 FM**4   53MN B(E2) = 11.83 E**2 FM**4
B(M1) = 1.79 N.M.**2   B(M1) = 1.79 N.M.**2

*** 44CA - 52CR ***

JI	JF	E2 M.E. XP	E2 M.E. XN	B(E2)	B(E2)	M1 M.E.	B(M1)	DELTA/ENERGY	DELTA/ENERGY
		44CA	44CA	44CA	52CR	BOTH	BOTH	44CA	52CR
2+(1)	0+(1)	0	-5.11	21.17	105.49				
4+(1)	2+(1)	0	5.38	23.41	116.61				
5+(1)	4+(1)	0	0	0	0	0	0	FOPRIDDEN	
6+(1)	4+(1)	0	-4.91	19.55	97.37				
6+(1)	5+(1)	0	4.10	13.61	67.81	0	0	E2	E2
8+(1)	6+(1)	0	-4.32	15.12	75.35				
4+(2)	2+(2)	0	-2.67	5.76	28.70				
2+(2)	0+(1)	0	0	0	0			FORRIDDEN	
2+(2)	2+(1)	0	-5.14	21.39	106.57	0	0	E2	E2
2+(2)	4+(1)	0	0	0	0			FORBIDDEN	
4+(2)	2+(1)	0	0	0	0			FORBIDDEN	
4+(2)	4+(1)	0	5.27	22.47	111.95	0	0	E2	E2
4+(2)	5+(1)	0	5.52	24.70	123.07	0	0	F2	E2
4+(2)	6+(1)	0	0	0	0			FORRIDDEN	

WEISSKOPF ESTIMATES   44CA B(E2) = 9.23 E**2 FM**4   52CR B(E2) = 11.53 E**2 FM**4
B(M1) = 1.79 N.M.**2   B(M1) = 1.79 N.M.**2

*** 45CA - 51V ***

JI	JF	E2 M.E. XP	E2 M.E. XN	B(E2)	B(E2)	M1 M.E.	B(M1)	DELTA/ENERGY	DELTA/ENERGY
		45CA	45CA	45CA	51V	BOTH	BOTH	45CA	51V
5/2-(1)	3/2-(1)	0	2.89	6.76	32.73	0	0	E2	E2
7/2-(1)	3/2-(1)	0	-2.92	6.91	33.47				
7/2-(1)	5/2-(1)	0	6.04	29.55	143.18	0	0	E2	E2
9/2-(1)	5/2-(1)	0	2.77	6.24	30.22				
9/2-(1)	7/2-(1)	0	2.87	6.65	32.23	0	0	E2	E2
11/2-(1)	7/2-(1)	0	-4.70	17.91	86.78				
11/2-(1)	9/2-(1)	0	-3.75	11.40	55.22	0	0	E2	E2
15/2-(1)	11/2-(1)	0	4.03	13.16	63.76				

WEISSKOPF ESTIMATES   45CA B(E2) = 9.51 E**2 FM**4   51V B(E2) = 11.23 E**2 FM**4
B(M1) = 1.79 N.M.**2   B(M1) = 1.79 N.M.**2

*** 46CA - 50TI ***

JI	JF	E2 M.E. XP	E2 M.E. XN	B(E2)	B(E2)	M1 M.E.	B(M1)	DELTA/ENERGY	DELTA/ENERGY
		46CA	46CA	46CA	50TI	BOTH	BOTH	46CA	50TI
2+(1)	0+(1)	0	4.49	16.36	77.08				
4+(1)	2+(1)	0	4.49	16.32	76.90				
6+(1)	4+(1)	0	3.03	7.44	35.03				

WEISSKOPF ESTIMATES   46CA B(E2) = 9.79 E**2 FM**4   50TI B(E2) = 10.94 E**2 FM**4
B(M1) = 1.79 N.M.**2   B(M1) = 1.79 N.M.**2

E2 AND M1 MATRIX ELEMENTS (TRANSITIONS) EP = 1.900 EN = 0.900 GP = 1.456 GN = -0.377 (42SC-INT)

JI	JF	E2 M.E.		B(E2)		M1 M.E.	B(M1)	DELTA/ENERGY	
		XP	XN	(E**2 FM**4)		XP,-XN	(N.M.**2)	(MEV**-1)	
***************** • 42SC - 54CO • *****************		42SC	42SC	42SC	54CO	BOTH	BOTH	42SC	54CO
1+(1)	0+(1)					-1.120	4.212		
2+(1)	0+(1)	-2.18	-2.18	37.26	44.05				
2+(1)	1+(1)	1.17	-1.17	1.36	1.61	-1.197	4.813	0.004	-0.005
3+(1)	1+(1)	-2.31	-2.31	41.02	49.44				
3+(1)	2+(1)	1.89	-1.89	3.56	4.20	-1.186	4.728	0.007	-0.008
4+(1)	2+(1)	-2.18	-2.18	37.17	43.95				
4+(1)	3+(1)	2.46	-2.46	6.03	7.13	-1.128	4.279	0.010	-0.011
5+(1)	3+(1)	-1.89	-1.89	27.95	33.05				
5+(1)	4+(1)	2.83	-2.83	8.02	9.49	-1.029	3.555	0.013	-0.014
6+(1)	4+(1)	-1.47	-1.47	16.93	20.02				
6+(1)	5+(1)	2.92	-2.92	8.53	10.08	-0.878	2.592	0.015	-0.016
7+(1)	5+(1)	-0.92	-0.92	6.69	7.91				
7+(1)	6+(1)	2.52	-2.52	6.34	7.49	-0.646	1.404	0.018	-0.019

WEISSKOPF ESTIMATES 42SC B(E2) = 8.67 E**2 FM**4 54CO B(E2) = 12.12 E**2 FM**4
B(M1) = 1.79 N.M.**2 B(M1) = 1.79 N.M.**2

JI	JF	E2 M.E. XP	E2 M.E. XN	B(E2)	B(E2)	M1 M.E.	B(M1)	DELTA/ENERGY	DELTA/ENERGY
***************** • 43SC - 53FE • *****************		43SC	43SC	43SC	53FE	BOTH	BOTH	43SC	53FE
3/2-(1)	1/2-(1)	-0.83	-2.49	14.59	34.53	-0.546	1.003	-0.032	-0.049
5/2-(1)	1/2-(1)	-1.03	-1.90	13.43	23.62				
5/2-(1)	3/2-(1)	1.17	0.49	7.09	4.55	-0.545	0.997	0.022	0.018
7/2-(1)	3/2-(1)	-0.75	-1.55	7.98	15.03				
7/2-(1)	5/2-(1)	0.57	-1.45	0.05	5.79	-0.425	0.606	-0.002	-0.026
9/2-(1)	5/2-(1)	-0.81	0.39	1.38	0.00				
9/2-(1)	7/2-(1)	1.60	4.75	53.50	126.02	-0.478	0.766	0.070	0.107
11/2-(1)	7/2-(1)	-0.63	-3.14	16.11	48.90				
11/2-(1)	9/2-(1)	2.24	3.46	54.17	84.68	-0.626	1.318	0.053	0.067
13/2-(1)	9/2-(1)	-0.60	-3.40	17.70	56.44				
13/2-(1)	11/2-(1)	1.55	2.10	23.44	33.37	-0.507	0.865	0.043	0.052
15/2-(1)	11/2-(1)	-0.77	-3.84	24.11	73.18				
15/2-(1)	13/2-(1)	2.44	0.73	27.95	14.75	-0.662	1.472	0.036	0.026
17/2-(1)	13/2-(1)	-0.28	-2.79	9.25	35.50				
17/2-(1)	15/2-(1)	1.42	-0.09	6.87	1.39	-0.472	0.747	0.025	0.011
19/2-(1)	15/2-(1)	-0.56	-2.81	12.92	39.23				
19/2-(1)	17/2-(1)	2.74	-1.83	12.73	1.16	-0.727	1.773	0.022	-0.007
5/2-(2)	3/2-(2)	0.81	-0.81	0.65	0.75	-1.123	4.237	0.003	-0.004
7/2-(2)	3/2-(2)	1.17	-1.17	1.37	1.58				
7/2-(2)	5/2-(2)	-1.66	-2.29	27.31	39.40	0.546	1.000	0.044	0.052
9/2-(2)	5/2-(2)	-0.57	-0.60	2.64	3.12				
9/2-(2)	7/2-(2)	-0.34	1.48	0.48	7.23	0.802	2.162	-0.004	-0.015
11/2-(2)	7/2-(2)	-0.10	-3.03	8.52	39.33				
11/2-(2)	9/2-(2)	0.82	0.63	4.57	4.36	0.332	0.370	-0.029	-0.029
13/2-(2)	9/2-(2)	-2.24	-2.00	36.74	38.98				
13/2-(2)	11/2-(2)	-1.37	3.02	0.02	23.35	0.887	2.641	-0.001	-0.025
15/2-(2)	11/2-(2)	1.68	-1.68	2.82	3.25				
15/2-(2)	13/2-(2)	2.41	-2.41	5.81	6.67	-1.055	3.736	0.010	-0.011
3/2-(2)	1/2-(1)	-1.59	1.59	2.53	2.91	-1.046	3.677	-0.007	0.007
3/2-(2)	3/2-(1)	2.46	-2.46	6.07	6.98	-0.725	1.765	0.015	-0.017
3/2-(2)	5/2-(1)	0.56	-0.56	0.32	0.37	0.387	0.504	-0.007	0.007
3/2-(2)	7/2-(1)	-0.34	0.34	0.12	0.13				
5/2-(2)	1/2-(1)	-2.12	0.97	9.91	0.00				
5/2-(2)	3/2-(1)	-0.96	3.03	0.81	27.53	-0.213	0.153	0.019	0.112
5/2-(2)	5/2-(1)	1.63	-0.19	8.55	1.39	0.094	0.029	-0.142	-0.057
5/2-(2)	7/2-(1)	0.39	-0.61	0.04	0.74	0.013	0.001	-0.068	0.304
5/2-(2)	9/2-(1)	-0.51	-0.95	3.31	5.85				
7/2-(2)	3/2-(1)	-0.21	3.09	5.65	37.08				
7/2-(2)	5/2-(1)	1.69	0.38	12.67	5.82	0.323	0.352	-0.050	-0.034
7/2-(2)	7/2-(1)	0.19	-1.99	2.02	14.89	0.089	0.027	0.073	0.197
7/2-(2)	9/2-(1)	-1.72	-1.34	20.03	19.22	0.358	0.432	0.057	0.056
7/2-(2)	11/2-(1)	0.42	1.79	5.77	16.36				
9/2-(2)	5/2-(1)	-2.00	-1.92	30.53	34.08				
9/2-(2)	7/2-(1)	-0.20	0.01	0.14	0.03	-0.174	0.102	-0.010	-0.005
9/2-(2)	9/2-(1)	0.72	-1.07	0.16	2.22	-0.144	0.070	0.013	-0.047
9/2-(2)	11/2-(1)	-0.41	1.55	0.38	7.61	0.524	0.923	-0.005	-0.024
9/2-(2)	13/2-(1)	-1.26	0.55	3.61	0.01				
11/2-(2)	7/2-(1)	-0.03	-0.17	0.04	0.14				
11/2-(2)	9/2-(1)	0.28	1.23	2.67	7.68	-0.163	0.089	0.046	0.077
11/2-(2)	11/2-(1)	0.18	-0.62	0.05	1.18	0.048	0.008	0.021	0.103
11/2-(2)	13/2-(1)	-2.18	-0.20	18.60	6.25	0.592	1.177	0.033	0.019
11/2-(2)	15/2-(1)	0.09	0.43	0.30	0.90				
13/2-(2)	9/2-(1)	0.04	-0.39	0.07	0.57				
13/2-(2)	11/2-(1)	0.25	-0.21	0.08	0.03	-0.287	0.277	0.005	-0.003
13/2-(2)	13/2-(1)	0.52	-1.03	0.00	2.53	-0.112	0.042	0.003	-0.064
13/2-(2)	15/2-(1)	-0.93	1.56	0.13	5.23	0.492	0.812	0.003	-0.021
13/2-(2)	17/2-(1)	-2.11	-0.31	10.36	7.12				
15/2-(2)	11/2-(1)	-0.36	0.36	0.13	0.15				
15/2-(2)	13/2-(1)	-0.89	0.89	0.79	0.91	0.165	0.091	0.025	-0.026
15/2-(2)	15/2-(1)	1.67	-1.67	2.80	3.22	-0.282	0.267	0.027	-0.029
15/2-(2)	17/2-(1)	-2.79	2.79	7.76	8.92	0.922	2.858	0.014	-0.015
15/2-(2)	19/2-(1)	-1.16	1.16	1.34	1.54				

WEISSKOPF ESTIMATES 43SC B(E2) = 8.95 E**2 FM**4 53FE B(E2) = 11.83 E**2 FM**4
B(M1) = 1.79 N.M.**2 B(M1) = 1.79 N.M.**2

E2 AND M1 MATRIX ELEMENTS (TRANSITIONS)   EP = 1.900   EN = 0.900   GP = 1.456   GK = -0.377   (42SC-INT)

****
* 44SC - 52MN *
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JI	JF	E2 M.E. XP	XN	B(E2) (E**2 FM**4)		M1 M.E. XP,-XN	B(M1) (N.M.**2)	DELTA/ENERGY (MEV**-1)	
		44SC	44SC	44SC	52MN	BOTH	BOTH	44SC	52MN
1+(1)	0+(1)					-0.550	1.017		
2+(1)	0+(1)	-1.63	1.63	2.65	2.96				
2+(1)	1+(1)	2.12	4.40	63.78	117.94	-0.945	3.003	0.038	0.052
3+(1)	1+(1)	-1.65	-3.37	37.98	69.47				
3+(1)	2+(1)	2.30	3.04	50.49	68.93	-1.002	3.370	0.032	0.038
4+(1)	2+(1)	-1.36	-4.17	40.16	93.64				
4+(1)	3+(1)	1.74	0.54	14.44	7.52	-0.872	2.555	0.020	0.014
5+(1)	3+(1)	-1.48	-4.06	41.86	91.37				
5+(1)	4+(1)	2.39	1.17	31.28	21.33	-0.947	3.011	0.027	0.022
6+(1)	4+(1)	0.73	2.65	14.29	36.23				
6+(1)	5+(1)	-1.78	0.95	6.36	0.04	0.604	1.226	0.019	-0.002
7+(1)	5+(1)	-1.01	-1.89	13.07	22.64				
7+(1)	6+(1)	-1.89	-3.50	45.44	77.99	0.5''	0.946	0.058	0.076
8+(1)	6+(1)	-0.59	-2.86	13.66	39.76				
8+(1)	7+(1)	-0.94	-3.11	21.01	51.00	0.313	0.329	0.067	0.104
9+(1)	7+(1)	0.36	4.30	20.69	80.66				
9+(1)	8+(1)	2.41	1.53	35.47	28.73	-0.664	1.481	0.041	0.037
10+(1)	8+(1)	-0.62	-3.28	17.14	51.71				
10+(1)	9+(1)	0.60	1.02	4.19	6.82	-0.203	0.139	0.046	0.058
11+(1)	9+(1)	-0.25	-3.96	16.35	67.09				
11+(1)	10+(1)	2.83	-0.94	20.53	0.64	-0.755	1.914	0.027	0.005
2+(2)	1+(2)	-0.94	3.04	0.90	27.10	0.662	1.472	-0.007	-0.036
3+(2)	1+(2)	1.28	0.90	10.43	9.08				
3+(2)	2+(2)	0.51	-2.13	0.91	14.46	-0.447	0.671	-0.010	-0.039
4+(2)	2+(2)	-1.07	-0.97	8.38	8.74				
4+(2)	3+(2)	1.90	-0.03	12.88	3.09	-0.535	0.962	0.030	0.015
5+(2)	3+(2)	-0.50	-3.08	13.86	44.47				
5+(2)	4+(2)	1.15	-1.65	0.48	4.97	-0.414	0.576	0.008	-0.024
6+(2)	4+(2)	-0.67	-2.23	10.81	26.23				
6+(2)	5+(2)	1.21	-3.08	0.23	25.44	-0.344	0.398	-0.006	-0.067
7+(2)	5+(2)	-0.10	-1.93	3.60	15.71				
7+(2)	6+(2)	-0.81	-1.87	10.37	20.47	0.469	0.740	0.031	0.044
8+(2)	6+(2)	-0.66	-3.33	18.14	53.66				
8+(2)	7+(2)	0.27	-1.56	0.79	8.30	0.039	0.005	0.104	0.338
9+(2)	7+(2)	-0.17	-3.37	11.28	48.08				
9+(2)	8+(2)	-1.14	-0.25	5.68	2.49	0.586	1.153	0.018	0.012
1+(2)	0+(1)					-0.969	3.157		
1+(2)	1+(1)	2.26	-0.27	16.48	2.60	-0.492	0.813	0.038	0.015
1+(2)	2+(1)	0.23	0.66	1.08	2.41	0.618	1.284	-0.008	-0.011
1+(2)	3+(1)	-1.32	3.20	0.14	26.72				
2+(2)	0+(1)	0.78	-0.78	0.62	0.69				
2+(2)	1+(1)	1.04	2.36	16.89	32.98	-0.219	0.162	0.085	0.119
2+(2)	2+(1)	-0.59	-0.59	2.69	3.01	0.327	0.358	0.023	0.024
2+(2)	3+(1)	-0.20	0.09	0.09	0.00	0.341	0.391	0.004	0.000
2+(2)	4+(1)	-0.51	-1.82	6.86	17.25				
3+(2)	1+(1)	-0.00	2.00	3.21	16.05				
3+(2)	2+(1)	0.50	2.28	0.98	25.56	0.089	0.027	-0.153	-0.259
3+(2)	3+(1)	-0.70	1.47	0.00	5.25	0.121	0.049	0.000	-0.086
3+(2)	4+(1)	1.68	1.89	23.09	29.02	-0.573	1.104	0.039	0.043
3+(2)	5+(1)	0.93	-0.49	1.77	0.01				
4+(2)	2+(1)	-0.56	-0.62	2.63	3.14				
4+(2)	3+(1)	1.13	2.80	21.76	44.82	-0.487	0.796	0.044	0.063
4+(2)	4+(1)	1.27	3.04	26.54	53.51	-0.268	0.242	0.087	0.124
4+(2)	5+(1)	0.01	2.49	5.13	25.21	0.159	0.085	-0.065	-0.144
4+(2)	6+(1)	-0.23	-1.30	2.58	8.00				
5+(2)	3+(1)	-0.64	-1.05	4.68	7.40				
5+(2)	4+(1)	0.56	1.80	7.17	17.19	-0.165	0.091	0.074	0.114
5+(2)	5+(1)	-0.19	3.38	7.24	43.74	0.010	0.000	-1.186	-2.916
5+(2)	6+(1)	-2.10	-0.09	16.50	4.69	0.536	0.963	0.034	0.018
5+(2)	7+(1)	0.24	-3.35	6.61	42.42				
6+(2)	4+(1)	-0.95	-2.28	14.92	30.14				
6+(2)	5+(1)	1.51	2.38	25.19	38.68	-0.612	1.260	0.037	0.046
6+(2)	6+(1)	-1.50	-1.16	15.15	14.16	0.283	0.270	3.062	0.060
6+(2)	7+(1)	-1.49	3.80	0.34	30.51	0.489	0.803	-0.005	-0.058
6+(2)	8+(1)	1.24	1.26	12.16	13.72				
7+(2)	5+(1)	0.33	2.25	7.03	23.40				
7+(2)	6+(1)	0.24	1.77	4.20	14.30	-0.199	0.133	0.047	0.086
7+(2)	7+(1)	-1.13	1.23	1.08	1.95	0.190	0.121	0.025	-0.033
7+(2)	8+(1)	-2.84	-0.35	32.58	11.64	0.921	2.847	0.028	0.017
7+(2)	9+(1)	-1.12	1.66	0.41	5.16				
8+(2)	6+(1)	0.13	0.27	0.24	0.45				
8+(2)	7+(1)	-0.11	-1.23	1.72	6.63	-0.028	0.003	-0.215	-0.422
8+(2)	8+(1)	-1.33	0.34	4.99	0.35	0.245	0.201	0.041	0.011
8+(2)	9+(1)	0.93	-3.08	1.01	28.19	-0.305	0.313	-0.015	-0.079
8+(2)	10+(1)	1.19	1.15	10.85	11.85				
9+(2)	7+(1)	0.15	0.18	0.20	0.26				
9+(2)	8+(1)	0.28	0.73	1.40	2.98	-0.241	0.195	0.022	0.033
9+(2)	9+(1)	0.81	-0.67	0.89	0.32	-0.140	0.066	0.031	-0.018
9+(2)	10+(1)	-3.09	1.54	20.11	0.02	1.056	3.748	0.019	-0.001
9+(2)	11+(1)	-1.38	0.68	4.04	0.00				

WEISSKOPF ESTIMATES   44SC   B(E2) = 9.23 E**2 FM**4   52MN   B(E2) = 11.53 E**2 FM**4
B(M1) = 1.79 N.M.**2   B(M1) = 1.79 N.M.**2

E2 AND M1 MATRIX ELEMENTS (TRANSITIONS) EP = 1.900 EN = 0.900 GP = 1.456 GN = -0.377 (42SC-INT)

****
* 45SC - 51CR *
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JI	JF	E2 M.E. XP 45SC	E2 M.E. XN 45SC	B(E2) (E**2 FM**4) 45SC	B(E2) (E**2 FM**4) 51CR	M1 M.E. XP,-XN BOTH	B(M1) (N.M.**2) BOTH	DELTA/ENERGY (MEV**-1) 45SC	DELTA/ENERGY (MEV**-1) 51CR
3/2-(1)	1/2-(1)	0.57	3.75	19.81	63.36	0.367	0.453	-0.055	-0.099
5/2-(1)	1/2-(1)	1.38	2.22	21.38	32.39				
5/2-(1)	3/2-(1)	1.95	1.67	27.01	26.30	-0.732	1.800	0.032	0.032
7/2-(1)	3/2-(1)	-0.54	-3.51	17.51	55.64				
7/2-(1)	5/2-(1)	1.22	-3.35	0.49	30.20	-0.390	0.512	-0.008	-0.064
9/2-(1)	5/2-(1)	-1.24	-0.68	8.02	6.28				
9/2-(1)	7/2-(1)	1.18	4.75	42.40	110.60	-0.324	0.353	0.091	0.147
11/2-(1)	7/2-(1)	-0.31	-4.52	21.66	85.49				
11/2-(1)	9/2-(1)	2.21	3.09	48.78	67.25	-0.686	1.580	0.046	0.054
13/2-(1)	9/2-(1)	0.87	3.49	23.04	59.85				
13/2-(1)	11/2-(1)	-1.78	-3.52	43.00	74.75	0.629	1.327	0.047	0.063
15/2-(1)	11/2-(1)	-0.45	-4.32	22.42	80.61				
15/2-(1)	13/2-(1)	-1.58	0.05	8.69	1.90	0.544	0.995	0.025	0.012
17/2-(1)	13/2-(1)	-0.93	-4.14	30.20	82.24				
17/2-(1)	15/2-(1)	-1.68	-3.00	34.75	56.57	0.566	1.075	0.047	0.060
19/2-(1)	15/2-(1)	0.64	2.83	14.15	38.53				
19/2-(1)	17/2-(1)	2.55	1.64	40.06	31.87	-0.690	1.599	0.042	0.037
21/2-(1)	17/2-(1)	-0.54	-3.70	19.05	61.49				
21/2-(1)	19/2-(1)	0.48	1.30	4.32	9.19	-0.163	0.089	0.058	0.085
23/2-(1)	19/2-(1)	-0.21	-4.30	18.17	75.88				
23/2-(1)	21/2-(1)	2.87	0	29.75	7.26	-0.762	1.953	0.033	0.016
3/2-(2)	1/2-(2)	-0.76	-0.39	3.23	2.21	-0.494	0.818	-0.017	-0.014
5/2-(2)	1/2-(2)	-1.17	-0.38	6.59	3.43				
5/2-(2)	3/2-(2)	0.02	-0.74	0.39	2.09	-1.045	3.668	-0.003	-0.006
7/2-(2)	3/2-(2)	0.50	-0.52	0.23	0.32				
7/2-(2)	5/2-(2)	-1.15	-2.62	20.68	39.34	0.467	0.733	0.044	0.061
9/2-(2)	5/2-(2)	-1.95	-1.85	28.88	30.13				
9/2-(2)	7/2-(2)	-0.56	-0.54	2.40	2.55	0.191	0.122	0.037	0.038
11/2-(2)	7/2-(2)	0.86	1.86	10.88	20.07				
11/2-(2)	9/2-(2)	1.13	0.52	6.84	4.40	-0.084	0.024	0.141	0.113
13/2-(2)	9/2-(2)	-1.21	-0.98	10.17	9.51				
13/2-(2)	11/2-(2)	1.19	1.18	11.04	11.88	-0.254	0.217	0.059	0.062
15/2-(2)	11/2-(2)	-1.20	-0.06	5.46	1.55				
15/2-(2)	13/2-(2)	1.45	0.41	9.80	4.72	-0.269	0.243	0.053	0.037
17/2-(2)	13/2-(2)	-0.02	-1.83	2.83	13.25				
17/2-(2)	15/2-(2)	-1.09	-3.65	28.79	68.20	0.344	0.399	0.071	0.109
19/2-(2)	15/2-(2)	-0.22	-1.98	4.86	17.04				
19/2-(2)	17/2-(2)	-0.33	-1.13	2.72	6.50	0.200	0.134	0.038	0.058
1/2-(2)	1/2-(1)					0	0	FORBIDDEN	
1/2-(2)	3/2-(1)	-0.07	-1.11	1.30	5.14	-0.049	0.008	-0.107	-0.212
1/2-(2)	5/2-(1)	0.65	0.54	2.96	2.84				
3/2-(2)	1/2-(1)	1.47	2.14	22.25	31.63	0.950	3.035	-0.023	-0.027
3/2-(2)	3/2-(1)	1.43	-1.32	2.35	1.63	-0.387	0.503	0.018	-0.015
3/2-(2)	5/2-(1)	0.18	3.23	10.56	43.21	0.455	0.694	-0.033	-0.066
3/2-(2)	7/2-(1)	-0.35	0.77	0.00	1.42				
5/2-(2)	1/2-(1)	1.49	2.58	26.66	42.52				
5/2-(2)	3/2-(1)	-0.84	0.72	0.91	0.41	0.049	0.008	0.088	-0.059
5/2-(2)	5/2-(1)	1.05	0.58	6.37	4.55	-0.452	0.686	0.025	0.021
5/2-(2)	7/2-(1)	0.47	-1.07	0.00	2.80	-0.057	0.011	-0.005	-0.133
5/2-(2)	9/2-(1)	0.55	-0.78	0.11	1.08				
7/2-(2)	3/2-(1)	-0.64	0.45	0.66	0.09				
7/2-(2)	5/2-(1)	1.46	2.88	28.83	50.01	-0.656	1.447	0.037	0.049
7/2-(2)	7/2-(1)	0.84	-3.00	1.22	26.55	-0.112	0.042	-0.045	-0.210
7/2-(2)	9/2-(1)	-2.48	-1.39	35.47	25.79	0.901	2.726	0.030	0.026
7/2-(2)	11/2-(1)	-1.38	0.75	3.74	0.04				
9/2-(2)	5/2-(1)	-0.80	-2.86	16.74	41.06				
9/2-(2)	7/2-(1)	0.42	0.47	1.51	1.77	-0.133	0.059	0.042	0.045
9/2-(2)	9/2-(1)	-0.23	-1.27	2.48	7.45	0.015	0.001	0.486	0.844
9/2-(2)	11/2-(1)	-0.36	2.42	2.24	19.82	0.233	0.183	-0.029	-0.087
9/2-(2)	13/2-(1)	0.84	2.75	16.58	38.94				
11/2-(2)	7/2-(1)	-0.25	-1.82	4.47	14.81				
11/2-(2)	9/2-(1)	0.07	-3.41	8.62	44.75	0.152	0.078	0.088	0.200
11/2-(2)	11/2-(1)	-1.96	-0.93	20.80	13.54	0.358	0.432	0.058	0.047
11/2-(2)	13/2-(1)	-1.77	-0.87	17.26	11.48	0.746	1.871	0.025	0.021
11/2-(2)	15/2-(1)	0.55	-0.80	0.10	1.14				
13/2-(2)	9/2-(1)	0.17	-1.08	0.43	3.95				
13/2-(2)	11/2-(1)	-0.43	-0.83	2.41	4.14	0.089	0.027	0.079	0.103
13/2-(2)	13/2-(1)	-0.60	2.48	1.19	18.89	0.139	0.065	-0.036	-0.142
13/2-(2)	15/2-(1)	-2.08	0.23	14.05	2.26	0.653	1.431	0.026	0.010
13/2-(2)	17/2-(1)	-0.80	-0.55	1.07	0.11				
15/2-(2)	11/2-(1)	0.67	1.86	8.61	18.49				
15/2-(2)	13/2-(1)	1.80	3.08	38.33	60.73	-0.624	1.309	0.045	0.057
15/2-(2)	15/2-(1)	-1.12	-1.70	13.39	19.57	0.199	0.133	0.084	0.101
15/2-(2)	17/2-(1)	-1.46	1.30	2.57	1.47	0.522	0.917	0.014	-0.011
15/2-(2)	19/2-(1)	-0.81	-2.10	11.74	24.22				
17/2-(2)	13/2-(1)	0.46	1.17	3.72	7.60				
17/2-(2)	15/2-(1)	-0.29	-1.07	2.27	5.69	0.009	0.000	0.800	1.269
17/2-(2)	17/2-(1)	-0.93	-1.11	7.61	9.40	0.154	0.079	0.082	0.091
17/2-(2)	19/2-(1)	1.02	-3.66	1.85	39.54	-0.284	0.271	-0.022	-0.101
17/2-(2)	21/2-(1)	0.46	1.48	4.84	11.31				
19/2-(2)	15/2-(1)	0.35	1.48	4.01	10.66				
19/2-(2)	17/2-(1)	0.24	1.33	2.70	8.14	-0.210	0.148	0.036	0.062
19/2-(2)	19/2-(1)	0.66	-0.32	0.94	0.00	-0.114	0.044	0.039	-0.001
19/2-(2)	21/2-(1)	-3.12	0.22	32.94	6.24	1.071	3.856	0.024	0.011
19/2-(2)	23/2-(1)	-1.42	0.75	4.09	0.02				

WEISSKOPF ESTIMATES 45SC B(E2) = 9.51 E**2 FM**4 51CR B(E2) = 11.23 E**2 FM**4
B(M1) = 1.79 N.M.**2 B(M1) = 1.79 N.M.**2

E2 AND M1 MATRIX ELEMENTS (TRANSITIONS)   EP = 1.900 EN = 0.900   GP = 1.456 GN = -0.377   (42SC-INT)

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* 46SC - 50V *
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JI	JF	E2 M.E. XP 46SC	E2 M.E. XN 46SC	B(E2) (E**2 FM**4) 46SC	B(E2) (E**2 FM**4) 50V	M1 M.E. XP,-XN BOTH	B(M1) (N.M.**2) BOTH	DELTA/ENERGY (MEV**-1) 46SC	DELTA/ENERGY (MEV**-1) 50V
1+(1)	0+(1)					-0.777	2.029		
2+(1)	0+(1)	-1.96	1.96	3.85	4.08				
2+(1)	1+(1)	1.74	2.58	31.69	44.20	-1.031	3.573	0.025	0.029
3+(1)	1+(1)	-1.89	1.32	5.77	0.70				
3+(1)	2+(1)	2.20	3.79	57.71	89.15	-1.057	3.751	0.033	0.041
4+(1)	2+(1)	1.82	-0.99	6.61	0.06				
4+(1)	3+(1)	-2.71	-4.03	77.23	108.02	1.005	3.395	0.040	0.047
5+(1)	3+(1)	-0.71	-3.41	19.54	53.59				
5+(1)	4+(1)	-0.54	1.60	0.17	6.93	0.275	0.255	-0.007	-0.043
6+(1)	4+(1)	0.70	3.49	19.97	55.71				
6+(1)	5+(1)	2.58	3.61	66.34	88.93	-0.762	1.952	0.049	0.056
7+(1)	5+(1)	-0.79	0.67	0.80	0.33				
7+(1)	6+(1)	2.36	3.45	57.42	79.40	-0.621	1.296	0.055	0.065
8+(1)	6+(1)	-0.29	-4.42	20.54	79.28				
8+(1)	7+(1)	0.41	0.05	0.70	0.23	-0.145	0.071	0.026	0.015
9+(1)	7+(1)	-0.28	-4.67	22.48	88.17				
9+(1)	8+(1)	2.27	2.60	44.27	51.46	-0.674	1.526	0.045	0.048
10+(1)	8+(1)	0.81	2.72	15.96	36.85				
10+(1)	9+(1)	-1.23	-1.70	14.97	19.93	0.414	0.576	0.042	0.049
11+(1)	9+(1)	0.52	3.64	18.24	57.68				
11+(1)	10+(1)	2.87	0.96	39.99	20.54	-0.755	1.914	0.038	0.027
2+(2)	1+(2)	-0.83	-0.05	2.64	0.75	0.019	0.001	0.386	0.206
3+(2)	1+(2)	0.12	1.40	2.24	8.14				
3+(2)	2+(2)	-0.63	0.64	0.39	0.45	0.527	0.932	0.005	-0.006
4+(2)	2+(2)	0.64	-0.75	0.29	0.76				
4+(2)	3+(2)	2.27	0.57	23.26	10.33	-0.763	1.954	0.029	0.019
5+(2)	3+(2)	-0.43	-1.34	4.05	9.03				
5+(2)	4+(2)	0.56	-1.61	0.16	6.94	-0.020	0.001	-0.089	-0.594
6+(2)	4+(2)	-0.09	0.01	0.02	0.00				
6+(2)	5+(2)	2.21	3.82	58.33	90.47	-0.677	1.540	0.051	0.064
7+(2)	5+(2)	0.39	1.87	5.82	16.01				
7+(2)	6+(2)	-0.64	-0.85	3.92	5.08	0.345	0.399	0.026	0.030
8+(2)	6+(2)	0.65	2.88	14.58	38.69				
8+(2)	7+(2)	0.64	1.34	5.87	10.33	-0.394	0.522	0.028	0.037
9+(2)	7+(2)	0.64	3.19	16.64	46.44				
9+(2)	8+(2)	-0.50	-2.31	9.17	24.69	0.340	0.388	0.041	0.067
1+(2)	0+(1)					-0.485	0.790		
1+(2)	1+(1)	1.53	-3.33	0.01	25.83	-0.145	0.071	-0.003	-0.159
1+(2)	2+(1)	-0.05	1.79	2.28	11.87	0.397	0.528	-0.017	-0.039
1+(2)	3+(1)	-0.54	0.22	0.68	0.00				
2+(2)	0+(1)	0.56	-0.56	0.32	0.34				
2+(2)	1+(1)	0.52	-1.79	0.38	9.07	0.024	0.002	0.115	0.565
2+(2)	2+(1)	-0.86	-3.51	22.95	58.64	0.220	0.163	0.099	0.158
2+(2)	3+(1)	-0.70	-2.38	12.05	28.02	0.087	0.026	0.180	0.275
2+(2)	4+(1)	0.10	3.54	11.42	49.17				
3+(2)	1+(1)	-0.41	-2.49	9.17	27.59				
3+(2)	2+(1)	0.05	-2.42	4.34	21.95	-0.339	0.387	-0.028	-0.063
3+(2)	3+(1)	0.87	1.94	11.55	21.13	-0.162	0.088	0.096	0.129
3+(2)	4+(1)	-0.27	1.11	0.24	3.70	-0.035	0.004	0.063	0.249
3+(2)	5+(1)	-1.37	2.43	0.17	12.07				
4+(2)	2+(1)	-0.73	-3.43	20.06	54.35				
4+(2)	3+(1)	-0.14	-1.57	2.84	10.27	-0.157	0.083	-0.049	-0.093
4+(2)	4+(1)	-0.87	-0.05	2.88	0.81	0.174	0.101	0.044	0.024
4+(2)	5+(1)	-2.89	-1.67	48.89	35.19	0.996	3.335	0.032	0.027
4+(2)	6+(1)	-1.41	2.94	0.00	19.68				
5+(2)	3+(1)	1.41	0.29	8.67	3.54				
5+(2)	4+(1)	2.56	4.14	73.66	109.21	-0.806	2.183	0.048	0.059
5+(2)	5+(1)	-1.08	-1.02	8.90	9.03	0.194	0.126	0.070	0.071
5+(2)	6+(1)	0.92	-3.20	1.29	29.20	-0.368	0.454	-0.014	-0.067
5+(2)	7+(1)	0.83	2.78	16.65	38.49				
6+(2)	4+(1)	-0.74	-0.89	4.85	5.87				
6+(2)	5+(1)	0.48	-1.16	0.02	3.30	-0.034	0.004	-0.017	-0.244
6+(2)	6+(1)	-1.12	-0.27	5.64	2.47	0.187	0.118	0.058	0.038
6+(2)	7+(1)	1.06	-4.20	3.10	52.24	-0.332	0.371	-0.024	-0.099
6+(2)	8+(1)	0.55	0.74	2.92	3.81				
7+(2)	5+(1)	-0.33	-3.41	13.68	48.57				
7+(2)	6+(1)	0.09	1.17	1.50	5.61	-0.111	0.041	0.050	0.097
7+(2)	7+(1)	0.82	-0.32	1.62	0.02	-0.136	0.062	0.043	0.005
7+(2)	8+(1)	-2.70	-1.25	39.06	24.37	0.986	3.267	0.029	0.023
7+(2)	9+(1)	-1.52	0.06	8.01	1.66				
8+(2)	6+(1)	-0.23	-0.01	0.20	0.05				
8+(2)	7+(1)	0.57	2.96	14.00	39.69	-0.167	0.093	0.102	0.172
8+(2)	8+(1)	1.55	1.68	19.91	22.26	-0.274	0.253	0.074	0.078
8+(2)	9+(1)	-1.48	2.23	0.65	8.87	0.479	0.771	0.008	-0.028
8+(2)	10+(1)	0.94	1.52	10.00	14.81				
9+(2)	7+(1)	-0.11	-1.03	1.29	4.49				
9+(2)	8+(1)	-0.07	-0.87	0.83	3.10	0.219	0.162	0.019	0.036
9+(2)	9+(1)	-1.57	-0.42	11.30	5.16	0.266	0.239	0.057	0.039
9+(2)	10+(1)	-2.93	-0.65	37.78	15.83	0.986	3.265	0.028	0.018
9+(2)	11+(1)	-1.31	1.99	0.47	7.19				

WEISSKOPF ESTIMATES   46SC B(E2) = 9.79 E**2 FM**4   50V B(E2) = 10.94 E**2 FM**4
B(M1) = 1.79 N.M.**2   B(M1) = 1.79 N.M.**2

E2 AND M1 MATRIX ELEMENTS (TRANSITIONS) EP = 1.900 EN = 0.900 GP = 1.456 GN = -0.377 (42SC-INT)

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* 47SC - 49TI *
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JI	JF	E2 M.E. XP	E2 M.E. XN	B(E2) (E**2 FM**4)	B(E2) (E**2 FM**4)	M1 M.E. XP,-XN	B(M1) (N.M.**2)	DELTA/ENERGY (MEV**-1)	DELTA/ENERGY (MEV**-1)
		47SC	47SC	47SC	49TI	BOTH	BOTH	47SC	49TI
3/2-(1)	1/2-(1)	0.11	3.04	8.66	35.53	0.069	0.016	-0.195	-0.396
5/2-(1)	1/2-(1)	0.33	0.54	1.24	1.81				
5/2-(1)	3/2-(1)	2.84	2.15	53.65	45.33	-0.751	1.897	0.044	0.041
7/2-(1)	3/2-(1)	0.37	3.81	17.12	58.95				
7/2-(1)	5/2-(1)	-1.06	3.90	2.23	42.78	0.286	0.274	-0.024	-0.104
9/2-(1)	5/2-(1)	-0.95	-3.10	21.10	46.82				
9/2-(1)	7/2-(1)	-0.83	-3.54	22.76	57.57	0.209	0.147	0.104	0.165
11/2-(1)	7/2-(1)	0.21	4.83	22.57	90.31				
11/2-(1)	9/2-(1)	2.38	-1.43	10.45	0.35	-0.640	1.376	0.023	-0.004
13/2-(1)	9/2-(1)	-0.67	-2.66	13.44	32.86				
13/2-(1)	11/2-(1)	0.53	1.65	6.24	13.41	-0.137	0.063	0.083	0.122
15/2-(1)	11/2-(1)	-0.18	-3.46	11.96	46.73				
15/2-(1)	13/2-(1)	2.62	2.27	49.17	45.64	-0.984	3.256	0.032	0.031
17/2-(1)	13/2-(1)	-1.67	-0.82	15.26	9.66				
17/2-(1)	15/2-(1)	2.37	2.63	47.18	52.35	-0.761	1.946	0.041	0.043
19/2-(1)	15/2-(1)	-0.93	-1.61	10.39	15.63				
19/2-(1)	17/2-(1)	2.83	1.88	49.95	38.58	-0.727	1.773	0.044	0.039
5/2-(2)	3/2-(2)	0.27	0.80	1.52	3.19	-1.044	3.664	0.005	0.008
7/2-(2)	3/2-(2)	1.76	0.58	15.01	7.46				
7/2-(2)	5/2-(2)	-0.66	0.96	0.16	1.54	0.742	1.852	0.002	-0.008
9/2-(2)	5/2-(2)	-2.13	-0.73	22.24	11.29				
9/2-(2)	7/2-(2)	-0.06	-3.78	12.30	53.73	0.342	0.394	0.047	0.097
11/2-(2)	7/2-(2)	-0.60	-1.95	8.34	18.53				
11/2-(2)	9/2-(2)	-0.83	-2.26	13.08	26.15	0.978	3.214	0.017	0.024
13/2-(2)	9/2-(2)	-0.01	1.89	2.82	13.13				
13/2-(2)	11/2-(2)	0.12	2.03	4.24	16.18	-0.405	0.550	0.023	0.045
15/2-(2)	11/2-(2)	-1.30	-0.13	6.72	2.08				
15/2-(2)	13/2-(2)	2.63	-0.11	23.97	4.79	-0.819	2.256	0.027	0.012
3/2-(2)	1/2-(1)	-1.84	-0.09	12.84	3.43	-1.178	4.664	-0.014	-0.007
3/2-(2)	3/2-(1)	-0.36	3.53	6.25	42.03	0.102	0.035	-0.111	-0.288
3/2-(2)	5/2-(1)	-0.15	-3.05	9.21	36.26	-0.150	0.075	-0.092	-0.183
3/2-(2)	7/2-(1)	0.12	0.01	0.06	0.02				
5/2-(2)	1/2-(1)	-2.08	-1.31	26.34	19.52				
5/2-(2)	3/2-(1)	0.08	-2.17	3.22	16.81	0.035	0.004	0.231	0.528
5/2-(2)	5/2-(1)	-0.50	2.92	2.82	26.73	-0.102	0.035	0.075	0.231
5/2-(2)	7/2-(1)	0.09	0.35	0.24	0.58	-0.036	0.004	0.062	0.096
5/2-(2)	9/2-(1)	1.56	0.43	11.18	5.06				
7/2-(2)	3/2-(1)	-0.79	-1.80	9.79	17.56				
7/2-(2)	5/2-(1)	2.11	2.63	40.59	48.80	-0.630	1.334	-0.046	0.050
7/2-(2)	7/2-(1)	-0.56	2.62	1.66	20.61	0.073	0.018	-0.080	-0.283
7/2-(2)	9/2-(1)	-2.73	1.64	13.79	0.45	0.959	3.088	0.018	-0.003
7/2-(2)	11/2-(1)	-1.18	-0.92	9.40	8.12				
9/2-(2)	5/2-(1)	-0.46	0.57	0.13	0.46				
9/2-(2)	7/2-(1)	-0.54	-0.89	3.30	4.85	0.141	0.067	0.059	0.071
9/2-(2)	9/2-(1)	-1.63	0.80	5.66	0.00	0.332	0.371	0.033	-0.001
9/2-(2)	11/2-(1)	-0.38	0.08	0.43	0.04	0.020	0.001	0.152	0.046
9/2-(2)	13/2-(1)	2.38	-0.12	19.46	3.74				
11/2-(2)	7/2-(1)	-0.01	-0.12	0.02	0.06				
11/2-(2)	9/2-(1)	0.32	2.10	6.25	18.85	-0.237	0.189	0.048	0.083
11/2-(2)	11/2-(1)	0.16	-0.49	0.02	0.63	-0.010	0.000	-0.061	-0.351
11/2-(2)	13/2-(1)	-2.00	-2.72	39.06	49.94	1.266	5.386	0.022	0.025
11/2-(2)	15/2-(1)	-2.32	0.36	16.66	2.02				
13/2-(2)	9/2-(1)	0.64	2.13	9.80	21.98				
13/2-(2)	11/2-(1)	-1.02	-1.65	11.69	16.85	0.316	0.336	0.049	0.059
13/2-(2)	13/2-(1)	1.63	1.59	20.47	20.76	-0.338	0.383	0.061	0.061
13/2-(2)	15/2-(1)	0.46	-0.12	0.60	0.04	0.094	0.030	-0.037	-0.009
13/2-(2)	17/2-(1)	-1.12	3.14	0.49	25.32				
15/2-(2)	11/2-(1)	0.35	2.60	9.07	28.50				
15/2-(2)	13/2-(1)	0.40	2.16	7.34	20.55	-0.375	0.472	0.033	0.055
15/2-(2)	15/2-(1)	2.02	1.83	30.18	28.95	-0.331	0.368	0.075	0.074
15/2-(2)	17/2-(1)	-2.09	-0.66	20.76	10.09	0.670	1.510	0.031	0.022
15/2-(2)	19/2-(1)	-0.87	2.94	1.00	23.75				

WEISSKOPF ESTIMATES 47SC B(E2) = 10.08 E**2 FM**4 49TI B(E2) = 10.65 E**2 FM**4
B(M1) = 1.79 N.M.**2 B(M1) = 1.79 N.M.**2

****
* 48SC - 48SC *
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JI	JF	E2 M.E. XP	E2 M.E. XN	B(E2)	B(E2)	M1 M.E.	B(M1)	DELTA/ENERGY	DELTA/ENERGY
		48SC	48SC	48SC	48SC	BOTH	BOTH	48SC	48SC
1+(1)	0+(1)					-1.120	4.212		
2+(1)	0+(1)	-2.28	2.28	5.19	5.19				
2+(1)	1+(1)	1.22	1.22	11.64	11.64	-1.197	4.813	0.013	0.013
3+(1)	1+(1)	-2.41	2.41	5.83	5.83				
3+(1)	2+(1)	1.97	1.97	30.47	30.47	-1.186	4.728	0.021	0.021
4+(1)	2+(1)	-2.28	2.28	5.18	5.18				
4+(1)	3+(1)	2.57	2.57	51.71	51.71	-1.128	4.279	0.029	0.029
5+(1)	3+(1)	-1.97	1.97	3.90	3.90				
5+(1)	4+(1)	2.96	2.96	68.75	68.75	-1.029	3.555	0.037	0.037
6+(1)	4+(1)	-1.54	1.54	2.36	2.36				
6+(1)	5+(1)	3.05	3.05	73.09	73.09	-0.878	2.592	0.044	0.044
7+(1)	5+(1)	-0.97	0.97	0.93	0.93				
7+(1)	6+(1)	2.63	2.63	54.30	54.30	-0.646	1.404	0.052	0.052

WEISSKOPF ESTIMATES 48SC B(E2) = 10.36 E**2 FM**4 48SC B(E2) = 10.36 E**2 FM**4
B(M1) = 1.79 N.M.**2 B(M1) = 1.79 N.M.**2

E2 AND M1 MATRIX ELEMENTS (TRANSITIONS) EP = 1.900 EN = 0.900 GP = 1.456 GN = -0.377 (42SC-INT)

JI	JF	E2 M.E. XP	E2 M.E. XN	B(E2) (E**2 FM**4)	B(E2) (E**2 FM**4)	M1 M.E. XP,-XN	B(M1) (N.M.**2)	DELTA/ENERGY (MEV**-1)	DELTA/ENERGY (MEV**-1)
* 42TI - 54NI *		42TI	42TI	42TI	54NI	BOTH	BOTH	42TI	54NI
2+(1)	0+(1)	-4.36	0	68.62	18.20				
4+(1)	2+(1)	-4.35	0	68.46	18.16				
6+(1)	4+(1)	-2.94	0	31.19	8.27				

WEISSKOPF ESTIMATES 42TI B(E2) = 8.67 E**2 FM**4 B(M1) = 1.79 N.M.**2 54NI B(E2) = 12.12 E**2 FM**4 B(M1) = 1.79 N.M.**2

JI	JF	E2 M.E. XP	E2 M.E. XN	B(E2)	B(E2)	M1 M.E. XP,-XN	B(M1)	DELTA/ENERGY	DELTA/ENERGY
* 43TI - 53CO *		43TI	43TI	43TI	53CO	BOTH	BOTH	43TI	53CO
3/2-(1)	1/2-(1)	2.49	0.83	30.04	16.77	-0.546	1.003	0.046	0.034
5/2-(1)	1/2-(1)	-1.90	-1.03	20.55	15.44				
5/2-(1)	3/2-(1)	-0.49	-1.17	3.96	8.15	-0.545	0.997	-0.017	-0.024
7/2-(1)	3/2-(1)	-1.55	-0.75	13.07	9.17				
7/2-(1)	5/2-(1)	1.45	-0.57	5.04	0.06	-0.425	0.606	0.024	0.003
9/2-(1)	5/2-(1)	0.39	-0.81	0.00	1.59				
9/2-(1)	7/2-(1)	-4.75	-1.60	109.62	61.51	-0.478	0.766	-0.100	-0.075
11/2-(1)	7/2-(1)	-3.14	-0.63	42.54	18.52				
11/2-(1)	9/2-(1)	-3.46	-2.24	73.66	62.27	-0.626	1.318	-0.062	-0.057
13/2-(1)	9/2-(1)	-3.40	-0.60	49.09	20.35				
13/2-(1)	11/2-(1)	-2.10	-1.55	29.03	26.95	-0.507	0.865	-0.048	-0.047
15/2-(1)	11/2-(1)	-3.84	-0.77	63.66	27.71				
15/2-(1)	13/2-(1)	-0.73	-2.44	12.83	32.13	-0.662	1.472	-0.025	-0.039
17/2-(1)	13/2-(1)	-2.79	-0.28	30.88	10.63				
17/2-(1)	15/2-(1)	0.09	-1.42	1.21	7.89	-0.472	0.747	-0.011	-0.027
19/2-(1)	15/2-(1)	-2.81	-0.56	34.12	14.86				
19/2-(1)	17/2-(1)	1.83	-2.74	1.01	14.63	-0.727	1.773	0.006	-0.024
5/2-(2)	3/2-(2)	0.81	-0.81	0.65	0.75	-1.123	4.237	0.003	-0.004
7/2-(2)	3/2-(2)	-1.17	1.17	1.37	1.58				
7/2-(2)	5/2-(2)	2.29	1.66	34.28	31.39	0.546	1.000	-0.049	-0.047
9/2-(2)	5/2-(2)	-0.60	-0.57	2.71	3.03				
9/2-(2)	7/2-(2)	-1.48	0.34	6.29	0.55	0.802	2.162	0.014	0.004
11/2-(2)	7/2-(2)	-3.03	-0.10	34.21	9.80				
11/2-(2)	9/2-(2)	-0.63	-0.82	3.80	5.26	0.332	0.370	0.027	0.031
13/2-(2)	9/2-(2)	-2.00	-2.24	33.90	42.24				
13/2-(2)	11/2-(2)	-3.02	1.37	20.31	0.02	0.887	2.641	0.023	0.001
15/2-(2)	11/2-(2)	-1.68	1.68	2.82	3.25				
15/2-(2)	13/2-(2)	2.41	-2.41	5.81	6.67	-1.055	3.736	0.010	-0.011
3/2-(2)	1/2-(1)	-1.59	1.59	2.53	2.91	-1.046	3.677	-0.007	0.007
3/2-(2)	3/2-(1)	-2.46	2.46	6.07	6.98	0.725	1.765	0.015	-0.017
3/2-(2)	5/2-(1)	0.56	-0.56	0.32	0.37	0.387	0.504	-0.007	0.007
3/2-(2)	7/2-(1)	0.34	-0.34	0.12	0.13				
5/2-(2)	1/2-(1)	0.97	-2.12	0.00	11.39				
5/2-(2)	3/2-(1)	-3.03	0.96	23.95	0.93	-0.213	0.153	-0.104	-0.021
5/2-(2)	5/2-(1)	-0.19	1.63	1.20	9.82	-0.094	0.029	0.053	0.152
5/2-(2)	7/2-(1)	0.61	-0.39	0.64	0.04	0.013	0.001	-0.283	0.073
5/2-(2)	9/2-(1)	-0.95	-0.51	5.09	3.81				
7/2-(2)	3/2-(1)	3.09	-0.21	32.26	6.49				
7/2-(2)	5/2-(1)	-0.38	-1.69	5.06	14.57	0.323	0.352	0.032	0.054
7/2-(2)	7/2-(1)	-1.99	0.19	12.95	2.32	-0.089	0.027	-0.184	-0.078
7/2-(2)	9/2-(1)	1.34	1.72	16.72	23.03	0.358	0.432	-0.052	-0.061
7/2-(2)	11/2-(1)	1.79	0.42	14.23	6.63				
9/2-(2)	5/2-(1)	-1.92	-2.00	29.65	35.09				
9/2-(2)	7/2-(1)	-0.01	0.20	0.03	0.16	-0.174	0.102	0.004	0.011
9/2-(2)	9/2-(1)	-1.07	0.72	1.93	0.19	0.144	0.070	0.044	-0.014
9/2-(2)	11/2-(1)	-1.55	0.41	6.62	0.43	0.524	0.923	0.022	0.006
9/2-(2)	13/2-(1)	0.55	-1.26	0.01	4.15				
11/2-(2)	7/2-(1)	-0.17	-0.03	0.12	0.05				
11/2-(2)	9/2-(1)	-1.23	-0.28	6.68	3.07	-0.163	0.089	-0.072	-0.049
11/2-(2)	11/2-(1)	-0.62	0.18	1.02	0.05	-0.048	0.008	-0.096	-0.022
11/2-(2)	13/2-(1)	0.20	2.18	5.44	21.39	0.592	1.177	-0.018	-0.036
11/2-(2)	15/2-(1)	0.43	0.09	0.79	0.34				
13/2-(2)	9/2-(1)	-0.39	0.04	0.50	0.08				
13/2-(2)	11/2-(1)	0.21	-0.25	0.03	0.09	-0.287	0.277	0.003	-0.005
13/2-(2)	13/2-(1)	-1.03	0.52	2.20	0.01	0.112	0.042	0.060	-0.003
13/2-(2)	15/2-(1)	-1.56	0.93	4.55	0.15	0.492	0.812	0.020	-0.004
13/2-(2)	17/2-(1)	-0.31	-2.11	6.19	21.11				
15/2-(2)	11/2-(1)	0.36	-0.36	0.13	0.15				
15/2-(2)	13/2-(1)	-0.89	0.89	0.79	0.91	0.165	0.091	0.025	-0.026
15/2-(2)	15/2-(1)	-1.67	1.67	2.80	3.22	0.282	0.267	0.027	-0.029
15/2-(2)	17/2-(1)	-2.79	2.79	7.76	8.92	0.922	2.058	0.014	-0.015
15/2-(2)	19/2-(1)	1.16	-1.16	1.34	1.54				

WEISSKOPF ESTIMATES 43TI B(E2) = 8.95 E**2 FM**4 B(M1) = 1.79 N.M.**2 53CO B(E2) = 11.83 E**2 FM**4 B(M1) = 1.79 N.M.**2

E2 AND M1 MATRIX ELEMENTS (TRANSITIONS)   EP = 1.900 EN = 0.900   GP = 1.456 GA = -0.377   (42SC-INT)

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* 44TI - 52FE *
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JI	JF	E2 M.E. XP 44TI	E2 M.E. XN 44TI	B(E2) (E**2 FM**4) 44TI	B(E2) (E**2 FM**4) 52FE	M1 M.E. XP,-XN BOTH	B(M1) (N.M.**2) BOTH	DELTA/ENERGY (MEV**-1) 44TI	DELTA/ENERGY (MEV**-1) 52FE
1+(1)	0+(1)					-0.494	0.820		
2+(1)	0+(1)	-3.69	-3.69	1C6.65	119.22				
2+(1)	1+(1)	2.02	-2.02	4.06	4.54	0.244	0.200	-0.038	0.040
3+(1)	1+(1)	-1.56	1.56	2.43	2.72				
3+(1)	2+(1)	0.46	0.46	1.67	1.87	0	0	F2	E2
4+(1)	2+(1)	-4.16	-4.16	135.42	151.38				
4+(1)	3+(1)	-1.37	-1.37	14.63	16.35	0	0	E2	E2
5+(1)	3+(1)	1.83	1.83	26.15	29.23				
5+(1)	4+(1)	0.27	0.27	0.57	0.64	0	0	E2	E2
6+(1)	4+(1)	-2.74	-2.74	59.05	66.00				
6+(1)	5+(1)	1.39	1.39	15.19	16.98	0	0	E2	E2
7+(1)	5+(1)	-1.60	-1.60	20.12	22.50				
7+(1)	6+(1)	2.15	2.15	36.10	40.36	0	0	E2	E2
8+(1)	6+(1)	-2.79	-2.79	61.19	68.40				
8+(1)	7+(1)	2.19	2.19	37.70	42.14	0	0	E2	E2
9+(1)	7+(1)	-1.77	-1.77	24.66	27.56				
9+(1)	8+(1)	1.08	1.C8	9.10	10.17	0	0	F2	E2
10+(1)	8+(1)	-2.95	-2.95	68.32	76.37				
10+(1)	9+(1)	1.24	1.24	12.06	13.48	0	0	E2	E2
11+(1)	9+(1)	1.89	-1.89	3.56	3.98				
11+(1)	10+(1)	-0.58	0.58	0.34	0.38	-0.156	0.082	-0.017	0.018
12+(1)	10+(1)	-2.17	-2.17	36.97	41.32				
12+(1)	11+(1)	2.10	-2.10	4.41	4.93	-0.846	2.407	0.011	-0.012
1+(2)	0+(2)					1.046	3.678		
2+(2)	0+(2)	1.20	1.20	11.37	12.71				
2+(2)	1+(2)	0.88	-0.88	0.78	0.87	-0.261	0.228	0.015	-0.016
3+(2)	1+(2)	0.61	0.61	2.96	3.31				
3+(2)	2+(2)	1.54	-1.54	2.37	2.65	0.374	0.469	-0.019	0.020
4+(2)	2+(2)	-1.79	-1.79	25.22	28.19				
4+(2)	3+(2)	0.58	-0.58	0.34	0.38	-0.589	1.165	0.004	-0.005
5+(2)	3+(2)	2.77	2.77	60.16	67.24				
5+(2)	4+(2)	-1.32	1.32	1.74	1.94	-0.142	0.068	-0.042	0.045
6+(2)	4+(2)	1.43	1.43	16.07	17.97				
6+(2)	5+(2)	0.32	-0.32	0.10	0.12	-0.646	1.404	0.002	-0.002
7+(2)	5+(2)	-1.45	-1.45	16.47	18.41				
7+(2)	6+(2)	0.33	-0.33	0.11	0.12	0.344	0.397	-0.004	0.005
8+(2)	6+(2)	2.24	2.24	39.30	43.93				
8+(2)	7+(2)	-0.50	0.50	0.25	0.28	-0.460	0.711	-0.005	0.005
9+(2)	7+(2)	-2.33	-2.33	42.54	47.54				
9+(2)	8+(2)	0.41	-0.41	0.17	0.18	-0.617	1.281	0.003	-0.003
10+(2)	8+(2)	-1.33	-1.33	13.86	15.49				
10+(2)	9+(2)	0.61	-0.61	0.37	0.41	-0.738	1.828	0.004	-0.004
0+(2)	1+(1)					0.285	0.273		
0+(2)	2+(1)	-1.31	-1.31	13.37	14.95				
1+(2)	0+(1)					-0.188	0.118		
1+(2)	1+(1)	1.00	1.00	7.79	8.71	0	0	E2	E2
1+(2)	2+(1)	0.25	-0.25	0.06	0.07	0.180	0.109	-0.006	0.007
1+(2)	3+(1)	1.52	-1.52	2.32	2.60				
2+(2)	0+(1)	-0.34	-0.34	0.93	1.03				
2+(2)	1+(1)	-1.07	1.07	1.15	1.28	-0.762	1.948	-0.006	0.007
2+(2)	2+(1)	-1.78	-1.78	24.88	27.81	0	0	E2	E2
2+(2)	3+(1)	3.17	3.17	78.68	87.95	0	0	E2	E2
2+(2)	4+(1)	-0.38	-0.38	1.12	1.25				
3+(2)	1+(1)	-2.51	-2.51	49.33	55.14				
3+(2)	2+(1)	2.06	-2.06	4.25	4.75	-0.343	0.396	0.027	-0.029
3+(2)	3+(1)	0.93	-0.93	0.86	0.97	0.602	1.216	-0.007	0.007
3+(2)	4+(1)	-2.08	2.08	4.34	4.85	-0.379	0.482	-0.025	0.026
3+(2)	5+(1)	1.77	-1.77	3.13	3.50				
4+(2)	2+(1)	0.84	0.84	5.59	6.24				
4+(2)	3+(1)	-1.82	-1.82	25.87	28.92	0	0	E2	E2
4+(2)	4+(1)	-1.92	-1.92	28.80	32.20	0	0	E2	E2
4+(2)	5+(1)	-2.81	-2.81	61.91	69.21	0	0	F2	E2
4+(2)	6+(1)	-1.09	-1.09	9.24	10.32				
5+(2)	3+(1)	-0.23	0.23	0.05	0.06				
5+(2)	4+(1)	-2.19	2.19	4.80	5.37	0.202	0.138	0.049	-0.052
5+(2)	5+(1)	-0.13	0.13	0.02	0.02	0.986	3.266	0.001	-0.001
5+(2)	6+(1)	2.31	-2.31	5.35	5.98	0.049	0.008	-0.215	0.227
5+(2)	7+(1)	-0.40	0.40	0.16	0.18				
6+(2)	4+(1)	-2.94	-2.94	67.98	75.99				
6+(2)	5+(1)	0.74	0.74	4.35	4.86	0	0	E2	E2
6+(2)	6+(1)	2.68	2.68	56.16	62.77	0	0	E2	F2
6+(2)	7+(1)	2.14	2.14	35.81	40.03	0	0	E2	E2
6+(2)	8+(1)	-2.04	-2.04	32.74	36.60				
7+(2)	5+(1)	0.10	-0.10	0.01	0.01				
7+(2)	6+(1)	-2.11	2.11	4.45	4.96	-0.187	0.118	-0.051	0.054
7+(2)	7+(1)	-0.61	0.61	0.37	0.42	0.922	2.853	0.003	-0.003
7+(2)	8+(1)	0.40	-0.40	0.16	0.18	0.707	1.682	-0.003	0.003
7+(2)	9+(1)	0.57	-0.57	0.33	0.36				
8+(2)	6+(1)	0.22	0.22	0.37	0.41				
8+(2)	7+(1)	1.65	1.65	21.27	23.78	0	0	E2	E2
8+(2)	8+(1)	-1.11	-1.11	9.58	10.70	0	0	E2	E2
8+(2)	9+(1)	-1.89	-1.89	27.87	31.16	0	0	E2	E2
8+(2)	10+(1)	0.87	0.87	5.99	6.70				
9+(2)	7+(1)	1.48	-1.48	2.18	2.45				
9+(2)	8+(1)	-1.19	1.19	1.40	1.57	-0.262	0.231	-0.021	0.022
9+(2)	9+(1)	-1.19	1.19	1.41	1.58	0.457	0.703	0.012	-0.012
9+(2)	10+(1)	-0.87	0.87	0.75	0.84	0.753	1.903	0.005	-0.006
9+(2)	11+(1)	-2.32	-2.32	42.07	47.03				
10+(2)	8+(1)	-0.12	-0.12	0.11	0.13				
10+(2)	9+(1)	1.08	1.08	9.09	10.16	0	0	E2	E2
10+(2)	10+(1)	-0.40	-0.40	1.27	1.42	0	0	E2	E2
10+(2)	11+(1)	-2.89	2.89	8.37	9.35	1.214	4.953	0.011	-0.011
10+(2)	12+(1)	-0.34	-0.34	0.89	0.99				

WEISSKOPF ESTIMATES   44TI B(E2) = 9.23 E**2 FM**4   52FE B(E2) = 11.53 E**2 FM**4
B(M1) = 1.79 N.M.**2   B(M1) = 1.79 N.M.**2

E2 AND M1 MATRIX ELEMENTS (TRANSITIONS)   EP = 1.900   EN = 0.900   GP = 1.456   GN = -0.377   (42SC-INT)

***** 45TI - 51MN *****

JI	JF	E2 M.E. XP 45TI	E2 M.E. XN 45TI	B(E2) (E**2 FM**4) 45TI	B(E2) (E**2 FM**4) 51MN	M1 M.E. XP,-XN BOTH	B(M1) (N.M.**2) BOTH	DELTA/ENERGY (MEV**-1) 45TI	DELTA/ENERGY (MEV**-1) 51MN
3/2-(1)	1/2-(1)	3.44	1.75	65.79	44.82	0.334	0.374	-0.111	-0.091
5/2-(1)	1/2-(1)	-0.28	-1.05	2.15	5.46				
5/2-(1)	3/2-(1)	-0.09	-2.63	6.50	28.16	-0.184	0.114	-0.063	-0.131
7/2-(1)	3/2-(1)	1.99	2.43	35.59	44.60				
7/2-(1)	5/2-(1)	-4.10	-5.33	158.61	207.55	-0.150	0.075	-0.382	-0.438
9/2-(1)	5/2-(1)	-2.78	-2.25	53.32	49.78				
9/2-(1)	7/2-(1)	-3.78	-3.00	97.67	89.94	-0.116	0.045	-0.387	-0.371
11/2-(1)	7/2-(1)	-3.83	-3.85	115.40	125.96				
11/2-(1)	9/2-(1)	-2.47	-4.04	69.30	106.42	-0.345	0.399	-0.110	-0.136
13/2-(1)	9/2-(1)	-3.49	-3.13	89.27	89.69				
13/2-(1)	11/2-(1)	-2.53	-1.16	34.23	21.76	-0.051	0.009	-0.523	-0.417
15/2-(1)	11/2-(1)	4.13	3.95	130.08	137.10				
15/2-(1)	13/2-(1)	1.06	2.35	17.12	31.99	0.493	0.816	-0.038	-0.052
17/2-(1)	13/2-(1)	0.75	0.94	5.17	6.59				
17/2-(1)	15/2-(1)	-0.98	0.33	2.45	0.07	0.067	0.015	0.106	0.018
19/2-(1)	15/2-(1)	2.71	2.46	54.18	54.94				
19/2-(1)	17/2-(1)	-1.08	-3.51	27.16	63.57	0.525	0.927	0.045	0.069
21/2-(1)	17/2-(1)	-0.61	-2.84	13.83	38.40				
21/2-(1)	19/2-(1)	-0.45	-2.99	12.65	40.38	0.436	0.639	0.037	0.066
23/2-(1)	19/2-(1)	1.41	4.02	39.60	86.15				
23/2-(1)	21/2-(1)	1.63	1.49	19.80	20.20	-0.753	1.907	0.027	0.027
25/2-(1)	21/2-(1)	-0.61	-3.34	17.40	51.03				
25/2-(1)	23/2-(1)	0.32	0.87	1.95	4.10	-0.381	0.487	0.017	0.024
27/2-(1)	23/2-(1)	-1.34	-3.60	33.50	70.42				
27/2-(1)	25/2-(1)	2.21	-1.11	10.27	0.01	-0.892	2.674	0.016	-0.001
3/2-(2)	1/2-(2)	-1.03	-0.00	3.80	0.94	0.163	0.089	0.054	0.027
5/2-(2)	1/2-(2)	0.67	-0.22	1.16	0.04				
5/2-(2)	3/2-(2)	-3.12	-4.13	93.12	123.58	-0.529	0.939	-0.083	-0.096
7/2-(2)	3/2-(2)	-0.64	-2.77	13.76	37.06				
7/2-(2)	5/2-(2)	-1.08	-3.19	24.33	53.90	-0.553	1.029	-0.041	-0.060
9/2-(2)	5/2-(2)	2.00	2.82	40.06	55.57				
9/2-(2)	7/2-(2)	1.70	1.55	21.27	21.64	0.009	0.000	-2.372	-2.392
11/2-(2)	7/2-(2)	-1.26	-1.28	12.58	13.83				
11/2-(2)	9/2-(2)	1.44	0.96	12.98	10.61	0.534	0.959	-0.031	-0.028
13/2-(2)	9/2-(2)	-2.67	-1.86	45.55	38.29				
13/2-(2)	11/2-(2)	0.14	0.66	0.73	2.06	0.319	0.343	-0.012	-0.020
15/2-(2)	11/2-(2)	-1.97	-3.43	46.69	74.62				
15/2-(2)	13/2-(2)	-0.71	-1.19	5.86	9.13	0.542	0.988	0.020	0.025
17/2-(2)	13/2-(2)	-0.42	1.15	0.06	3.55				
17/2-(2)	15/2-(2)	2.12	0.66	21.26	10.81	-0.382	0.489	0.055	0.039
19/2-(2)	15/2-(2)	-1.83	0.29	10.35	1.30				
19/2-(2)	17/2-(2)	0.40	0.25	0.99	0.76	0.430	0.622	-0.010	-0.009
21/2-(2)	17/2-(2)	-1.70	-3.22	37.63	63.57				
21/2-(2)	19/2-(2)	0.84	-0.89	0.64	0.94	0.086	0.025	-0.043	0.051
23/2-(2)	19/2-(2)	-1.81	-2.87	36.17	54.49				
23/2-(2)	21/2-(2)	-0.28	0.22	0.11	0.03	0.407	0.555	0.004	-0.002
1/2-(2)	1/2-(1)					-0.320	0.343		
1/2-(2)	3/2-(1)	0.01	-1.58	1.96	9.76	0.262	0.231	0.024	0.054
1/2-(2)	5/2-(1)	-0.46	-0.10	0.93	0.40				
3/2-(2)	1/2-(1)	0.26	2.01	5.26	17.78	-0.353	0.420	0.029	0.054
3/2-(2)	3/2-(1)	-0.41	-3.14	13.05	43.66	-0.341	0.391	-0.048	-0.088
3/2-(2)	5/2-(1)	-3.08	-0.17	35.95	10.37	0.611	1.255	0.045	0.024
3/2-(2)	7/2-(1)	2.07	-0.96	9.49	0.00				
5/2-(2)	1/2-(1)	-0.17	-1.86	4.00	14.82				
5/2-(2)	3/2-(1)	-0.23	-0.06	0.25	0.12	0.216	0.157	0.011	0.007
5/2-(2)	5/2-(1)	-2.86	-0.31	32.56	10.82	0.200	0.134	0.130	0.075
5/2-(2)	7/2-(1)	-0.54	-0.35	1.78	1.44	0.463	0.720	0.013	0.012
5/2-(2)	9/2-(1)	1.32	-2.46	0.08	13.21				
7/2-(2)	3/2-(1)	-2.76	-1.14	39.38	23.52				
7/2-(2)	5/2-(1)	-2.13	-0.20	17.94	5.78	0.128	0.055	0.153	0.085
7/2-(2)	7/2-(1)	-2.63	0.67	19.30	1.32	0.287	0.276	0.070	0.018
7/2-(2)	9/2-(1)	1.23	3.37	28.78	61.35	0.655	1.441	-0.037	-0.054
7/2-(2)	11/2-(1)	1.88	0.21	14.18	4.73				
9/2-(2)	5/2-(1)	-0.79	-0.99	5.76	7.31				
9/2-(2)	7/2-(1)	1.47	-0.34	6.24	0.51	-0.177	0.105	0.064	0.018
9/2-(2)	9/2-(1)	1.34	-0.31	5.16	0.43	-0.173	0.101	0.060	0.017
9/2-(2)	11/2-(1)	0.20	1.74	3.77	13.18	-0.319	0.342	0.028	0.052
9/2-(2)	13/2-(1)	-0.10	2.62	4.69	25.95				
11/2-(2)	7/2-(1)	-0.77	1.25	0.11	3.08				
11/2-(2)	9/2-(1)	-1.78	-0.64	15.65	8.62	-0.031	0.003	-0.582	-0.432
11/2-(2)	11/2-(1)	-0.51	0.66	0.13	0.71	0.468	0.737	0.004	-0.008
11/2-(2)	13/2-(1)	-0.46	0.85	0.01	1.54	0.450	0.682	0.001	-0.013
11/2-(2)	15/2-(1)	-0.50	1.55	0.19	6.70				
13/2-(2)	9/2-(1)	-1.06	-0.46	5.88	3.60				
13/2-(2)	11/2-(1)	0.70	-0.67	0.52	0.44	-0.173	0.101	0.019	-0.017
13/2-(2)	13/2-(1)	0.73	0.82	4.52	5.31	-0.070	0.016	0.138	0.150
13/2-(2)	15/2-(1)	-0.50	-2.98	13.10	40.45	0.277	0.259	0.059	0.104
13/2-(2)	17/2-(1)	-2.34	-2.54	45.28	52.23				
15/2-(2)	11/2-(1)	-0.30	1.01	0.11	2.91				
15/2-(2)	13/2-(1)	-1.07	-0.08	4.41	1.34	-0.060	0.012	-0.158	-0.087
15/2-(2)	15/2-(1)	0.76	-1.11	0.20	2.22	-0.606	1.234	0.003	-0.011
15/2-(2)	17/2-(1)	0.84	-1.07	0.40	1.76	-0.430	0.622	0.007	-0.014
15/2-(2)	19/2-(1)	-0.30	-2.18	6.43	21.20				
17/2-(2)	13/2-(1)	-2.39	-3.18	54.65	72.77				
17/2-(2)	15/2-(1)	1.57	-0.46	6.65	0.32	0.133	0.060	-0.088	-0.019
17/2-(2)	17/2-(1)	-0.58	-1.50	6.04	12.36	0.179	0.107	0.063	0.090
17/2-(2)	19/2-(1)	0.21	2.38	6.45	24.14	0.435	0.636	-0.027	-0.051
17/2-(2)	21/2-(1)	1.44	1.53	17.00	19.27				

E2 AND M1 MATRIX ELEMENTS (TRANSITIONS)   EP = 1.900 EN = 0.900   GP = 1.456 GA = -0.377   (42SC-INT)

JI	JF	E2 M.E.		B(E2)		M1 M.E.	B(M1)	DELTA/ENERGY	
		XP	XN	(E**2 FM**4)		XP,-XN	(N.M.**2)	(MEV**-1)	
* 45TI - 51MN *		45TI	45TI	45TI	51MN	BOTH	BOTH	45TI	51MN
19/2-(2)	15/2-(1)	-2.47	-3.38	59.82	81.35				
19/2-(2)	17/2-(1)	-0.33	-1.64	4.42	12.63	0.070	0.016	0.137	0.231
19/2-(2)	19/2-(1)	-1.26	-0.95	10.63	9.47	0.338	0.385	0.044	0.041
19/2-(2)	21/2-(1)	1.98	1.26	23.96	18.95	-0.395	0.523	0.056	0.050
19/2-(2)	23/2-(1)	-2.78	-0.59	33.76	14.26				
21/2-(2)	17/2-(1)	-0.01	0.29	0.06	0.31				
21/2-(2)	19/2-(1)	-0.53	-0.86	3.14	4.81	-0.091	0.028	-0.088	-0.109
21/2-(2)	21/2-(1)	-0.62	-0.13	1.67	0.71	0.195	0.128	0.030	0.020
21/2-(2)	23/2-(1)	-0.02	-2.39	4.82	22.65	-0.376	0.474	-0.027	-0.058
21/2-(2)	25/2-(1)	1.90	0.92	19.69	12.98				
23/2-(2)	19/2-(1)	0.24	-0.24	0.06	0.06				
23/2-(2)	21/2-(1)	-0.48	-1.09	3.56	6.79	0.147	0.073	0.058	0.080
23/2-(2)	23/2-(1)	1.19	-0.35	3.82	0.18	-0.254	0.218	0.035	0.008
23/2-(2)	25/2-(1)	2.56	-0.34	20.81	3.02	-0.578	1.122	0.036	0.014
23/2-(2)	27/2-(1)	-2.49	1.07	14.24	0.05				

WEISSKUPF ESTIMATES   45TI B(E2) = 9.51 E**2 FM**4   B(M1) = 1.79 N.M.**2   51MN B(E2) = 11.23 E**2 FM**4   B(M1) = 1.79 N.M.**2

JI	JF	E2 M.E. XP	E2 M.E. XN	B(E2)		M1 M.E.	B(M1)	DELTA/ENERGY	
* 46TI - 50CR *		46TI	46TI	46TI	50CR	BOTH	BOTH	46TI	50CR
1+(1)	0+(1)					-0.340	0.388		
2+(1)	0+(1)	-3.66	-4.24	115.81	136.05				
2+(1)	1+(1)	2.00	-2.05	3.79	4.65	0.159	0.085	-0.056	0.062
3+(1)	1+(1)	1.26	1.83	16.32	22.40				
3+(1)	2+(1)	-2.18	2.80	2.60	11.95	0.175	0.103	0.042	-0.090
4+(1)	2+(1)	3.51	5.13	127.54	176.13				
4+(1)	3+(1)	2.42	0.30	23.71	7.98	0.340	0.389	-0.065	-0.038
5+(1)	3+(1)	-0.40	-2.59	9.52	29.44				
5+(1)	4+(1)	1.41	-0.95	3.34	0.30	-0.012	0.000	0.709	-0.211
6+(1)	4+(1)	-3.38	-4.49	109.64	141.83				
6+(1)	5+(1)	2.29	2.83	47.47	58.46	0.243	0.199	-0.129	-0.143
7+(1)	5+(1)	-3.03	-2.10	58.53	47.72				
7+(1)	6+(1)	2.19	-0.68	12.61	0.50	0.068	0.016	-0.237	-0.047
8+(1)	6+(1)	-3.68	-4.53	122.48	150.00				
8+(1)	7+(1)	1.39	1.93	19.15	25.49	0.534	0.958	-0.037	-0.043
9+(1)	7+(1)	1.40	1.99	19.82	26.86				
9+(1)	8+(1)	-1.27	1.16	1.90	1.17	0.004	0.000	1.687	-1.321
10+(1)	8+(1)	-2.76	-3.38	68.82	83.98				
10+(1)	9+(1)	0.34	0.20	0.68	0.49	-0.443	0.660	0.008	0.007
11+(1)	9+(1)	-1.58	-3.91	42.59	82.98				
11+(1)	10+(1)	-0.10	2.75	5.24	27.82	-0.285	0.273	0.037	0.084
12+(1)	10+(1)	-1.70	-3.59	41.65	73.67				
12+(1)	11+(1)	1.71	1.90	24.67	28.12	-0.786	2.076	0.079	0.031
13+(1)	11+(1)	-0.99	-3.39	24.26	56.82				
13+(1)	12+(1)	0.23	1.48	3.12	9.59	-0.251	0.211	0.032	0.056
14+(1)	12+(1)	-0.84	-4.17	28.70	79.82				
14+(1)	13+(1)	2.25	0	18.31	4.34	-0.905	2.751	0.022	0.010
1+(2)	0+(2)					0.190	0.121		
2+(2)	0+(2)	-0.93	1.46	0.21	3.99				
2+(2)	1+(2)	0.24	-0.47	0.00	0.49	-0.240	0.193	0.001	-0.013
3+(2)	1+(2)	-1.09	-1.20	9.94	11.25				
3+(2)	2+(2)	-0.03	-0.33	0.13	0.46	-0.153	0.079	-0.011	-0.020
4+(2)	2+(2)	0.35	-2.76	3.31	25.64				
4+(2)	3+(2)	2.75	-0.08	26.58	5.74	-0.285	0.273	0.082	0.038
5+(2)	3+(2)	1.03	1.20	9.27	10.93				
5+(2)	4+(2)	0.02	-0.74	0.40	2.06	0.190	0.121	0.015	0.034
6+(2)	4+(2)	0.23	0.48	0.75	1.32				
6+(2)	5+(2)	-0.19	1.31	0.66	5.64	0.010	0.000	-0.352	-1.028
7+(2)	5+(2)	0.83	-0.83	0.71	0.71				
7+(2)	6+(2)	0.05	3.30	9.83	44.30	-0.359	0.434	0.040	0.084
8+(2)	6+(2)	-1.67	-4.25	48.85	96.76				
8+(2)	7+(2)	1.27	1.65	15.15	19.37	-0.700	1.647	0.025	0.029
9+(2)	7+(2)	-0.05	-2.52	5.57	24.63				
9+(2)	8+(2)	0.25	0.33	0.59	0.77	-0.267	0.240	0.013	0.015
10+(2)	8+(2)	-2.09	-1.63	29.67	26.30				
10+(2)	9+(2)	1.46	1.28	15.40	14.84	-0.623	1.305	0.029	0.028
11+(2)	9+(2)	-0.95	-1.59	10.48	15.97				
11+(2)	10+(2)	0.30	-1.31	0.37	5.19	0.093	0.029	0.030	0.111
12+(2)	10+(2)	-1.48	-2.99	30.36	51.99				
12+(2)	11+(2)	0.17	-0.37	0.00	0.32	0.115	0.044	0.000	0.022

E2 AND M1 MATRIX ELEMENTS (TRANSITIONS)   EP = 1.900 EN = 0.900   GP = 1.456 GN = -0.377   (42SC-INT)

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* 46TI - 50CR *
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JI	JF	E2 M.E. XP	E2 M.E. XN	B(E2) (E**2 FM**4)	B(E2) (E**2 FM**4)	M1 M.E. XP,-XN	B(M1) (N.M.**2)	DELTA/ENERGY (MEV**-1)	DELTA/ENERGY (MEV**-1)
		46TI	46TI	46TI	50CR	BOTH	BOTH	46TI	50CR
0+(2)	1+(1)					1.239	5.161		
0+(2)	2+(1)	-1.51	-1.83	20.42	24.77				
1+(2)	0+(1)					-0.060	0.012		
1+(2)	1+(1)	0.59	2.54	11.66	30.45	-0.022	0.002	0.705	1.139
1+(2)	2+(1)	0.20	-0.07	0.10	0.00	0.088	0.026	-0.016	-0.003
1+(2)	3+(1)	-0.14	-2.34	5.60	22.03				
2+(2)	0+(1)	1.99	-2.56	2.21	9.91				
2+(2)	1+(1)	2.32	3.30	54.49	73.91	-0.385	0.499	0.087	0.101
2+(2)	2+(1)	-2.24	-2.15	38.31	39.29	-0.603	1.220	-0.047	-0.047
2+(2)	3+(1)	4.67	4.91	176.77	193.59	0.102	0.035	-0.593	-0.621
2+(2)	4+(1)	1.93	0.40	16.23	6.62				
3+(2)	1+(1)	0.87	-0.40	1.68	0.00				
3+(2)	2+(1)	-0.50	-0.19	1.25	0.69	0.046	0.007	0.110	0.082
3+(2)	3+(1)	0.95	0.59	5.41	4.09	0.099	0.033	-0.107	-0.093
3+(2)	4+(1)	0.64	1.20	5.27	8.66	-0.199	0.133	0.052	0.067
3+(2)	5+(1)	2.21	-0.06	17.22	3.71				
4+(2)	2+(1)	0.85	0.02	2.68	0.69				
4+(2)	3+(1)	-0.15	1.04	0.43	3.58	0.238	0.190	-0.013	-0.036
4+(2)	4+(1)	2.25	3.68	60.19	93.20	0.200	0.135	-0.176	-0.219
4+(2)	5+(1)	4.38	4.45	152.10	162.70	0.190	0.122	-0.295	-0.305
4+(2)	6+(1)	1.09	0.01	4.30	1.04				
5+(2)	3+(1)	2.77	3.14	65.46	75.60				
5+(2)	4+(1)	-2.34	0.95	12.91	0.09	0.148	0.073	0.111	0.009
5+(2)	5+(1)	0.78	0.90	5.28	6.14	-0.176	0.105	0.059	0.064
5+(2)	6+(1)	0.73	-0.92	0.31	1.28	0.409	0.563	-0.006	0.013
5+(2)	7+(1)	0.51	3.71	18.49	59.57				
6+(2)	4+(1)	-0.15	-1.93	4.12	15.36				
6+(2)	5+(1)	1.37	1.68	16.90	20.64	0.027	0.002	-0.691	-0.764
6+(2)	6+(1)	2.78	2.33	54.47	50.86	-1.157	4.497	0.029	0.028
6+(2)	7+(1)	-2.29	-1.34	30.89	22.45	0.236	0.186	0.107	0.091
6+(2)	8+(1)	-2.49	0.30	19.87	2.93				
7+(2)	5+(1)	0.80	0.43	3.67	2.51				
7+(2)	6+(1)	-1.30	-2.11	19.02	28.34	0.319	0.341	0.062	0.076
7+(2)	7+(1)	-1.39	-1.34	14.71	15.17	0.528	0.937	0.033	0.034
7+(2)	8+(1)	1.07	0.67	6.96	5.31	-0.039	0.005	0.309	0.270
7+(2)	9+(1)	0.08	1.66	2.71	10.98				
8+(2)	6+(1)	-0.14	0.31	0.00	0.21				
8+(2)	7+(1)	1.18	1.08	10.30	10.27	-0.108	0.039	0.135	0.134
8+(2)	8+(1)	2.50	1.14	33.32	20.56	-0.774	2.012	0.034	0.027
8+(2)	9+(1)	1.66	3.03	34.52	55.45	-0.570	1.090	0.047	0.059
8+(2)	10+(1)	-0.43	3.53	5.60	42.22				
9+(2)	7+(1)	-0.99	-1.06	8.05	8.93				
9+(2)	8+(1)	-0.45	-0.17	1.01	0.56	0.216	0.157	0.021	0.016
9+(2)	9+(1)	0.25	0.32	0.58	0.74	-0.011	0.000	0.313	0.354
9+(2)	10+(1)	1.67	-2.10	1.62	6.59	-0.595	1.191	0.010	-0.020
9+(2)	11+(1)	-0.19	0.32	0.00	0.21				
10+(2)	8+(1)	-2.55	-2.58	51.34	54.75				
10+(2)	9+(1)	0.14	0.84	1.04	3.14	-0.224	0.168	0.021	0.036
10+(2)	10+(1)	1.80	2.57	32.84	44.61	-0.419	0.589	0.062	0.073
10+(2)	11+(1)	2.18	1.73	32.58	29.23	-0.494	0.819	0.053	0.050
10+(2)	12+(1)	-2.24	-0.66	23.43	11.26				
11+(2)	9+(1)	0.41	1.19	3.41	7.34				
11+(2)	10+(1)	0.53	0.83	3.07	4.44	-0.004	0.000	2.146	2.581
11+(2)	11+(1)	-0.77	-0.96	5.39	6.65	0.250	0.210	0.042	0.047
11+(2)	12+(1)	0.53	-3.14	3.29	31.75	-0.366	0.449	-0.023	-0.070
11+(2)	13+(1)	1.46	1.07	13.95	11.83				
12+(2)	10+(1)	-0.55	-1.11	4.17	7.20				
12+(2)	11+(1)	-0.37	-0.81	2.06	3.70	0.024	0.002	0.276	0.370
12+(2)	12+(1)	0.83	0.16	2.95	1.16	-0.184	0.114	0.042	0.027
12+(2)	13+(1)	2.31	0.26	21.36	7.00	-0.410	0.566	0.051	0.029
12+(2)	14+(1)	-2.82	0.77	21.75	1.23				

WEISSKOPF ESTIMATES   46TI B(E2) = 9.79 E**2 FM**4   50CR B(E2) = 10.94 E**2 FM**4
B(M1) = 1.79 N.M.**2   B(M1) = 1.79 N.M.**2

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* 47TI - 49V *
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JI	JF	47TI	47TI	47TI	49V	BOTH	BOTH	47TI	49V
3/2-(1)	1/2-(1)	1.30	2.97	26.55	47.89	-0.441	0.652	0.053	0.071
5/2-(1)	1/2-(1)	-2.67	0.87	18.39	0.57				
5/2-(1)	3/2-(1)	3.10	2.50	66.40	58.53	-0.068	0.015	0.549	0.515
7/2-(1)	3/2-(1)	-2.65	-2.70	55.63	58.09				
7/2-(1)	5/2-(1)	2.97	5.63	114.71	183.79	0.048	0.008	-1.012	-1.281
9/2-(1)	5/2-(1)	-4.07	-0.89	72.78	29.40				
9/2-(1)	7/2-(1)	2.84	0.18	30.84	8.66	0.048	0.008	-0.527	-0.279
11/2-(1)	7/2-(1)	-4.19	-3.66	126.86	118.50				
11/2-(1)	9/2-(1)	1.71	3.29	38.54	62.33	0.299	0.301	-0.094	-0.120
13/2-(1)	9/2-(1)	0.23	0.19	0.38	0.34				
13/2-(1)	11/2-(1)	-1.97	-1.20	23.24	16.84	0.297	0.297	0.074	0.063
15/2-(1)	11/2-(1)	-3.71	-3.78	109.31	113.74				
15/2-(1)	13/2-(1)	0.61	2.03	8.97	20.06	-0.376	0.474	0.036	0.054
17/2-(1)	13/2-(1)	-2.16	-3.58	93.55	78.51				
17/2-(1)	15/2-(1)	-1.97	-1.78	28.52	27.23	0.551	1.019	0.044	0.043
19/2-(1)	15/2-(1)	-2.49	-2.68	50.94	55.31				
19/2-(1)	17/2-(1)	1.39	3.26	31.02	56.96	-0.629	1.330	0.040	0.055
21/2-(1)	17/2-(1)	-0.81	-4.32	29.38	82.02				
21/2-(1)	19/2-(1)	-0.49	0.01	0.85	0.19	-0.007	0.000	-0.634	-0.297
23/2-(1)	19/2-(1)	-1.49	-4.62	48.96	105.38				
23/2-(1)	21/2-(1)	1.30	2.53	22.56	36.78	-0.686	1.581	0.031	0.040
25/2-(1)	21/2-(1)	0.95	2.74	18.28	37.87				
25/2-(1)	23/2-(1)	-0.31	-1.77	4.74	13.66	0.376	0.476	0.026	0.045
27/2-(1)	23/2-(1)	1.39	3.48	33.23	63.48				
27/2-(1)	25/2-(1)	2.24	1.12	27.78	17.70	-0.892	2.674	0.027	0.021

E2 AND M1 MATRIX ELEMENTS (TRANSITIONS)   EP = 1.900 EN = 0.900   GP = 1.456 GN = -0.377   (42SC-INT)

* 47TI - 49V *

JI	JF	E2 M.E. XP	E2 M.E. XN	B(E2) (E**2 FM**4)	B(E2) (E**2 FM**4)	M1 M.E. XP,-XN	B(M1) (N.M.**2)	DELTA/ENERGY (MEV**-1)	DELTA/ENERGY (MEV**-1)
		47TI	47TI	47TI	49V	BOTH	BOTH	47TI	49V
3/2-(2)	1/2-(2)	-1.97	-0.74	19.41	10.41	-0.467	0.731	-0.043	-0.031
5/2-(2)	1/2-(2)	-0.56	-0.48	2.23	2.06				
5/2-(2)	3/2-(2)	0.03	2.17	4.04	17.75	0.139	0.064	-0.066	-0.138
7/2-(2)	3/2-(2)	-1.78	-1.49	22.22	20.12				
7/2-(2)	5/2-(2)	1.78	1.10	19.11	14.02	-0.147	0.073	0.135	0.116
9/2-(2)	5/2-(2)	2.49	1.80	40.28	32.96				
9/2-(2)	7/2-(2)	-1.71	-2.31	28.35	36.13	-0.314	0.332	-0.077	-0.087
11/2-(2)	7/2-(2)	0.82	-0.04	2.33	0.45				
11/2-(2)	9/2-(2)	0.63	0.05	1.54	0.45	0.376	0.476	-0.015	-0.008
13/2-(2)	9/2-(2)	-0.42	1.47	0.28	5.98				
13/2-(2)	11/2-(2)	2.36	1.97	39.17	35.31	-0.360	0.436	0.079	0.075
15/2-(2)	11/2-(2)	2.36	2.35	43.59	44.72				
15/2-(2)	13/2-(2)	-1.45	0.30	6.19	0.55	0.115	0.045	0.098	0.029
17/2-(2)	13/2-(2)	2.37	2.82	49.48	57.55				
17/2-(2)	15/2-(2)	1.71	0.25	12.05	4.19	-0.173	0.100	0.091	0.054
19/2-(2)	15/2-(2)	-2.79	-0.55	33.50	12.95				
19/2-(2)	17/2-(2)	0.17	-0.88	0.23	2.38	0.398	0.532	0.005	0.018
21/2-(2)	17/2-(2)	-0.98	-0.44	5.05	3.00				
21/2-(2)	19/2-(2)	-0.03	2.25	3.84	18.51	-0.164	0.090	0.054	0.120
23/2-(2)	19/2-(2)	1.63	1.79	22.23	24.47				
23/2-(2)	21/2-(2)	-2.03	-2.17	33.70	36.33	0.884	2.625	0.030	0.031
1/2-(2)	1/2-(1)					0.482	0.781		
1/2-(2)	3/2-(1)	-2.62	0.07	24.13	5.11	0.118	0.047	0.189	0.087
1/2-(2)	5/2-(1)	0.69	-1.09	0.11	2.16				
3/2-(2)	1/2-(1)	-0.73	-2.11	10.85	22.47	-0.416	0.582	-0.036	-0.052
3/2-(2)	3/2-(1)	-2.80	-0.48	32.95	12.02	0.454	0.692	0.058	0.035
3/2-(2)	5/2-(1)	-1.31	-0.78	10.17	7.28	-0.473	0.751	-0.031	-0.026
3/2-(2)	7/2-(1)	2.80	-0.83	20.95	0.92				
5/2-(2)	1/2-(1)	2.12	3.64	53.28	80.11				
5/2-(2)	3/2-(1)	0.19	1.32	2.39	7.40	-0.579	1.127	0.012	0.021
5/2-(2)	5/2-(1)	-3.31	-0.68	47.52	18.69	-0.103	0.036	-0.304	-0.191
5/2-(2)	7/2-(1)	-3.03	1.88	16.46	0.75	-0.339	0.386	-0.054	0.012
5/2-(2)	9/2-(1)	0.11	-1.57	1.46	8.55				
7/2-(2)	3/2-(1)	1.32	1.25	13.17	13.02				
7/2-(2)	5/2-(1)	1.63	0.53	12.81	6.32	-0.387	0.504	0.042	0.030
7/2-(2)	7/2-(1)	-2.73	0.52	22.34	2.24	0.094	0.029	0.230	0.073
7/2-(2)	9/2-(1)	-1.01	1.55	0.27	4.25	-0.733	1.807	-0.003	0.013
7/2-(2)	11/2-(1)	1.24	0.23	6.63	2.52				
9/2-(2)	5/2-(1)	-1.20	-1.81	15.27	21.05				
9/2-(2)	7/2-(1)	-2.40	-2.55	46.87	50.30	0.175	0.103	0.178	0.184
9/2-(2)	9/2-(1)	0.53	-0.18	0.71	0.02	0.099	0.033	-0.039	-0.006
9/2-(2)	11/2-(1)	0.07	-3.50	9.11	44.62	0.392	0.515	0.035	0.078
9/2-(2)	13/2-(1)	-3.32	-2.84	78.74	72.38				
11/2-(2)	7/2-(1)	1.33	-2.67	0.02	15.40				
11/2-(2)	9/2-(1)	-0.70	-2.16	10.73	23.08	-0.082	0.023	-0.181	-0.265
11/2-(2)	11/2-(1)	0.02	-0.28	0.04	0.26	-0.626	1.317	-0.001	-0.004
11/2-(2)	13/2-(1)	-1.00	-2.11	14.41	24.84	0.337	0.383	0.051	0.067
11/2-(2)	15/2-(1)	-1.27	2.15	0.22	8.87				
13/2-(2)	9/2-(1)	-2.86	-2.23	55.45	47.74				
13/2-(2)	11/2-(1)	1.75	-0.99	5.89	0.10	0.044	0.007	-0.248	0.032
13/2-(2)	13/2-(1)	-0.60	0.07	1.16	0.17	0.291	0.285	0.017	0.006
13/2-(2)	15/2-(1)	-0.30	-1.69	4.37	12.49	-0.638	1.367	-0.015	-0.025
13/2-(2)	17/2-(1)	0.14	-0.63	0.09	1.18				
15/2-(2)	11/2-(1)	0.80	2.37	13.36	28.12				
15/2-(2)	13/2-(1)	1.33	0.60	9.37	5.57	-0.081	0.022	0.171	0.132
15/2-(2)	15/2-(1)	-2.55	-2.67	52.47	55.86	0.892	2.675	0.037	0.038
15/2-(2)	17/2-(1)	1.09	2.37	17.67	30.90	-0.571	1.096	0.033	0.044
15/2-(2)	19/2-(1)	1.70	-1.05	5.25	0.22				
17/2-(2)	13/2-(1)	-0.29	-1.65	4.11	11.81				
17/2-(2)	15/2-(1)	-1.24	0.69	3.03	0.04	-0.013	0.001	-0.596	0.065
17/2-(2)	17/2-(1)	0.56	0.50	2.33	2.21	-0.194	0.126	0.036	0.035
17/2-(2)	19/2-(1)	-0.02	2.68	5.63	26.39	0.441	0.653	-0.024	-0.053
17/2-(2)	21/2-(1)	-1.17	-0.95	9.46	8.38				
19/2-(2)	15/2-(1)	1.92	3.09	41.39	59.31				
19/2-(2)	17/2-(1)	0.81	1.78	9.87	17.33	-0.280	0.263	0.051	0.068
19/2-(2)	19/2-(1)	-2.03	-0.17	16.01	4.74	0.456	0.697	0.040	0.022
19/2-(2)	21/2-(1)	-2.11	-0.17	17.43	5.14	0.485	0.791	0.039	0.021
19/2-(2)	23/2-(1)	2.33	-1.02	12.25	0.02				
21/2-(2)	17/2-(1)	-0.16	-0.41	0.46	0.89				
21/2-(2)	19/2-(1)	0.56	1.82	7.25	16.07	-0.258	0.224	0.047	0.071
21/2-(2)	21/2-(1)	0.07	0.41	0.24	0.71	-0.025	0.002	0.089	0.151
21/2-(2)	23/2-(1)	-1.74	1.23	4.82	0.62	0.526	0.930	0.019	-0.007
21/2-(2)	25/2-(1)	-0.21	1.56	1.00	7.92				
23/2-(2)	19/2-(1)	-0.68	-0.82	4.08	4.79				
23/2-(2)	21/2-(1)	0.31	-1.15	0.20	3.74	0.010	0.000	0.194	0.847
23/2-(2)	23/2-(1)	0.22	0.34	0.51	0.72	0.004	0.000	-0.842	-0.992
23/2-(2)	25/2-(1)	-3.24	-1.16	51.71	26.84	1.169	4.593	0.028	0.020
23/2-(2)	27/2-(1)	0.62	0.90	3.98	5.30				

WEISSKOPF ESTIMATES   47TI B(E2) = 10.08 E**2 FM**4   B(M1) = 1.79 N.M.**2   49V B(E2) = 10.65 E**2 FM**4   B(M1) = 1.79 N.M.**2

E2 AND M1 MATRIX ELEMENTS (TRANSITIONS)   EP = 1.900 EN = 0.900   GP = 1.456 GN = -0.377   (42SC-INT)

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* 48TI - 48TI *
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JI	JF	E2 M.E. XP 48TI	E2 M.E. XN 48TI	B(E2) (E**2 FM**4) 48TI	B(E2) (E**2 FM**4) 48TI	M1 M.E. XP,-XN BOTH	B(M1) (N.M.**2) BOTH	DELTA/ENERGY (MEV**-1) 48TI	DELTA/ENERGY (MEV**-1) 48TI
1+(1)	0+(1)					0.227	0.172		
2+(1)	0+(1)	-3.59	-3.59	130.89	100.88				
2+(1)	1+(1)	-1.97	1.97	3.86	3.87	0	0	E2	E2
3+(1)	1+(1)	1.01	-1.01	1.02	1.02				
3+(1)	2+(1)	3.00	-3.00	9.00	9.01	0	0	E2	E2
4+(1)	2+(1)	-4.01	-4.01	125.88	125.89				
4+(1)	3+(1)	2.28	2.28	40.87	40.87	0.365	0.447	-0.080	-0.080
5+(1)	3+(1)	-2.77	-2.77	60.22	60.22				
5+(1)	4+(1)	2.21	-2.21	4.89	4.89	0	0	E2	E2
6+(1)	4+(1)	3.11	3.11	76.00	76.00				
6+(1)	5+(1)	-1.29	-1.29	13.14	13.14	-0.420	0.592	-0.039	-0.039
7+(1)	5+(1)	-2.58	-2.58	52.07	52.07				
7+(1)	6+(1)	-1.44	1.44	2.06	2.06	0	0	E2	E2
8+(1)	6+(1)	-3.20	-3.20	80.09	80.10				
8+(1)	7+(1)	0.46	0.46	1.64	1.63	-0.809	2.200	0.007	0.007
9+(1)	7+(1)	0.52	-0.52	0.27	0.27				
9+(1)	8+(1)	1.67	1.67	21.85	21.86	-0.557	1.041	0.038	0.038
10+(1)	8+(1)	2.84	2.84	63.23	63.23				
10+(1)	9+(1)	-0.77	0.77	0.59	0.59	0	0	E2	E2
11+(1)	9+(1)	0.35	-0.35	0.12	0.12				
11+(1)	10+(1)	0.97	-0.97	0.94	0.94	0	0	E2	E2
12+(1)	10+(1)	2.17	2.17	37.02	37.02				
12+(1)	11+(1)	2.16	2.16	36.67	36.67	-0.846	2.407	0.033	0.033
1+(2)	0+(2)					0.623	1.306		
2+(2)	0+(2)	-0.71	0.71	0.50	0.50				
2+(2)	1+(2)	0.05	0.05	0.02	0.02	-0.052	0.009	0.011	0.011
3+(2)	1+(2)	0.49	0.49	1.87	1.87				
3+(2)	2+(2)	-0.53	0.53	0.28	0.28	0	0	E2	E2
4+(2)	2+(2)	-2.43	-2.44	46.48	46.49				
4+(2)	3+(2)	2.20	2.20	37.80	37.80	-0.066	0.015	0.425	0.425
5+(2)	3+(2)	-1.99	-1.99	31.11	31.11				
5+(2)	4+(2)	1.45	-1.45	2.09	2.09	0	0	E2	E2
6+(2)	4+(2)	-2.60	-2.60	52.94	52.93				
6+(2)	5+(2)	1.53	1.53	18.45	18.45	0.347	0.405	-0.056	-0.056
7+(2)	5+(2)	-2.20	-2.20	37.86	37.87				
7+(2)	6+(2)	1.26	-1.26	1.58	1.58	0	0	E2	E2
8+(2)	6+(2)	2.81	2.81	61.95	61.94				
8+(2)	7+(2)	-0.15	-0.15	0.17	0.17	-0.652	1.429	-0.003	-0.003
9+(2)	7+(2)	-1.40	1.40	1.97	1.97				
9+(2)	8+(2)	-1.62	-1.62	20.65	20.65	0.253	0.216	0.082	0.082
10+(2)	8+(2)	-1.38	-1.38	14.94	14.94				
10+(2)	9+(2)	0.65	-0.65	0.42	0.42	0	0	E2	E2
0+(2)	1+(1)					1.302	5.695		
0+(2)	2+(1)	1.55	1.56	18.96	18.96				
1+(2)	0+(1)					0.097	0.032		
1+(2)	1+(1)	-0.62	0.62	0.38	0.38	0	0	E2	E2
1+(2)	2+(1)	0.20	-0.20	0.04	0.04	0	0	E2	E2
1+(2)	3+(1)	0.19	-0.19	0.04	0.04				
2+(2)	0+(1)	-2.57	2.57	6.61	6.61				
2+(2)	1+(1)	2.09	2.09	34.32	34.31	-0.360	0.434	0.074	0.074
2+(2)	2+(1)	3.33	3.33	86.81	86.82	0.579	1.126	-0.073	-0.073
2+(2)	3+(1)	4.93	4.93	190.76	190.75	0.271	0.247	-0.231	-0.231
2+(2)	4+(1)	0.81	-0.81	0.66	0.66				
3+(2)	1+(1)	-2.28	-2.28	40.63	40.63				
3+(2)	2+(1)	-0.20	-0.20	0.32	0.32	0.163	0.089	0.016	0.016
3+(2)	3+(1)	-1.15	-1.15	10.41	10.41	0.304	0.310	0.048	0.048
3+(2)	4+(1)	1.41	-1.41	2.00	2.00	0	0	E2	E2
3+(2)	5+(1)	0.58	-0.58	0.34	0.34				
4+(2)	2+(1)	-1.82	1.82	3.30	3.30				
4+(2)	3+(1)	-0.62	0.62	0.39	0.39	0	0	E2	E2
4+(2)	4+(1)	-0.28	-0.28	0.62	0.62	0.840	2.370	0.004	0.004
4+(2)	5+(1)	2.54	2.54	50.57	50.57	-0.064	0.014	0.505	0.505
4+(2)	6+(1)	-0.70	0.70	0.50	0.50				
5+(2)	3+(1)	-1.64	1.64	2.68	2.68				
5+(2)	4+(1)	-0.38	-0.38	1.15	1.15	0.165	0.091	0.030	0.030
5+(2)	5+(1)	-1.18	-1.18	10.85	10.84	0.891	2.667	0.017	0.017
5+(2)	6+(1)	-1.88	1.88	3.52	3.52	0	0	E2	E2
5+(2)	7+(1)	0.87	-0.87	0.75	0.75				
6+(2)	4+(1)	-0.86	0.86	0.73	0.73				
6+(2)	5+(1)	-1.39	1.39	1.94	1.94	0	0	E2	E2
6+(2)	6+(1)	3.58	3.58	100.46	100.46	-1.356	6.182	0.034	0.034
6+(2)	7+(1)	2.16	2.16	36.74	36.74	-0.271	0.246	0.102	0.102
6+(2)	8+(1)	-2.43	2.43	5.93	5.93				
7+(2)	5+(1)	-0.44	0.44	0.19	0.19				
7+(2)	6+(1)	1.71	1.71	22.85	22.85	-0.344	0.399	0.063	0.063
7+(2)	7+(1)	-2.77	-2.77	60.24	60.24	0.928	2.895	0.038	0.038
7+(2)	8+(1)	-1.25	1.25	1.57	1.57	0	0	E2	E2
7+(2)	9+(1)	-1.89	-1.89	27.95	27.95				
8+(2)	6+(1)	1.46	-1.46	2.14	2.13				
8+(2)	7+(1)	1.55	-1.55	2.39	2.39	0	0	E2	E2
8+(2)	8+(1)	-3.47	-3.47	94.20	94.20	0.839	2.363	0.053	0.053
8+(2)	9+(1)	0.93	-0.93	0.86	0.86	0	0	E2	E2
8+(2)	10+(1)	-2.40	2.40	5.77	5.77				
9+(2)	7+(1)	2.22	2.22	38.64	38.64				
9+(2)	8+(1)	0.89	-0.89	0.79	0.79	0	0	E2	E2
9+(2)	9+(1)	1.69	1.69	22.51	22.51	-0.338	0.384	0.064	0.064
9+(2)	10+(1)	-0.89	-0.89	6.25	6.25	0.796	2.128	0.014	0.014
9+(2)	11+(1)	2.14	2.14	35.85	35.85				
10+(2)	8+(1)	0.58	-0.58	0.34	0.34				
10+(2)	9+(1)	3.01	3.01	70.81	70.81	-1.208	4.903	0.032	0.032
10+(2)	10+(1)	1.45	1.45	16.44	16.44	-0.225	0.171	0.082	0.082
10+(2)	11+(1)	-3.02	-3.02	71.63	71.63	1.100	4.067	0.035	0.035
10+(2)	12+(1)	0.44	-0.44	0.20	0.20				

WEISSKOPF ESTIMATES   48TI B(E2) = 10.36 E**2 FM**4   48TI B(E2) = 10.36 E**2 FM**4
B(M1) = 1.79 N.M.**2   B(M1) = 1.79 N.M.**2

E2 AND M1 MATRIX ELEMENTS (TRANSITIONS)   EP = 1.933   EN = 0.900   GP = 1.456   GN = -0.377   (42SC-INT)

* 46V - 50MN *

JI	JF	E2 M.E. XP	E2 M.E. XN	B(E2) (E**2 FM**4)	B(E2) (E**2 FM**4)	M1 M.E. XP,-XN	B(M1) (N.M.**2)	DELTA/ENERGY (MEV**-1)	DELTA/ENERGY (MEV**-1)
		46V	46V	46V	50MN	BOTH	BOTH	46V	50MN
1+(1)	0+(1)					-0.876	2.575		
2+(1)	0+(1)	3.95	3.95	122.15	129.13				
2+(1)	1+(1)	-0.70	0.70	0.49	0.52	0.571	1.095	0.006	-0.006
3+(1)	1+(1)	3.91	3.91	119.60	126.43				
3+(1)	2+(1)	-0.41	0.41	0.17	0.18	-0.801	2.156	-0.002	0.002
4+(1)	2+(1)	-0.28	0.28	0.08	0.08				
4+(1)	3+(1)	2.05	2.05	32.87	34.75	0	0	E2	E2
5+(1)	3+(1)	-0.28	-0.28	0.61	0.65				
5+(1)	4+(1)	-0.78	-0.78	4.73	5.00	0	0	E2	E2
6+(1)	4+(1)	-1.95	-1.95	29.68	31.38				
6+(1)	5+(1)	4.28	4.28	143.81	152.03	0	0	E2	E2
7+(1)	5+(1)	1.82	1.82	25.88	27.35				
7+(1)	6+(1)	-4.25	-4.25	141.52	149.61	0	0	E2	E2
8+(1)	6+(1)	2.85	2.85	63.55	67.18				
8+(1)	7+(1)	2.62	2.62	53.72	56.79	0	0	E2	E2
9+(1)	7+(1)	4.08	4.08	130.45	137.91				
9+(1)	8+(1)	-3.18	-3.18	79.06	83.58	0	0	E2	E2
10+(1)	8+(1)	0.02	0.02	0.00	0.00				
10+(1)	9+(1)	0.62	0.62	3.02	3.19	0	0	E2	E2
11+(1)	9+(1)	-3.98	-3.98	124.44	131.56				
11+(1)	10+(1)	-1.27	-1.27	12.57	13.29	0	0	E2	E2
12+(1)	10+(1)	1.09	1.09	9.38	9.92				
12+(1)	11+(1)	1.04	1.04	8.40	8.88	0	0	E2	E2
13+(1)	11+(1)	3.58	3.58	100.29	106.02				
13+(1)	12+(1)	-1.67	-1.67	21.81	23.06	0	0	E2	E2
14+(1)	12+(1)	-1.72	1.72	2.97	3.14				
14+(1)	13+(1)	-0.96	0.96	0.92	0.97	-0.139	0.065	-0.031	0.032
15+(1)	13+(1)	-2.89	-2.89	65.32	69.06				
15+(1)	14+(1)	1.17	-1.17	1.37	1.45	-0.946	3.008	0.006	-0.006
1+(2)	0+(2)					-0.309	0.321		
2+(2)	0+(2)	-0.27	-0.27	0.55	0.58				
2+(2)	1+(2)	-1.91	1.91	3.65	3.86	-0.612	1.259	-0.014	0.015
3+(2)	1+(2)	-2.41	-2.41	45.54	48.14				
3+(2)	2+(2)	0.89	-0.89	0.78	0.83	-0.881	2.610	0.005	-0.005
4+(2)	2+(2)	-0.87	-0.87	5.93	6.26				
4+(2)	3+(2)	0.80	-0.80	0.64	0.67	0.164	0.091	-0.022	0.023
5+(2)	3+(2)	-1.75	-1.75	23.92	25.28				
5+(2)	4+(2)	0.61	-0.61	0.37	0.39	-0.804	2.171	0.003	-0.004
6+(2)	4+(2)	3.94	3.94	121.60	128.55				
6+(2)	5+(2)	-0.87	0.87	0.75	0.79	0.544	0.995	0.007	-0.007
7+(2)	5+(2)	-3.37	-3.37	88.85	93.93				
7+(2)	6+(2)	0.53	-0.53	0.28	0.30	0.287	0.276	-0.008	0.009
8+(2)	6+(2)	-1.39	1.39	1.94	2.05				
8+(2)	7+(2)	0.40	0.40	1.28	1.35	0	0	E2	E2
9+(2)	7+(2)	-2.33	-2.33	42.44	44.87				
9+(2)	8+(2)	-0.08	-0.08	0.05	0.05	0	0	E2	E2
10+(2)	8+(2)	-0.02	-0.02	0.00	0.00				
10+(2)	9+(2)	-0.95	-0.95	7.05	7.45	0	0	E2	E2
11+(2)	9+(2)	-0.14	-0.14	0.15	0.16				
11+(2)	10+(2)	-0.90	-0.90	6.41	6.78	0	0	E2	E2
12+(2)	10+(2)	0.87	-0.87	0.76	0.80				
12+(2)	11+(2)	0.64	-0.64	0.41	0.43	0.367	0.453	-0.008	0.008
13+(2)	11+(2)	0.75	0.75	4.45	4.71				
13+(2)	12+(2)	-0.70	0.70	0.49	0.52	-0.498	0.834	-0.006	0.007
0+(2)	1+(1)					-0.237	0.189		
0+(2)	2+(1)	-1.67	-1.67	21.90	23.15				
1+(2)	0+(1)					-0.536	0.965		
1+(2)	1+(1)	-1.77	-1.77	24.55	25.95	0	0	E2	E2
1+(2)	2+(1)	1.61	-1.61	2.60	2.74	0.690	1.600	-0.011	0.011
1+(2)	3+(1)	-0.71	-0.71	3.93	4.16				
2+(2)	0+(1)	-0.28	-0.28	0.62	0.66				
2+(2)	1+(1)	1.43	-1.43	2.04	2.15	-0.627	1.321	0.010	-0.011
2+(2)	2+(1)	2.19	2.19	37.72	39.88	0	0	E2	E2
2+(2)	3+(1)	1.52	-1.52	2.30	2.43	0.533	0.955	-0.013	0.013
2+(2)	4+(1)	-0.37	0.37	0.14	0.15				
3+(2)	1+(1)	-1.11	-1.11	9.60	10.15				
3+(2)	2+(1)	-1.39	1.39	1.94	2.05	0.451	0.682	0.014	-0.014
3+(2)	3+(1)	0.76	0.76	4.52	4.77	0	0	E2	E2
3+(2)	4+(1)	-3.68	-3.68	106.05	112.11	0	0	E2	E2
3+(2)	5+(1)	-2.39	-2.39	44.83	47.39				
4+(2)	2+(1)	4.32	4.32	146.40	154.77				
4+(2)	3+(1)	-0.75	0.75	0.56	0.59	0.748	1.881	0.005	-0.005
4+(2)	4+(1)	1.57	-1.57	2.45	2.59	-0.163	0.090	0.044	-0.045
4+(2)	5+(1)	-1.01	1.01	1.03	1.09	0.257	0.222	0.018	-0.018
4+(2)	6+(1)	-0.00	0.00	0.00	0.00				
5+(2)	3+(1)	3.89	3.89	118.34	125.11				
5+(2)	4+(1)	2.88	2.88	65.22	68.95	0	0	E2	E2
5+(2)	5+(1)	-0.52	-0.52	2.14	2.26	0	0	E2	E2
5+(2)	6+(1)	0.99	0.99	7.70	8.14	0	0	E2	E2
5+(2)	7+(1)	3.22	3.22	81.23	85.87				
6+(2)	4+(1)	0.33	-0.33	0.11	0.11				
6+(2)	5+(1)	-0.50	0.50	0.25	0.26	-0.417	0.584	-0.005	0.006
6+(2)	6+(1)	-1.95	1.95	3.80	4.02	0.011	0.000	0.829	-0.852
6+(2)	7+(1)	-0.74	0.74	0.55	0.59	0.706	1.676	0.005	-0.005
6+(2)	8+(1)	0.19	-0.19	0.03	0.04				
7+(2)	5+(1)	1.16	1.16	10.48	11.08				
7+(2)	6+(1)	-1.08	-1.08	9.21	9.74	0	0	E2	E2
7+(2)	7+(1)	-0.56	-0.56	2.48	2.62	0	0	E2	E2
7+(2)	8+(1)	-2.66	-2.66	55.41	58.57	0	0	E2	E2
7+(2)	9+(1)	-1.14	-1.14	13.21	10.80				
8+(2)	6+(1)	0.91	0.92	6.56	6.94				
8+(2)	7+(1)	-1.15	-1.15	10.29	10.88	0	0	E2	E2
8+(2)	8+(1)	-0.57	-0.57	2.56	2.71	0	0	E2	E2
8+(2)	9+(1)	0.75	0.75	4.40	4.65	0	0	E2	E2
8+(2)	10+(1)	-2.50	-2.50	49.09	51.90				

E2 AND M1 MATRIX ELEMENTS (TRANSITIONS)   EP = 1.900 EN = C.900   GP = 1.456 GN = -0.377   (42SC-INT)

JI	JF	E2 M.E. XP	E2 M.E. XN	B(E2) (E**2 FM**4)	B(E2) (E**2 FM**4)	M1 M.E. XP.-XN	B(M1) (N.M.**2)	DELTA/ENERGY (MEV**-1)	DELTA/ENERGY (MEV**-1)
**************** * 46V - 50MN * ****************		46V	46V	46V	50MN	BOTH	BOTH	46V	50MN
9+(2)	7+(1)	0.07	0.07	0.04	0.04				
9+(2)	8+(1)	-0.05	-0.05	0.02	0.02	0	0	E2	E2
9+(2)	9+(1)	0.08	0.08	0.05	0.05	0	0	E2	E2
9+(2)	10+(1)	-0.57	-0.57	2.58	2.73	0	0	E2	E2
9+(2)	11+(1)	-0.42	-0.42	1.37	1.45				
10+(2)	8+(1)	3.08	3.08	74.53	78.79				
10+(2)	9+(1)	1.37	1.37	14.71	15.55	0	0	E2	E2
10+(2)	10+(1)	1.13	1.13	10.03	10.60	0	0	E2	E2
10+(2)	11+(1)	-2.21	-2.21	38.19	40.38	0	0	E2	E2
10+(2)	12+(1)	-1.50	-1.50	17.72	18.73				
11+(2)	9+(1)	1.42	1.42	15.76	16.66				
11+(2)	1G+(1)	-1.88	-1.88	27.57	29.14	0	0	E2	E2
11+(2)	11+(1)	-1.19	-1.20	11.19	11.84	0	0	E2	E2
11+(2)	12+(1)	-2.18	-2.18	37.17	39.29	0	0	E2	E2
11+(2)	13+(1)	-1.28	-1.28	12.78	13.51				
12+(2)	10+(1)	1.53	-1.53	2.35	2.48				
12+(2)	11+(1)	1.71	-1.71	2.91	3.08	0.065	0.014	-0.120	0.123
12+(2)	12+(1)	0.08	-0.08	0.01	0.01	-0.487	0.797	0.001	-0.001
12+(2)	13+(1)	-0.03	0.03	0.00	0.00	0.856	2.462	0.000	-0.000
12+(2)	14+(1)	-2.70	-2.70	57.23	60.49				
13+(2)	11+(1)	-0.24	-0.24	0.46	0.49				
13+(2)	12+(1)	-0.81	-0.81	5.09	5.38	0	0	E2	E2
13+(2)	13+(1)	-0.39	-0.39	1.22	1.29	0	0	E2	E2
13+(2)	14+(1)	-1.69	1.69	2.86	3.02	1.355	6.170	0.006	-0.006
13+(2)	15+(1)	0.01	0.01	0.00	0.00				

WEISSKOPF ESTIMATES   46V B(E2) = 9.79 E**2 FM**4   50MN B(E2) = 10.94 E**2 FM**4
B(M1) = 1.79 N.M.**2   B(M1) = 1.79 N.M.**2

JI	JF	E2 M.E. XP	E2 M.E. XN	B(E2)	B(E2)	M1 M.E.	B(M1)	DELTA/ENERGY	DELTA/ENERGY
**************** * 47V - 49CR * ****************		47V	47V	47V	49CR	BOTH	BOTH	47V	49CR
3/2-(1)	1/2-(1)	2.16	1.44	29.17	22.54	-0.491	0.809	0.050	0.044
5/2-(1)	1/2-(1)	-0.10	1.88	2.29	12.54				
5/2-(1)	3/2-(1)	2.37	2.92	50.87	60.68	0.047	0.007	-0.696	-0.760
7/2-(1)	3/2-(1)	-2.57	-2.42	49.72	49.00				
7/2-(1)	5/2-(1)	-5.43	-4.52	206.63	186.51	0.017	0.001	3.772	3.584
9/2-(1)	5/2-(1)	2.23	2.75	45.04	53.69				
9/2-(1)	7/2-(1)	2.88	3.75	78.28	97.08	-0.287	0.277	0.140	0.156
11/2-(1)	7/2-(1)	-3.92	-4.56	133.70	153.12				
11/2-(1)	9/2-(1)	3.41	2.72	79.63	69.70	-0.292	0.287	0.139	0.130
13/2-(1)	9/2-(1)	2.36	2.31	43.19	43.71				
13/2-(1)	11/2-(1)	-1.08	-3.09	23.40	48.18	0.198	0.132	0.111	0.159
15/2-(1)	11/2-(1)	3.69	4.90	130.24	163.92				
15/2-(1)	13/2-(1)	-0.16	-0.58	0.68	1.61	-0.518	0.902	-0.007	-0.011
17/2-(1)	13/2-(1)	-1.86	-2.71	35.74	47.84				
17/2-(1)	15/2-(1)	1.39	1.80	18.26	22.54	-0.200	0.135	0.097	0.108
19/2-(1)	15/2-(1)	-3.68	-4.71	125.91	154.36				
19/2-(1)	17/2-(1)	3.57	1.49	66.04	37.53	-0.495	0.823	0.075	0.056
21/2-(1)	17/2-(1)	3.70	3.35	100.77	96.61				
21/2-(1)	19/2-(1)	0.23	-1.06	0.27	3.36	0.003	0.000	0.923	3.273
23/2-(1)	19/2-(1)	4.38	4.23	146.98	147.56				
23/2-(1)	21/2-(1)	2.03	0.31	17.21	6.06	-0.708	1.683	0.027	0.016
25/2-(1)	21/2-(1)	-2.83	-1.98	51.22	40.90				
25/2-(1)	23/2-(1)	-1.45	0.93	3.70	0.22	0.063	0.013	0.140	-0.034
27/2-(1)	23/2-(1)	-3.89	-3.55	112.25	108.03				
27/2-(1)	25/2-(1)	0.53	1.54	5.76	11.93	-0.793	2.113	0.014	0.020
29/2-(1)	25/2-(1)	-1.15	-3.53	28.71	61.61				
29/2-(1)	27/2-(1)	-0.61	1.37	0.00	4.30	-0.221	0.164	0.001	0.043
31/2-(1)	27/2-(1)	-2.23	-3.67	56.82	82.77				
31/2-(1)	29/2-(1)	1.20	0	5.17	1.19	-0.961	3.105	0.011	0.005

3/2-(2)	1/2-(2)	-1.08	0.77	1.85	0.25	0.244	0.200	0.025	-0.009
5/2-(2)	1/2-(2)	-0.33	-0.90	2.07	4.14				
5/2-(2)	3/2-(2)	3.74	2.94	94.85	82.15	0.391	0.515	-0.113	-0.105
7/2-(2)	3/2-(2)	-1.37	-1.15	13.28	12.08				
7/2-(2)	5/2-(2)	0.71	0.85	4.48	5.25	-0.174	0.102	0.055	0.060
9/2-(2)	5/2-(2)	-2.88	-1.51	46.76	30.78				
9/2-(2)	7/2-(2)	-0.52	-1.05	3.74	6.23	0.614	1.265	0.014	0.018
11/2-(2)	7/2-(2)	-0.90	-1.62	10.12	15.65				
11/2-(2)	9/2-(2)	-1.58	-1.82	21.63	24.55	-0.033	0.004	-0.639	-0.680
13/2-(2)	9/2-(2)	-0.86	-2.46	14.79	30.58				
13/2-(2)	11/2-(2)	-1.21	0.50	3.40	0.02	-0.050	0.008	-0.167	-0.013
15/2-(2)	11/2-(2)	1.55	-0.68	5.49	0.01				
15/2-(2)	13/2-(2)	-0.30	0.34	0.07	0.14	-0.225	0.170	-0.005	0.008
17/2-(2)	13/2-(2)	-0.65	-1.22	5.46	8.67				
17/2-(2)	15/2-(2)	-2.81	-2.81	61.82	63.57	0.117	0.046	0.305	C.310
19/2-(2)	15/2-(2)	-1.64	-0.39	11.98	5.01				
19/2-(2)	17/2-(2)	-0.73	-1.22	6.12	9.03	0.105	0.037	0.107	0.130
21/2-(2)	17/2-(2)	2.86	1.92	51.36	39.77				
21/2-(2)	19/2-(2)	1.80	2.09	28.07	32.13	-0.113	0.043	0.213	0.227
23/2-(2)	19/2-(2)	2.41	2.87	51.12	59.55				
23/2-(2)	21/2-(2)	-0.62	-0.16	1.77	0.78	0.137	0.063	0.044	0.029
25/2-(2)	21/2-(2)	-1.30	-2.07	18.74	26.81				
25/2-(2)	23/2-(2)	-0.59	0.93	0.08	1.59	0.057	0.011	0.022	-0.100
27/2-(2)	23/2-(2)	1.79	2.15	28.55	33.48				
27/2-(2)	25/2-(2)	-0.40	-0.97	2.64	4.99	0.401	0.539	0.018	0.025

E2 AND M1 MATRIX ELEMENTS (TRANSITIONS)   EP = 1.900   EN = 0.900   GP = 1.456   GN = -0.377   (42SC-INT)

* 47V - 49CR *

JI	JF	E2 M.E. XP 47V	E2 M.E. XN 47V	B(E2) (E**2 FM**4) 47V	B(E2) (E**2 FM**4) 49CR	M1 M.E. XP,-XN BOTH	B(M1) (N.M.**2) BOTH	DELTA/ENERGY (MEV**-1) 47V	DELTA/ENERGY (MEV**-1) 49CR
1/2-(2)	1/2-(1)					0.175	0.103		
1/2-(2)	3/2-(1)	-0.79	-2.48	13.91	30.25	-0.091	0.028	-0.186	-0.275
1/2-(2)	5/2-(1)	1.25	-0.39	4.08	0.15				
3/2-(2)	1/2-(1)	-1.31	-3.20	28.93	54.24	-0.506	0.859	-0.048	-0.066
3/2-(2)	3/2-(1)	-0.90	1.85	0.00	7.58	-0.399	0.535	-0.000	0.031
3/2-(2)	5/2-(1)	-0.52	-1.05	3.74	6.27	-0.647	1.404	-0.014	-0.018
3/2-(2)	7/2-(1)	0.15	2.32	5.59	21.16				
5/2-(2)	1/2-(1)	-2.87	-1.37	44.82	27.77				
5/2-(2)	3/2-(1)	1.71	3.12	36.57	57.17	-0.118	0.047	0.243	0.291
5/2-(2)	5/2-(1)	1.01	2.59	18.01	34.86	0.010	0.000	-2.019	-2.809
5/2-(2)	7/2-(1)	-0.21	0.74	0.07	1.51	0.489	0.802	-0.002	-0.011
5/2-(2)	9/2-(1)	-2.23	-1.19	28.10	18.73				
7/2-(2)	3/2-(1)	0.63	0.99	4.33	6.13				
7/2-(2)	5/2-(1)	0.16	-2.70	4.54	25.55	0.582	1.139	0.017	0.039
7/2-(2)	7/2-(1)	-0.47	2.29	1.38	15.89	-0.331	0.369	0.016	0.055
7/2-(2)	9/2-(1)	-3.44	-1.50	62.12	36.36	0.102	0.035	0.351	0.269
7/2-(2)	11/2-(1)	-0.68	0.49	0.73	0.11				
9/2-(2)	5/2-(1)	-0.66	-3.20	17.11	45.79				
9/2-(2)	7/2-(1)	0.72	2.90	15.75	38.85	0.048	0.008	-0.377	-0.593
9/2-(2)	9/2-(1)	0.73	0.09	2.14	0.69	0.095	0.031	-0.070	-0.040
9/2-(2)	11/2-(1)	2.58	1.33	37.27	24.23	0.343	0.396	-0.081	-0.065
9/2-(2)	13/2-(1)	1.86	3.59	45.76	74.31				
11/2-(2)	7/2-(1)	1.70	-1.11	4.95	0.36				
11/2-(2)	9/2-(1)	0.83	0.05	2.63	0.72	-0.418	0.587	0.018	0.009
11/2-(2)	11/2-(1)	-0.94	0.82	1.09	0.53	-0.517	0.896	-0.009	0.006
11/2-(2)	13/2-(1)	0.99	-0.45	2.19	0.00	0.286	0.274	-0.024	-0.001
11/2-(2)	15/2-(1)	1.71	0.83	15.88	9.91				
13/2-(2)	9/2-(1)	1.90	3.26	42.72	64.19				
13/2-(2)	11/2-(1)	-1.20	-0.82	9.14	7.13	0.302	0.307	0.045	0.040
13/2-(2)	13/2-(1)	4.17	3.45	121.54	109.16	0.059	0.012	-0.850	-0.806
13/2-(2)	15/2-(1)	-3.97	-2.27	92.00	63.99	0.112	0.042	0.390	0.325
13/2-(2)	17/2-(1)	-2.64	-3.49	66.63	83.47				
15/2-(2)	11/2-(1)	0.94	1.05	7.46	8.29				
15/2-(2)	13/2-(1)	3.14	3.22	78.64	82.26	-0.176	0.105	0.229	0.234
15/2-(2)	15/2-(1)	1.47	2.89	29.03	47.62	0.039	0.005	.621	-0.795
15/2-(2)	17/2-(1)	1.39	2.41	23.17	35.01	0.194	0.126	-0.113	-0.139
15/2-(2)	19/2-(1)	-0.35	-1.32	3.45	8.18				
17/2-(2)	13/2-(1)	2.48	2.42	47.46	47.95				
17/2-(2)	15/2-(1)	1.27	-0.67	3.26	0.02	0.040	0.005	-0.203	0.015
17/2-(2)	17/2-(1)	-1.07	-0.49	6.08	3.65	-0.024	0.002	-0.463	-0.359
17/2-(2)	19/2-(1)	-1.77	-2.65	33.06	45.20	-0.528	0.937	-0.050	-0.058
17/2-(2)	21/2-(1)	-2.04	-2.13	33.58	35.55				
19/2-(2)	15/2-(1)	-2.34	-0.98	28.41	16.20				
19/2-(2)	17/2-(1)	-1.68	0.06	9.85	2.02	0.045	0.007	0.319	0.144
19/2-(2)	19/2-(1)	0.11	-0.16	0.00	0.04	0.417	0.584	-0.001	0.002
19/2-(2)	21/2-(1)	0.16	1.40	2.44	8.04	-0.512	0.880	0.014	0.025
19/2-(2)	23/2-(1)	-0.48	2.43	1.63	17.98				
21/2-(2)	17/2-(1)	0.74	1.35	6.80	10.65				
21/2-(2)	19/2-(1)	-2.44	-0.36	24.61	8.52	0.081	0.022	0.278	0.163
21/2-(2)	21/2-(1)	1.53	-0.34	6.73	0.54	-0.280	0.263	0.042	0.012
21/2-(2)	23/2-(1)	-2.43	-1.55	36.20	27.08	-0.375	0.474	-0.073	-0.063
21/2-(2)	25/2-(1)	1.08	2.23	16.40	27.81				
23/2-(2)	19/2-(1)	0.33	-0.86	0.02	1.82				
23/2-(2)	21/2-(1)	-1.38	0.28	5.68	0.54	0.070	0.017	0.155	0.048
23/2-(2)	23/2-(1)	-0.81	-0.89	5.44	5.98	0.469	0.740	0.023	0.024
23/2-(2)	25/2-(1)	-1.13	-2.47	19.04	33.49	0.656	1.447	0.030	0.040
23/2-(2)	27/2-(1)	1.12	-2.68	0.08	17.07				
25/2-(2)	21/2-(1)	1.18	1.51	12.95	15.87				
25/2-(2)	23/2-(1)	0.79	-0.45	1.20	0.02	0.045	0.007	-0.110	0.014
25/2-(2)	25/2-(1)	-0.32	-1.28	3.10	7.61	0.296	0.294	0.027	0.042
25/2-(2)	27/2-(1)	-0.36	-2.43	8.26	25.11	-0.382	0.490	-0.034	-0.060
25/2-(2)	29/2-(1)	2.54	0.44	27.35	10.06				
27/2-(2)	23/2-(1)	-0.84	-1.69	9.70	16.13				
27/2-(2)	25/2-(1)	-0.33	-1.57	4.17	11.07	0.142	0.068	0.065	0.106
27/2-(2)	27/2-(1)	0.94	0.27	4.16	1.92	-0.363	0.442	0.026	0.017
27/2-(2)	29/2-(1)	2.13	0.65	21.36	10.17	-0.735	1.815	0.029	0.020
27/2-(2)	31/2-(1)	-3.13	1.80	18.81	0.36				

WEISSKOPF ESTIMATES   47V   B(E2) = 10.08 E**2 FM**4   B(M1) = 1.79 N.M.**2   49CR   B(E2) = 10.65 E**2 FM**4   B(M1) = 1.79 N.M.**2

E2 AND M1 MATRIX ELEMENTS (TRANSITIONS)   EP = 1.933   EN = 0.900   GP = 1.456   GN = -0.377   (42SC-INT)

****
* 48V - 48V *
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JI	JF	E2 M.E. XP	E2 M.E. XN	B(E2) (E**2 FM**4)	B(E2) (E**2 FM**4)	M1 M.E. XP,-XN	B(M1) (N.M.**2)	DELTA/ENERGY (MEV**-1)	DELTA/ENERGY (MEV**-1)
		48V	48V	48V	48V	BOTH	BOTH	48V	48V
1+(1)	C+(1)					-0.664	1.483		
2+(1)	C+(1)	-1.63	1.63	2.67	2.67				
2+(1)	1+(1)	3.94	3.94	121.45	121.45	-0.908	2.771	0.055	0.055
3+(1)	1+(1)	0.25	-0.25	0.06	0.06				
3+(1)	2+(1)	-3.89	-3.89	118.79	118.79	0.027	2.296	0.060	0.060
4+(1)	2+(1)	-3.59	-3.59	101.09	101.09				
4+(1)	3+(1)	-1.25	1.25	1.56	1.56	0	0	E2	E2
5+(1)	3+(1)	-1.39	1.39	1.94	1.94				
5+(1)	4+(1)	0.87	-0.87	0.75	0.76	0	0	E2	E2
6+(1)	4+(1)	3.51	3.51	96.64	96.65				
6+(1)	5+(1)	-3.76	-3.76	111.04	111.04	-0.136	0.062	-0.352	-0.352
7+(1)	5+(1)	0.53	-0.53	0.28	0.28				
7+(1)	6+(1)	3.36	3.36	88.62	88.62	-0.541	0.993	0.079	0.079
8+(1)	6+(1)	-4.01	-4.01	126.04	126.05				
8+(1)	7+(1)	0.12	-0.12	0.01	0.01	0	0	E2	E2
9+(1)	7+(1)	4.22	4.22	139.35	139.35				
9+(1)	8+(1)	-2.51	-2.51	49.22	49.23	0.585	1.152	0.054	0.054
10+(1)	8+(1)	3.75	3.75	110.04	110.04				
10+(1)	9+(1)	-0.43	0.43	0.18	0.18	0	0	E2	E2
11+(1)	9+(1)	-4.18	-4.18	136.94	136.94				
11+(1)	10+(1)	1.87	1.87	27.42	27.42	-0.684	1.574	0.035	0.035
12+(1)	10+(1)	3.33	3.33	86.74	86.73				
12+(1)	11+(1)	0.90	-0.90	0.82	0.82	0	0	E2	E2
13+(1)	11+(1)	3.81	3.81	113.78	113.79				
13+(1)	12+(1)	1.16	1.16	10.48	10.48	-0.829	2.307	0.018	0.018
14+(1)	12+(1)	-2.55	-2.55	50.98	50.98				
14+(1)	13+(1)	-1.14	1.14	1.30	1.30	0	0	E2	E2
15+(1)	13+(1)	-2.91	-2.91	66.49	66.49				
15+(1)	14+(1)	1.19	1.19	11.08	11.08	-0.946	3.008	0.016	0.016
1+(2)	0+(2)					0	0	FORBIDDEN	
2+(2)	0+(2)	1.00	1.00	7.81	7.81				
2+(2)	1+(2)	2.47	2.47	47.90	47.90	0.289	0.281	-0.109	-0.109
3+(2)	1+(2)	-1.18	1.18	1.39	1.39				
3+(2)	2+(2)	-1.93	-1.93	29.16	29.16	0.495	0.824	0.050	0.050
4+(2)	2+(2)	-1.90	-1.90	28.34	28.34				
4+(2)	3+(2)	1.37	-1.37	1.87	1.87	0	0	E2	E2
5+(2)	3+(2)	-0.61	0.61	0.38	0.37				
5+(2)	4+(2)	-0.58	0.58	0.34	0.34	0	0	E2	E2
6+(2)	4+(2)	-0.19	0.19	0.04	0.04				
6+(2)	5+(2)	0.51	-0.51	0.26	0.26	0	0	E2	E2
7+(2)	5+(2)	1.20	-1.20	1.44	1.44				
7+(2)	6+(2)	-0.02	0.02	0.00	0.00	0	0	E2	E2
8+(2)	6+(2)	0.42	-0.42	0.18	0.18				
8+(2)	7+(2)	0.37	-0.37	0.14	0.14	0	0	E2	E2
9+(2)	7+(2)	1.60	1.60	20.02	20.02				
9+(2)	8+(2)	0.37	0.37	1.05	1.06	-0.627	1.319	0.007	0.007
10+(2)	8+(2)	3.03	3.03	72.12	72.12				
10+(2)	9+(2)	-0.24	0.24	0.06	p.06	0	0	E2	E2
11+(2)	9+(2)	-2.74	-2.74	58.92	58.92				
11+(2)	10+(2)	-2.18	-2.18	37.25	37.25	0.660	1.464	0.042	0.042
12+(2)	10+(2)	-2.48	-2.48	48.27	48.27				
12+(2)	11+(2)	-0.68	0.68	0.46	0.46	0	0	E2	E2
13+(2)	11+(2)	-2.44	-2.44	46.53	46.53				
13+(2)	12+(2)	-1.99	-1.99	31.10	31.10	0.404	0.548	0.063	0.063
0+(2)	1+(1)					0.105	0.037		
0+(2)	2+(1)	-0.15	0.15	0.02	0.02				
1+(2)	0+(1)					0	0	FORBIDDEN	
1+(2)	1+(1)	2.72	2.72	57.89	57.90	-0.809	2.197	0.043	0.043
1+(2)	2+(1)	-0.19	0.19	0.04	0.04	0	0	E2	E2
1+(2)	3+(1)	-2.60	-2.60	53.03	53.03				
2+(2)	0+(1)	0	0	0	0			FORBIDDEN	
2+(2)	1+(1)	-0.63	0.63	0.39	0.39	0	0	E2	E2
2+(2)	2+(1)	-2.78	-2.78	60.67	60.67	-0.071	0.017	-0.498	-0.498
2+(2)	3+(1)	0.44	-0.44	0.19	0.19	0	0	E2	E2
2+(2)	4+(1)	-0.23	0.23	0.05	0.05				
3+(2)	1+(1)	-3.49	-3.49	95.29	95.29				
3+(2)	2+(1)	0.86	-0.86	0.74	0.73	0	0	E2	E2
3+(2)	3+(1)	-1.95	-1.95	29.87	29.88	0.304	0.311	0.082	0.082
3+(2)	4+(1)	-2.23	-2.23	38.88	38.88	0.988	3.276	0.029	0.029
3+(2)	5+(1)	1.10	1.10	9.42	9.42				
4+(2)	2+(1)	1.22	-1.22	1.50	1.50				
4+(2)	3+(1)	1.53	1.53	18.38	18.38	0.049	0.008	-0.398	-0.398
4+(2)	4+(1)	-4.54	-4.54	161.55	161.55	-0.073	0.018	-0.793	-0.793
4+(2)	5+(1)	-5.00	-5.00	195.80	195.79	0.491	0.810	0.130	0.130
4+(2)	6+(1)	0.91	-0.91	0.83	0.82				
5+(2)	3+(1)	3.59	3.59	100.96	100.96				
5+(2)	4+(1)	2.72	2.72	58.21	58.21	-0.774	2.011	0.045	C.045
5+(2)	5+(1)	-2.68	-2.68	56.14	56.14	-0.172	0.099	-0.198	-0.198
5+(2)	6+(1)	1.28	-1.28	1.65	1.65	0	0	E2	E2
5+(2)	7+(1)	4.16	4.16	135.91	135.91				
6+(2)	4+(1)	1.46	1.46	16.77	16.77				
6+(2)	5+(1)	3.04	3.04	72.35	72.35	-0.588	1.163	0.066	0.066
6+(2)	6+(1)	1.12	-1.12	1.25	1.25	0	0	E2	E2
6+(2)	7+(1)	2.74	2.74	58.97	58.97	0.453	0.691	-0.077	-0.077
6+(2)	8+(1)	-0.95	-0.95	7.01	7.01				
7+(2)	5+(1)	-2.62	-2.62	53.98	53.98				
7+(2)	6+(1)	-1.08	1.08	1.17	1.17	0	0	E2	E2
7+(2)	7+(1)	0.27	0.27	0.56	0.56	0.034	0.004	-0.100	-0.100
7+(2)	8+(1)	1.73	1.73	23.56	23.56	0.525	0.927	-0.042	-0.042
7+(2)	9+(1)	-0.36	0.36	0.13	0.13				

E2 AND M1 MATRIX ELEMENTS (TRANSITIONS)   EP = 1.900 EN = 0.900   GP = 1.456 GN = -0.377   (42SC-IN*)

***** 48V - 48V *****

JI	JF	E2 M.E. XP	E2 M.E. XN	B(E2) (F**2 FM**4)	B(E2) (F**2 FM**4)	M1 M.E. XP,-XN	B(M1) (N.M.**2)	DELTA/ENERGY (MEV**-1)	DELTA/ENERGY (MEV**-1)
		48V	48V	48V	48V	BOTH	BOTH	48V	48V
8+(2)	6+(1)	0.69	-0.69	0.48	0.48				
8+(2)	7+(1)	2.38	2.38	44.54	44.54	-0.283	0.270	0.107	0.107
8+(2)	8+(1)	1.40	1.40	15.31	15.31	-0.463	0.720	0.038	0.038
8+(2)	9+(1)	1.89	-1.89	3.57	3.57	0	0	E2	E2
8+(2)	10+(1)	0.57	-0.57	0.33	0.33				
9+(2)	7+(1)	2.02	-2.02	4.06	4.06				
9+(2)	8+(1)	0.95	-0.94	0.89	0.89	0	0	E2	E2
9+(2)	9+(1)	0.39	0.39	1.20	1.20	0.522	0.914	-0.010	-0.010
9+(2)	10+(1)	0.25	0.25	0.50	0.50	0.199	0.133	-0.016	-0.016
9+(2)	11+(1)	1.55	-1.55	2.42	2.42				
10+(2)	8+(1)	-0.81	0.81	0.65	0.65				
10+(2)	9+(1)	1.47	1.47	16.91	16.91	-0.276	0.256	0.068	0.068
10+(2)	10+(1)	2.30	2.30	41.35	41.35	-0.794	2.117	0.037	0.037
10+(2)	11+(1)	-1.60	1.60	2.56	2.56	0	0	E2	E2
10+(2)	12+(1)	1.51	-1.51	2.28	2.28				
11+(2)	9+(1)	-1.18	1.18	1.39	1.39				
11+(2)	10+(1)	-1.22	1.22	1.50	1.49	0	0	E2	E2
11+(2)	11+(1)	-0.94	-0.94	6.98	6.98	0.709	1.687	0.017	0.017
11+(2)	12+(1)	0.87	0.87	5.96	5.96	-0.333	0.373	0.033	0.033
11+(2)	13+(1)	-2.49	2.49	6.22	6.21				
12+(2)	10+(1)	-0.31	0.31	0.10	0.10				
12+(2)	11+(1)	0.85	0.85	5.70	5.70	-0.153	0.078	0.071	0.071
12+(2)	12+(1)	-2.11	-2.11	34.83	34.83	0.445	0.664	0.060	0.060
12+(2)	13+(1)	1.37	-1.37	1.88	1.88	0	0	E2	E2
12+(2)	14+(1)	1.27	-1.27	1.62	1.62				
13+(2)	11+(1)	0.04	-0.04	0.00	0.00				
13+(2)	12+(1)	0.77	-0.77	0.60	0.60	0	0	E2	E2
13+(2)	13+(1)	1.24	1.24	12.00	12.00	-0.448	0.673	0.035	0.035
13+(2)	14+(1)	1.80	1.80	25.28	25.28	-0.641	1.379	0.036	0.036
13+(2)	15+(1)	-2.60	2.60	6.77	6.77				

WEISSKOPF ESTIMATES   48V B(E2) = 10.36 E**2 FM**4   48V B(E2) = 10.36 E**2 FM**4
B(M1) = 1.79 N.M.**2   B(M1) = 1.79 N.M.**2

***** 48CR - 48CR *****

JI	JF	E2 M.E. XP	E2 M.E. XN	B(E2)	B(E2)	M1 M.E.	B(M1)	DELTA/ENERGY	DELTA/ENERGY
		48CR	48CR	48CR	48CR	BOTH	BOTH	48CR	48CR
1+(1)	0+(1)					-0.593	1.182		
2+(1)	0+(1)	-4.40	-4.40	152.08	152.08				
2+(1)	1+(1)	1.91	-1.91	3.65	3.65	0	0	E2	E2
3+(1)	1+(1)	-0.60	0.60	0.36	0.36				
3+(1)	2+(1)	0	0	0	0	0	0	FORBIDDEN	
4+(1)	2+(1)	4.85	4.85	184.10	184.10				
4+(1)	3+(1)	1.51	1.51	17.92	17.92	0	0	E2	E2
5+(1)	3+(1)	-1.49	-1.49	17.50	17.50				
5+(1)	4+(1)	0	0	0	0	0	0	FORBIDDEN	
6+(1)	4+(1)	-4.88	-4.88	186.78	186.78				
6+(1)	5+(1)	2.77	2.77	60.17	60.17	0	0	E2	E2
7+(1)	5+(1)	2.77	2.77	60.05	60.05				
7+(1)	6+(1)	0	0	0	0	0	0	FORBIDDEN	
8+(1)	6+(1)	-5.00	-5.00	196.24	196.24				
8+(1)	7+(1)	-2.24	-2.24	39.25	39.25	0	0	E2	E2
9+(1)	7+(1)	3.26	3.26	83.47	83.47				
9+(1)	8+(1)	0	0	0	0	0	0	FORBIDDEN	
10+(1)	8+(1)	4.82	4.82	182.20	182.20				
10+(1)	9+(1)	-2.70	-2.70	57.00	57.01	0	0	E2	E2
11+(1)	9+(1)	2.83	2.83	62.57	62.57				
11+(1)	10+(1)	0	0	0	0	0	0	FORBIDDEN	
12+(1)	10+(1)	-4.52	-4.52	160.48	160.48				
12+(1)	11+(1)	2.73	2.73	58.46	58.46	0	0	E2	E2
13+(1)	11+(1)	0	0	0	0			FORBIDDEN	
13+(1)	12+(1)	0.77	0.77	4.65	4.65	0	0	E2	E2
14+(1)	12+(1)	-4.05	-4.05	128.49	128.49				
14+(1)	13+(1)	0	0	0	0	0	0	FORBIDDEN	
15+(1)	13+(1)	-2.91	2.91	8.48	8.48				
15+(1)	14+(1)	-1.19	1.19	1.41	1.41	0	0	E2	E2
16+(1)	14+(1)	-3.15	-3.15	77.57	77.57				
16+(1)	15+(1)	0	0	0	0	-0.977	3.209	M1	M1
1+(2)	0+(2)					0.604	1.227		
2+(2)	0+(2)	-2.37	-2.37	44.21	44.21				
2+(2)	1+(2)	-1.45	1.45	2.09	2.09	0	0	E2	E2
3+(2)	1+(2)	0.68	-0.68	0.46	0.46				
3+(2)	2+(2)	0	0	0	0	0	0	FORBIDDEN	
4+(2)	2+(2)	-2.83	-2.83	62.61	62.61				
4+(2)	3+(2)	1.46	1.46	16.62	16.62	0	0	E2	E2
5+(2)	3+(2)	-1.29	-1.29	12.95	12.95				
5+(2)	4+(2)	0	0	0	0	0	0	FORBIDDEN	
6+(2)	4+(2)	-3.19	-3.19	79.89	79.89				
6+(2)	5+(2)	-2.13	-2.13	35.53	35.53	0	0	E2	E2
7+(2)	5+(2)	-2.58	-2.58	52.31	52.31				
7+(2)	6+(2)	0	0	0	0	0	0	FORBIDDEN	
8+(2)	6+(2)	3.49	3.49	95.42	95.42				
8+(2)	7+(2)	0.63	0.63	3.11	3.11	0	0	E2	E2
9+(2)	7+(2)	2.09	2.07	34.30	34.29				
9+(2)	8+(2)	0	0	0	0	0	0	FORBIDDEN	
10+(2)	8+(2)	-2.38	-2.38	44.32	44.32				
10+(2)	9+(2)	3.40	3.40	90.60	90.60	0	0	E2	E2
11+(2)	9+(2)	1.08	-1.08	1.17	1.17				
11+(2)	10+(2)	0	0	0	0	-0.113	0.043	M1	M1
12+(2)	10+(2)	-2.37	-2.37	44.06	44.06				
12+(2)	11+(2)	-0.91	0.91	0.82	0.82	0	0	E2	E2
13+(2)	11+(2)	0	0	0	0			FORBIDDEN	
13+(2)	12+(2)	-2.30	-2.30	41.61	41.61	0	0	E2	E2
14+(2)	12+(2)	0	0	0	0			FORBIDDEN	
14+(2)	13+(2)	-1.92	1.92	3.67	3.67	0	0	E2	E2

E2 AND M1 MATRIX ELEMENTS (TRANSITIONS)   EP = 1.900 EN = 0.900   GP = 1.456 GN = -0.377   (42SC-INT)

****
* 48CR - 48CR *
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JI	JF	E2 M.E. XP 48CR	E2 M.E. XN 48CR	B(E2) (E**2 FM**4) 48CR	B(E2) (E**2 FM**4) 48CR	M1 M.E. XP,-XN BOTH	B(M1) (N.M.**2) BOTH	DELTA/ENERGY (MEV**-1) 48CR	DELTA/ENERGY (MEV**-1) 48CR
0+(2)	1+(1)					0	0	FORBIDDEN	
0+(2)	2+(1)	0	0	0	0			FORBIDDEN	
1+(2)	0+(1)					0	0	FORBIDDEN	
1+(2)	1+(1)	-2.72	-2.72	57.90	57.89	0	0	E2	E2
1+(2)	2+(1)	0	0	0	0	-0.407	0.557	M1	M1
1+(2)	3+(1)	0	0	0	0			FORBIDDEN	
2+(2)	0+(1)	0	0	0	0			FORBIDDEN	
2+(2)	1+(1)	0	0	0	0	-0.506	0.859	M1	M1
2+(2)	2+(1)	-5.03	-5.03	198.60	198.60	0	0	E2	E2
2+(2)	3+(1)	4.10	4.10	132.05	132.05	0	0	E2	E2
2+(2)	4+(1)	0	0	0	0			FORBIDDEN	
3+(2)	1+(1)	0	0	0	0			FORBIDDEN	
3+(2)	2+(1)	-0.26	-0.26	0.52	0.52	0	0	E2	E2
3+(2)	3+(1)	0.92	0.92	6.58	6.58	0	0	E2	E2
3+(2)	4+(1)	0	0	0	0	0	0	FORBIDDEN	
3+(2)	5+(1)	0	0	0	0			FORBIDDEN	
4+(2)	2+(1)	0	0	0	0			FORBIDDEN	
4+(2)	3+(1)	0	0	0	0	0	0	FORBIDDEN	
4+(2)	4+(1)	4.47	4.47	156.45	156.44	0	0	E2	E2
4+(2)	5+(1)	4.58	4.58	164.25	164.24	0	0	E2	E2
4+(2)	6+(1)	0	0	0	0			FORBIDDEN	
5+(2)	3+(1)	0	0	0	0			FORBIDDEN	
5+(2)	4+(1)	1.49	1.49	17.33	17.33	0	0	E2	E2
5+(2)	5+(1)	-1.82	-1.82	25.96	25.96	0	0	E2	E2
5+(2)	6+(1)	0	0	0	0	0	0	FORBIDDEN	
5+(2)	7+(1)	0	0	0	0			FORBIDDEN	
6+(2)	4+(1)	0	0	0	0			FORBIDDEN	
6+(2)	5+(1)	0	0	0	0	0	0	FORBIDDEN	
6+(2)	6+(1)	2.89	2.89	65.60	65.60	0	0	E2	E2
6+(2)	7+(1)	-3.41	-3.41	91.31	91.31	0	0	E2	E2
6+(2)	8+(1)	0	0	0	0			FORBIDDEN	
7+(2)	5+(1)	0	0	0	0			FORBIDDEN	
7+(2)	6+(1)	1.42	1.42	15.87	15.87	0	0	E2	E2
7+(2)	7+(1)	-0.98	-0.98	7.50	7.50	0	0	E2	E2
7+(2)	8+(1)	0	0	0	0	0	0	FORBIDDEN	
7+(2)	9+(1)	0	0	0	0			FORBIDDEN	
8+(2)	6+(1)	0	0	0	0			FORBIDDEN	
8+(2)	7+(1)	0	0	0	0	0	0	FORBIDDEN	
8+(2)	8+(1)	-2.72	-2.72	57.88	57.88	0	0	E2	E2
8+(2)	9+(1)	-3.07	-3.07	74.09	74.09	0	0	E2	E2
8+(2)	10+(1)	0	0	0	0			FORBIDDEN	
9+(2)	7+(1)	0	0	0	0			FORBIDDEN	
9+(2)	8+(1)	-0.14	-0.14	0.16	0.16	0	0	E2	E2
9+(2)	9+(1)	-2.83	-2.83	62.71	62.71	0	0	E2	E2
9+(2)	10+(1)	0	0	0	0	0	0	FORBIDDEN	
9+(2)	11+(1)	0	0	0	0			FORBIDDEN	
10+(2)	8+(1)	0	0	0	0			FORBIDDEN	
10+(2)	9+(1)	0	0	0	0	0	0	FORBIDDEN	
10+(2)	10+(1)	1.87	1.87	27.44	27.44	0	0	E2	E2
10+(2)	11+(1)	3.38	3.38	89.68	89.68	0	0	E2	E2
10+(2)	12+(1)	0	0	0	0			FORBIDDEN	
11+(2)	9+(1)	0	0	0	0			FORBIDDEN	
11+(2)	10+(1)	-1.29	1.29	1.65	1.65	0	0	E2	E2
11+(2)	11+(1)	1.08	-1.08	1.17	1.17	0	0	E2	E2
11+(2)	12+(1)	0	0	0	0	0.893	2.678	M1	M1
11+(2)	13+(1)	1.36	-1.36	1.85	1.85				
12+(2)	10+(1)	0	0	0	0			FORBIDDEN	
12+(2)	11+(1)	0	0	0	0	0	0	FORBIDDEN	
12+(2)	12+(1)	0.56	0.56	2.48	2.48	0	0	E2	E2
12+(2)	13+(1)	0	0	0	0	0	0	FORBIDDEN	
12+(2)	14+(1)	0	0	0	0			FORBIDDEN	
13+(2)	11+(1)	-2.47	-2.47	47.65	47.65				
13+(2)	12+(1)	0	0	0	0	0	0	FORBIDDEN	
13+(2)	13+(1)	1.07	1.07	8.90	8.90	0	0	E2	E2
13+(2)	14+(1)	-1.99	-1.99	30.90	30.90	0	0	E2	E2
13+(2)	15+(1)	0	0	0	0			FORBIDDEN	
14+(2)	12+(1)	-1.27	1.27	1.61	1.61				
14+(2)	13+(1)	0	0	0	0	0.905	2.751	M1	M1
14+(2)	14+(1)	0	0	0	0	0.506	0.860	M1	M1
14+(2)	15+(1)	-1.23	-1.23	11.85	11.85	0	0	E2	E2
14+(2)	16+(1)	3.36	-3.36	11.26	11.26				

WEISSKOPF ESTIMATES   48CR B(E2) = 10.36 E**2 FM**4   B(M1) = 1.79 N.M.**2   48CR B(E2) = 10.36 E**2 FM**4   B(M1) = 1.79 N.M.**2

4'5. *Wave functions. – Table IX.*

Symbols for table IX:

J = total spin of the state,

JP and JN = spins for the proton and neutron basis states. States with spin 2 and 4 with seniority 4 are indicated by 2* and 4*, respectively,

$A1$(JP, JN) = amplitude of the lowest J state, $\mathscr{A}^{(J,1)}_{(v_p J_p, v_n J_n)}$,

$A2$(JP, JN) = amplitude of the second-lowest J state, $\mathscr{A}^{(J,2)}_{(v_p J_p, v_n J_n)}$.

The wave functions of the spin-J state are written as a linear combination of the basis states $|j^{n_p}(v_p J_p) j^{n_n}(v_n J_n) J\rangle$.

In the table $\mathscr{A}^{(J,1)}_{(v_p J_p, v_n J_p)}$ and $\mathscr{A}^{(J,2)}_{(v_p J_p, v_n J_n)}$ of eq. (8) are shown for the lighter nucleus of each cross-conjugate pair. For example, the wave function for the first $17/2^-$ state in ^{45}Sc is obtained as

$$|^{45}\mathrm{Sc}\, J(17/2^-)_1\rangle = 0.892|j(v_p = 1, J_p = 7/2) j^4(v_n = 2, J_n = 6) J = 17/2\rangle + \\ + 0.368|j(1, 7/2) j^4(4, 5) 17/2\rangle + 0.262|j(1, 7/2) j^4(4, 8) 17/2\rangle .$$

The wave function of the cross-conjugate nucleus, ^{51}Cr in our example, relative to ^{56}Ni can be written in the same form as eq. (8) by replacing the numbers n_p and n_n with $n_p - (2j+1)$ and $n_n - (2j+1)$, respectively, and by exchanging the summation indices $(v_n J_n)$ with the indices $(v_p J_p)$. For example, the wave function for the first $17/2^-$ state in ^{51}Cr in this form is

$$|^{51}\mathrm{Cr}\, J = (17/2^-)_1\rangle = 0.892|j^{-1}(v_n = 1, J_n = 7/2) j^{-4}(v_p = 2, J_p = 6) J = 17/2\rangle + \\ + 0.368|j^{-1}(1, 7/2) j^{-4}(4, 5) 17/2\rangle + 0.262|j^{-1}(1, 7/2) j^{-4}(4, 8) 17/2\rangle .$$

However, note that the coupling order now is neutron-proton rather than proton-neutron. Then, to change the coupling order from neutron-proton to proton-neutron, a phase factor $(-)^{J-J_p-J_n}$ must be included. In our example this wave function becomes

$$|^{51}\mathrm{Cr}\, J = (17/2^-)_1\rangle = -0.892|j^{-4}(v_p = 2, J_p = 6) j^{-1}(v_n = 1, J_n = 7/2) J = 17/2\rangle + \\ + 0.368|j^{-4}(4, 5) j^{-1}(1, 7/2) 17/2\rangle - 0.262|j^{-4}(4, 8) j^{-1}(1, 7/2) 17/2\rangle .$$

Finally, to write the particle wave function relative to ^{40}Ca, a phase factor α in the identical-particle relation $|j^{2j+1-n} vJ\rangle = \alpha |j^{-n} vJ\rangle$ must be included. With our one-body c.f.p.'s this factor is $\alpha = (-)^{v/2}$ for $n = (2j+1)/2 = 4$ and $\alpha = 1$ for $n \neq 4$.

The ^{51}Cr $17/2^-$ wave function relative to ^{40}Ca is then

$$|^{51}\mathrm{Cr}\, J = (17/2^-)_1\rangle = 0.892|j^4(v_p = 2, J_p = 6) j^7(v_n = 1, J_n = 7/2) J = 17/2\rangle + \\ + 0.368|j^4(4, 5) j^7(1, 7/2) 17/2\rangle - 0.262|j^4(4, 8) j^7(1, 7/2) 17/2\rangle .$$

WAVE FUNCTIONS

40CA - 56NI

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
0+	0	0	1.000		1.000		1.000		1.000		1.000	

41CA - 55CO

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
7/2-	0	7/2	1.000		1.000		1.000		1.000		1.000	

42CA - 54FE

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
0+	0	0	1.000		1.000		1.000		1.000		1.000	
2+	0	2	1.000		1.000		1.000		1.000		1.000	
4+	0	4	1.000		1.000		1.000		1.000		1.000	
6+	0	6	1.000		1.000		1.000		1.000		1.000	

43CA - 53MN

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
3/2-	0	3/2	1.000		1.000		1.000		1.000		1.000	
5/2-	0	5/2	1.000		1.000		1.000		1.000		1.000	
7/2-	0	7/2	1.000		1.000		1.000		1.000		1.000	
9/2-	0	9/2	1.000		1.000		1.000		1.000		1.000	
11/2-	0	11/2	1.000		1.000		1.000		1.000		1.000	
15/2-	0	15/2	1.000		1.000		1.000		1.000		1.000	

44CA - 52CR

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
0+	0	0	1.000		1.000		1.000		1.000		1.000	
2+	0	2	1.000	0.0	1.000	0.0	1.000	0.0	1.000	0.0	1.000	0.0
	0	2*	0.0	1.000	0.0	1.000	0.0	1.000	0.0	1.000	0.0	1.000
4+	0	4	0.0	1.000	0.0	1.000	0.0	1.000	1.000	0.0	0.0	1.000
	0	4*	1.000	0.0	1.000	0.0	1.000	0.0	0.0	1.000	1.000	0.0
5+	0	5	1.000		1.000		1.000		1.000		1.000	
6+	0	6	1.000		1.000		1.000		1.000		1.000	
8+	0	8	1.000		1.000		1.000		1.000		1.000	

WAVE FUNCTIONS

45CA - 51V

			42SC-INT		54CO-INT		48SC-INT		42SC*-INT		48SC*-INT	
J	JP	JN	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)
3/2-	0	3/2	1.000		1.000		1.000		1.000		1.000	
5/2-	0	5/2	1.000		1.000		1.000		1.000		1.000	
7/2-	0	7/2	1.000		1.000		1.000		1.000		1.000	
9/2-	0	9/2	1.000		1.000		1.000		1.000		1.000	
11/2-	0	11/2	1.000		1.000		1.000		1.000		1.000	
15/2-	0	15/2	1.000		1.000		1.000		1.000		1.000	

46CA - 50TI

			42SC-INT		54CO-INT		48SC-INT		42SC*-INT		48SC*-INT	
J	JP	JN	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)
0+	0	0	1.000		1.000		1.000		1.000		1.000	
2+	0	2	1.000		1.000		1.000		1.000		1.000	
4+	0	4	1.000		1.000		1.000		1.000		1.000	
6+	0	6	1.000		1.000		1.000		1.000		1.000	

47CA - 49SC

			42SC-INT		54CO-INT		48SC-INT		42SC*-INT		48SC*-INT	
J	JP	JN	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)
7/2-	0	7/2	1.000		1.000		1.000		1.000		1.000	

48CA - 48CA

			42SC-INT		54CO-INT		48SC-INT		42SC*-INT		48SC*-INT	
J	JP	JN	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)
0+	0	0	1.000		1.000		1.000		1.000		1.000	

41SC - 55NI

			42SC-INT		54CO-INT		48SC-INT		42SC*-INT		48SC*-INT	
J	JP	JN	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)
7/2-	7/2	0	1.000		1.000		1.000		1.000		1.000	

42SC - 54CO

			42SC-INT		54CO-INT		48SC-INT		42SC*-INT		48SC*-INT	
J	JP	JN	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)
0+	7/2	7/2	1.000		1.000		1.000		1.000		1.000	
1+	7/2	7/2	1.000		1.000		1.000		1.000		1.000	
2+	7/2	7/2	1.000		1.000		1.000		1.000		1.000	
3+	7/2	7/2	1.000		1.000		1.000		1.000		1.000	
4+	7/2	7/2	1.000		1.000		1.000		1.000		1.000	
5+	7/2	7/2	1.000		1.000		1.000		1.000		1.000	
6+	7/2	7/2	1.000		1.000		1.000		1.000		1.000	
7+	7/2	7/2	1.000		1.000		1.000		1.000		1.000	

WAVE FUNCTIONS

43SC - 53FE

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
1/2-	7/2	4	1.000		1.000		1.C00		1.0C0		1.000	
3/2-	7/2	2	0.886	-.463	0.886	-.463	0.886	-.463	0.886	-.463	0.915	-.402
	7/2	4	0.463	0.886	0.463	0.886	0.463	0.886	0.463	0.886	0.402	0.915
5/2-	7/2	2	0.445	-.437	0.339	0.782	0.413	-.467	0.374	0.782	0.564	-.631
	7/2	4	0.424	0.871	0.604	0.246	0.483	0.84C	0.549	0.246	0.463	0.776
	7/2	6	0.789	-.222	0.722	-.573	0.772	-.276	0.747	-.573	0.684	-.035
7/2-	7/2	0	0.788	-.352	0.747	-.426	0.761	-.414	0.785	-.359	0.766	-.510
	7/2	2	0.562	0.737	0.629	0.680	0.608	0.674	0.565	0.731	0.609	0.745
	7/2	4	0.221	-.369	0.208	-.402	0.214	-.24C	0.224	-.337	0.195	-.188
	7/2	6	0.124	-.443	0.058	-.442	0.078	-.563	0.117	-.472	0.067	-.386
9/2-	7/2	2	0.925	-.202	0.912	-.256	0.903	-.286	0.916	-.241	0.921	-.263
	7/2	4	0.379	0.455	0.405	0.432	0.419	0.41P	0.398	0.438	0.383	0.481
	7/2	6	0.016	0.867	0.068	0.865	0.096	C.862	0.053	0.866	0.070	0.837
11/2-	7/2	2	0.815	-.241	0.790	-.313	0.783	-.33C	0.776	-.346	0.819	-.368
	7/2	4	0.505	0.740	0.570	0.691	0.585	0.679	0.599	0.666	0.540	0.753
	7/2	6	0.283	-.628	0.225	-.651	0.211	-.656	0.197	-.660	0.193	-.546
13/2-	7/2	4	0.989	-.147	C.587	-.160	0.970	-.244	0.981	-.194	0.975	-.220
	7/2	6	0.147	0.989	0.160	0.987	0.244	0.970	0.194	0.981	0.220	0.975
15/2-	7/2	4	0.879	-.477	0.879	-.477	0.879	-.477	0.879	-.477	0.889	-.457
	7/2	6	0.477	0.879	0.477	0.879	0.477	0.879	0.477	0.879	0.457	0.889
17/2-	7/2	6	1.000		1.000		1.000		1.000		1.000	
19/2-	7/2	6	1.000		1.000		1.000		1.000		1.000	

44SC - 52MN

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
0+	7/2	7/2	1.000		1.000		1.000		1.0C0		1.000	
1+	7/2	7/2	0.491	0.866	0.493	0.858	0.562	0.826	0.558	0.825	0.519	0.854
	7/2	5/2	0.869	-.480	0.869	-.479	0.826	-.560	0.829	-.550	0.854	-.517
	7/2	9/2	0.058	-.141	0.032	-.185	0.027	-.068	0.037	-.129	0.026	-.056
2+	7/2	7/2	0.735	-.354	0.676	0.457	0.679	0.446	0.716	0.392	0.656	0.519
	7/2	3/2	0.137	-.125	0.129	0.121	0.122	-.005	0.122	0.114	0.119	0.003
	7/2	5/2	0.657	0.509	0.723	-.406	0.722	-.387	0.684	-.472	0.741	-.426
	7/2	9/2	-.000	0.451	0.C59	-.435	0.061	-.365	0.028	-.441	0.061	-.339
	7/2	11/2	0.09C	-.629	-.009	0.649	-.001	0.720	0.063	0.645	-.006	0.659
3+	7/2	7/2	0.685	-.489	0.675	-.276	0.735	-.294	0.766	-.237	0.708	-.361
	7/2	3/2	-.001	0.698	-.018	0.894	-.036	0.844	-.044	0.892	-.017	0.814
	7/2	5/2	0.677	0.475	0.670	0.325	0.606	0.439	0.575	0.375	0.653	0.445
	7/2	9/2	0.185	-.115	0.241	-.118	0.242	-.089	0.232	-.034	0.214	-.095
	7/2	11/2	-.196	-.184	-.192	-.068	-.182	-.013	-.164	-.080	-.161	0.001
4+	7/2	7/2	0.780	0.033	0.754	0.127	0.765	0.059	0.777	0.078	0.769	0.061
	7/2	3/2	-.408	0.737	-.498	0.720	-.431	0.76C	-.430	0.757	-.439	0.744
	7/2	5/2	0.199	0.526	0.178	0.495	0.221	0.487	0.187	0.470	0.233	0.538
	7/2	9/2	0.320	0.349	0.285	0.420	0.311	0.373	0.314	0.407	0.293	0.334
	7/2	11/2	-.281	-.225	-.263	-.210	-.288	-.204	-.272	-.182	-.277	-.202
	7/2	15/2	0.060	-.082	0.006	-.030	0.015	-.023	0.055	-.019	0.012	-.076
5+	7/2	7/2	0.902	-.172	C.809	-.348	0.844	-.251	0.868	-.274	0.859	-.240
	7/2	3/2	-.202	-.247	-.288	-.259	-.238	-.259	-.247	-.335	-.250	-.269
	7/2	5/2	0.063	0.902	0.199	0.857	0.095	0.867	0.112	0.857	0.109	0.891
	7/2	9/2	0.125	0.292	0.194	0.271	0.174	0.342	0.152	0.274	0.158	0.277
	7/2	11/2	-.348	-.012	-.422	0.044	-.428	-.017	-.381	-.037	-.398	0.007
	7/2	15/2	-.071	-.105	-.088	-.034	-.084	-.016	-.070	-.046	-.069	-.021
6+	7/2	7/2	-.667	0.414	-.619	0.441	-.652	-.404	-.679	0.372	-.621	0.487
	7/2	5/2	0.664	0.677	0.725	0.577	0.681	-.621	0.643	0.657	0.729	0.606
	7/2	9/2	0.178	-.302	0.187	0.089	0.187	-.116	0.190	0.121	0.170	0.034
	7/2	11/2	0.265	-.535	0.230	-.637	0.260	0.611	0.273	-.593	0.223	-.587
	7/2	15/2	0.110	-.288	0.061	-.242	0.089	0.254	0.120	-.252	0.067	-.223
7+	7/2	7/2	0.942	0.333	0.907	0.302	0.907	0.416	0.936	0.211	0.975	0.378
	7/2	9/2	-.168	C.439	-.222	0.923	-.222	0.34P	-.197	0.967	-.201	0.449
	7/2	11/2	-.278	0.822	-.338	0.228	-.340	0.796	-.280	0.065	-.308	0.783
	7/2	15/2	-.086	0.143	-.115	-.372	-.110	0.269	-.CA6	-.128	-.091	0.205
8+	7/2	9/2	0.440	0.816	0.566	0.734	0.513	0.772	0.586	0.719	0.534	0.772
	7/2	11/2	0.844	-.233	0.795	-.367	0.819	-.31C	0.784	-.388	0.815	-.361
	7/2	15/2	0.308	-.528	0.218	-.571	0.258	-.554	0.202	-.577	0.224	-.524
9+	7/2	11/2	C.980	-.198	C.968	-.249	0.960	-.280	0.960	-.280	0.972	-.233
	7/2	15/2	0.198	0.980	0.249	0.968	0.280	0.96C	C.280	0.960	0.233	0.972
10+	7/2	15/2	1.C00		1.00C		1.000		1.000		1.000	
11+	7/2	15/2	1.000		1.000		1.000		1.0r0		1.000	

WAVE FUNCTIONS

45SC - 51CR

J	JP	JN	42SC-INT		54CO-INT		48SC-INT		42SC*-INT		48SC*-INT	
			A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)
1/2-	7/2	4	-.533	0.846	-.623	0.782	-.665	0.747	0.708	0.706	-.628	0.778
	7/2	4*	0.846	0.533	0.782	0.623	0.747	0.665	-.706	0.708	0.778	0.628
3/2-	7/2	2	0.880	-.157	0.836	-.223	0.848	0.223	0.877	0.044	0.868	0.204
	7/2	4	0.141	0.783	0.162	0.757	0.148	-.737	-.060	0.768	0.118	-.715
	7/2	2*	0.355	-.249	0.393	-.264	0.395	0.226	0.436	-.127	0.380	0.204
	7/2	4*	-.279	-.459	-.347	-.476	-.321	0.524	-.175	-.514	-.297	0.582
	7/2	5	-.038	0.299	0.008	0.285	0.004	-.289	-.083	0.311	-.009	-.257
5/2-	7/2	2	0.762	-.398	0.756	-.418	0.756	-.437	0.763	-.400	0.799	-.388
	7/2	4	0.170	0.724	0.201	0.716	0.216	0.714	0.176	0.741	0.157	0.724
	7/2	6	-.274	-.259	-.209	-.164	-.186	-.195	-.228	-.207	-.142	-.297
	7/2	2*	-.015	0.057	0.021	-.004	0.025	0.009	0.023	0.012	0.021	0.021
	7/2	4*	-.555	-.259	-.587	-.227	-.588	-.219	-.577	-.238	-.563	-.298
	7/2	5	-.081	0.423	0.010	0.484	0.024	0.461	-.022	0.438	-.004	0.440
7/2-	7/2	0	0.855	-.365	0.800	-.367	0.816	-.395	0.852	-.315	0.820	-.432
	7/2	2	0.496	0.612	0.568	0.481	0.551	0.504	0.502	0.554	0.548	0.532
	7/2	4	0.095	-.451	0.071	-.608	0.070	-.524	0.091	-.598	0.065	-.397
	7/2	6	0.024	-.179	-.028	0.031	-.008	-.066	0.022	0.002	-.005	-.150
	7/2	2*	-.036	-.205	-.058	-.346	-.057	-.282	-.044	-.332	-.053	-.225
	7/2	4*	-.108	-.452	-.166	-.245	-.148	-.426	-.109	-.261	-.141	-.534
	7/2	5	-.007	-.100	-.014	-.291	-.009	-.223	-.006	-.240	-.009	-.118
9/2-	7/2	2	0.786	0.195	0.756	0.169	0.746	-.140	0.762	0.310	0.782	0.148
	7/2	4	-.229	0.665	-.267	0.613	-.290	-.570	-.335	0.599	-.237	0.634
	7/2	6	-.099	-.485	-.103	-.512	-.104	0.555	-.018	-.514	-.096	-.490
	7/2	2*	-.250	0.316	-.307	0.336	-.294	-.283	-.334	0.240	-.268	0.329
	7/2	4*	-.502	-.116	-.501	-.206	-.509	0.226	-.427	-.198	-.498	-.196
	7/2	5	-.069	0.399	-.042	0.418	-.061	-.459	-.110	0.418	-.049	0.432
	7/2	8	0.006	-.105	-.001	-.059	0.008	0.068	0.031	-.091	0.006	-.059
11/2-	7/2	2	0.738	0.561	0.734	0.457	0.703	0.520	0.727	0.470	0.746	0.497
	7/2	4	-.219	0.538	-.194	0.693	-.214	0.664	-.197	0.711	-.182	0.646
	7/2	6	-.237	0.501	-.216	0.163	-.261	0.232	-.265	0.198	-.207	0.249
	7/2	2*	0.118	0.171	0.134	0.370	0.119	0.342	0.130	0.341	0.119	0.320
	7/2	4*	-.571	0.335	-.595	0.373	-.609	0.340	-.579	0.339	-.590	0.412
	7/2	5	0.100	-.057	0.072	0.092	0.085	0.042	0.096	0.035	0.068	0.043
	7/2	8	0.029	-.014	-.009	-.030	-.000	-.018	0.026	-.037	0.001	-.004
13/2-	7/2	4	0.224	0.913	0.304	0.883	0.303	0.877	0.470	0.831	0.298	0.891
	7/2	6	0.521	-.299	0.508	-.287	0.562	-.328	0.513	-.389	0.484	-.290
	7/2	4*	0.814	-.065	0.797	-.164	0.758	-.113	0.707	-.286	0.817	-.167
	7/2	5	-.076	-.235	-.077	-.292	-.078	-.286	-.098	-.230	-.062	-.281
	7/2	8	0.103	-.134	0.091	-.158	0.108	-.169	0.077	-.151	0.075	-.131
15/2-	7/2	4	0.517	0.746	-.552	0.671	0.531	0.699	0.569	0.694	-.526	0.700
	7/2	6	-.481	0.567	0.420	0.461	-.478	0.580	-.474	0.627	0.420	0.410
	7/2	4*	-.608	0.254	0.621	0.456	-.587	0.262	-.541	0.238	0.664	0.447
	7/2	5	-.319	-.200	0.341	-.347	-.340	-.268	-.351	-.187	0.299	-.369
	7/2	8	-.171	0.128	0.129	0.096	-.170	0.183	-.189	0.185	0.128	0.075
17/2-	7/2	6	0.892	-.323	0.836	-.385	0.853	-.333	0.864	-.352	0.850	-.398
	7/2	5	0.368	0.925	0.469	0.871	0.428	0.887	0.432	0.886	0.463	0.878
	7/2	8	0.262	-.199	0.285	-.304	0.298	-.320	0.260	-.300	0.253	-.267
19/2-	7/2	6	0.987	-.158	0.982	-.187	0.975	-.222	0.983	-.184	0.984	-.181
	7/2	8	0.158	0.987	0.187	0.982	0.222	0.975	0.184	0.983	0.181	0.984
21/2-	7/2	8	1.000		1.000		1.000		1.000		1.000	
23/2-	7/2	8	1.000		1.000		1.000		1.000		1.000	

46SC - 50V

J	JP	JN	42SC-INT		54CO-INT		48SC-INT		42SC*-INT		48SC*-INT	
			A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)
0+	7/2	7/2	1.000		1.000		1.000		1.000		1.000	
1+	7/2	7/2	0.694	0.433	-.692	0.189	0.805	0.084	0.783	0.148	0.769	0.139
	7/2	5/2	-.714	0.310	0.721	0.137	-.593	0.076	-.620	0.121	-.639	0.129
	7/2	9/2	-.093	0.846	0.033	0.972	-.022	0.993	-.041	0.982	-.021	0.982
2+	7/2	7/2	0.874	-.251	0.729	-.505	0.765	-.429	0.800	-.387	0.745	-.457
	7/2	3/2	0.089	0.878	0.368	0.836	0.302	0.844	0.268	0.825	0.308	0.850
	7/2	5/2	-.474	-.322	-.575	-.117	-.568	-.145	-.536	-.177	-.590	-.144
	7/2	9/2	-.014	0.202	-.035	0.160	-.031	0.261	0.000	0.329	-.027	0.202
	7/2	11/2	-.060	0.149	-.023	0.080	-.016	0.117	-.036	0.173	-.007	0.090
3+	7/2	7/2	0.725	0.548	0.716	-.380	0.745	-.390	0.788	-.359	0.710	0.561
	7/2	3/2	0.156	-.394	0.211	0.251	0.205	0.187	0.205	0.373	0.199	-.181
	7/2	5/2	-.664	0.583	-.661	-.374	-.629	-.432	-.573	-.417	-.672	0.560
	7/2	9/2	-.047	-.445	-.069	0.642	-.064	0.644	-.081	0.616	-.049	-.518
	7/2	11/2	0.076	-.403	0.032	0.490	0.047	0.460	0.041	0.423	0.044	-.266
4+	7/2	7/2	-.684	0.620	-.601	0.689	0.694	0.603	0.815	0.433	-.598	0.702
	7/2	3/2	-.209	0.142	-.189	0.242	0.201	0.180	0.230	0.138	-.169	0.222
	7/2	5/2	0.696	0.674	0.769	0.599	-.679	0.701	-.509	0.834	0.778	0.600
	7/2	9/2	0.009	-.275	-.039	-.299	-.001	-.289	-.075	-.266	-.026	-.258
	7/2	11/2	-.055	0.254	-.098	0.131	0.127	0.166	0.130	0.159	-.090	0.178
	7/2	15/2	0.036	0.032	-.000	0.030	-.009	0.019	-.025	0.027	0.008	0.009

WAVE FUNCTIONS

46SC - 50V

			42SC-INT		54CO-INT		48SC-INT		42SC*-INT		48SC*-INT	
J	JP	JN	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)
5+	7/2	7/2	0.750	-.558	0.613	0.658	0.688	-.56C	0.764	-.505	0.574	0.709
	7/2	3/2	0.286	0.163	C.373	-.100	0.349	0.138	C.351	0.209	0.344	-.034
	7/2	5/2	0.543	C.750	0.649	-.633	0.580	0.685	0.482	0.722	0.710	-.597
	7/2	9/2	-.131	-.163	-.168	0.143	-.154	-.196	-.144	-.223	-.162	0.132
	7/2	11/2	0.208	-.271	0.187	0.368	0.209	-.368	0.196	-.353	0.144	0.349
	7/2	15/2	0.008	0.018	0.010	-.016	0.010	0.045	0.022	0.069	0.011	-.024
6+	7/2	7/2	0.862	-.227	0.837	-.205	0.848	-.158	0.867	-.166	0.835	-.261
	7/2	5/2	0.424	0.802	0.465	0.731	0.432	0.727	0.404	0.749	0.479	0.755
	7/2	9/2	0.077	-.313	0.072	-.404	0.065	-.384	0.076	-.425	0.051	-.355
	7/2	11/2	0.265	-.454	0.260	-.490	0.299	-.518	0.282	-.459	0.264	-.476
	7/2	15/2	0.024	0.034	-.013	0.140	-.005	0.175	0.022	0.139	0.001	0.095
7+	7/2	7/2	0.959	-.195	0.938	-.203	0.929	-.239	0.955	-.149	0.944	-.202
	7/2	9/2	0.117	-.273	0.143	-.425	0.140	-.398	0.139	-.482	0.134	-.424
	7/2	11/2	0.259	0.836	0.314	0.774	0.340	0.755	0.263	0.775	0.299	0.794
	7/2	15/2	-.006	-.434	-.02C	-.424	-.046	-.462	-.015	-.379	-.025	-.387
8+	7/2	9/2	-.546	0.824	-.609	0.787	-.552	0.805	0.577	0.806	-.573	0.814
	7/2	11/2	0.738	0.388	0.717	0.495	0.728	0.338	-.709	0.411	0.746	0.467
	7/2	15/2	-.396	-.413	-.337	-.368	-.407	-.488	0.406	-.426	-.339	-.347
9+	7/2	11/2	0.915	0.404	0.904	0.428	0.870	0.493	0.911	0.413	0.930	0.367
	7/2	15/2	-.404	0.915	-.428	0.904	-.493	0.870	-.413	0.911	-.367	0.930
10+	7/2	15/2	1.000		1.000		1.000		1.000		1.000	
11+	7/2	15/2	1.000		1.000		1.000		1.000		1.000	

47SC - 49TI

			42SC-INT		54CO-INT		48SC-INT		42SC*-INT		48SC*-INT	
J	JP	JN	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)
1/2-	7/2	4	1.000		1.000		1.000		1.000		1.000	
3/2-	7/2	2	0.998	0.058	0.597	0.079	0.991	0.135	0.976	0.216	0.994	0.110
	7/2	4	-.058	0.998	-.079	0.997	-.135	0.991	-.216	0.976	-.110	0.994
5/2-	7/2	2	0.981	0.034	0.955	0.255	0.956	0.261	0.957	0.234	0.969	0.221
	7/2	4	-.132	0.832	-.298	0.826	-.292	0.861	-.288	0.839	-.246	0.891
	7/2	6	-.139	-.554	-.005	-.503	-.004	-.438	-.035	-.492	-.013	-.396
7/2-	7/2	0	0.928	0.252	0.900	-.275	0.905	0.280	0.925	0.236	0.907	0.393
	7/2	2	-.370	0.676	-.435	-.570	-.426	0.566	-.379	0.595	-.422	0.630
	7/2	4	-.025	-.688	0.004	0.749	0.016	-.750	-.013	-.745	0.013	-.709
	7/2	6	-.007	0.083	0.016	-.194	0.000	0.195	-.010	0.186	0.000	0.135
9/2-	7/2	2	0.835	0.476	0.818	0.489	0.768	0.537	0.747	0.595	0.893	0.478
	7/2	4	-.543	0.631	-.568	0.610	-.623	0.501	-.638	0.516	-.545	0.625
	7/2	6	0.089	-.612	0.085	-.624	0.148	-.678	0.186	-.616	0.093	-.617
11/2-	7/2	2	0.926	-.076	0.917	0.288	C.910	-.241	0.917	-.231	0.935	-.241
	7/2	4	-.376	-.275	-.399	0.638	-.414	-.510	-.397	-.613	-.356	-.640
	7/2	6	-.035	0.958	0.013	-.714	0.010	0.826	-.041	0.756	-.003	0.730
13/2-	7/2	4	-.510	0.860	-.544	0.839	-.502	0.865	-.628	0.778	-.586	0.810
	7/2	6	0.860	0.510	0.839	0.544	0.865	0.502	0.778	0.628	0.810	0.586
15/2-	7/2	4	-.639	0.769	-.698	0.716	-.617	0.787	-.652	0.758	-.676	0.737
	7/2	6	0.769	0.639	0.716	0.698	0.787	0.617	0.758	0.652	0.737	0.676
17/2-	7/2	6	1.000		1.000		1.000		1.000		1.000	
19/2-	7/2	6	1.000		1.000		1.000		1.000		1.000	

46SC - 48SC

			42SC-INT		54CO-INT		48SC-INT		42SC*-INT		48SC*-INT	
J	JP	JN	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)
0+	7/2	7/2	1.000		1.000		1.000		1.000		1.000	
1+	7/2	7/2	1.000		1.000		1.000		1.000		1.000	
2+	7/2	7/2	1.000		1.000		1.000		1.000		1.000	
3+	7/2	7/2	1.000		1.000		1.000		1.000		1.000	
4+	7/2	7/2	1.000		1.000		1.000		1.000		1.000	
5+	7/2	7/2	1.000		1.000		1.000		1.000		1.000	
6+	7/2	7/2	1.000		1.000		1.000		1.000		1.000	
7+	7/2	7/2	1.000		1.000		1.000		1.000		1.000	

WAVE FUNCTIONS

42TI - 54NI

J	JP	JN	42SC-INT		54CO-INT		48SC-INT		42SC*-INT		48SC*-INT	
			A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)
0+	0	0	1.000		1.000		1.000		1.000		1.000	
2+	2	0	1.000		1.000		1.000		1.000		1.000	
4+	4	0	1.000		1.000		1.000		1.000		1.000	
6+	6	0	1.000		1.000		1.000		1.000		1.000	

43TI - 53CO

J	JP	JN	42SC-INT		54CO-INT		48SC-INT		42SC*-INT		48SC*-INT	
			A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)
1/2-	4	7/2	1.000		1.000		1.000		1.000		1.000	
3/2-	2	7/2	0.886	-.463	0.886	-.463	0.886	-.463	0.886	-.463	0.915	-.402
	4	7/2	0.463	0.886	0.463	0.886	0.463	0.886	0.463	0.886	0.402	0.915
5/2-	2	7/2	0.445	-.437	0.339	0.782	0.413	-.467	0.374	0.782	0.564	-.631
	4	7/2	0.424	0.871	0.604	0.246	0.483	0.840	0.549	0.246	0.463	0.776
	6	7/2	0.789	-.222	0.722	-.573	0.772	-.276	0.747	-.573	0.684	-.305
7/2-	0	7/2	0.788	-.352	0.747	-.426	0.761	-.414	0.785	-.359	0.766	-.510
	2	7/2	0.562	0.737	0.629	0.680	0.608	0.674	0.565	0.731	0.609	0.745
	4	7/2	0.221	-.369	0.208	-.402	0.214	-.240	0.224	-.337	0.195	-.188
	6	7/2	0.124	-.443	0.058	-.442	0.078	-.563	0.117	-.472	0.067	-.386
9/2-	2	7/2	0.925	-.202	0.912	-.256	0.903	-.286	0.916	-.241	0.921	-.263
	4	7/2	0.379	0.455	0.405	0.432	0.419	0.418	0.398	0.438	0.383	0.481
	6	7/2	0.016	0.867	0.068	0.865	0.096	0.862	0.053	0.866	0.379	0.837
11/2-	2	7/2	0.815	-.241	0.790	-.313	0.783	-.330	0.776	-.346	0.919	-.368
	4	7/2	0.505	0.740	0.570	0.691	0.585	0.679	0.599	0.666	0.340	0.753
	6	7/2	0.283	-.628	0.225	-.651	0.211	-.656	0.197	-.660	0.193	-.546
13/2-	4	7/2	0.989	-.147	0.987	-.160	0.970	-.244	0.981	-.194	0.975	-.220
	6	7/2	0.147	0.989	0.160	0.987	0.244	0.970	0.194	0.981	0.220	0.975
15/2-	4	7/2	0.879	-.477	0.879	-.477	0.879	-.477	0.879	-.477	0.889	-.457
	6	7/2	0.477	0.879	0.477	0.879	0.477	0.879	0.477	0.879	0.457	0.889
17/2-	6	7/2	1.000		1.000		1.000		1.000		1.000	
19/2-	6	7/2	1.000		1.000		1.000		1.000		1.000	

44TI - 52FE

J	JP	JN	42SC-INT		54CO-INT		48SC-INT		42SC*-INT		48SC*-INT	
			A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)
0+	0	0	0.788	-.352	0.747	-.426	0.761	-.414	0.785	-.359	0.766	-.510
	2	2	0.562	0.737	0.629	0.680	0.608	0.674	0.565	0.731	0.609	0.745
	4	4	0.221	-.369	0.208	-.402	0.214	-.240	0.224	-.337	0.195	-.188
	6	6	0.123	-.443	0.058	-.442	0.078	-.563	0.117	-.472	0.067	-.386
1+	2	2	0.906	-.315	0.897	-.332	0.870	-.368	0.875	-.382	0.919	-.303
	4	4	0.401	0.425	0.424	0.458	0.451	0.325	0.442	0.378	0.376	0.475
	6	6	0.135	0.848	0.126	0.825	0.199	0.871	0.198	0.843	0.121	0.826
2+	0	2	0.610	0.156	0.595	0.586	0.598	-.588	0.607	0.620	0.603	0.615
	2	0	0.610	0.156	0.595	-.586	0.598	0.588	0.607	-.620	0.603	-.615
	2	2	-.354	0.810	-.393	0.0	-.380	0.0	-.356	0.0	-.383	0.0
	2	4	0.242	0.185	0.252	0.375	0.253	-.374	0.248	0.327	0.242	0.337
	4	2	0.242	0.185	0.252	-.375	0.253	0.374	0.248	-.327	0.242	-.337
	4	4	-.059	0.379	-.076	0.0	-.073	0.0	-.060	0.0	-.068	0.0
	4	6	0.061	0.181	0.052	0.127	0.057	-.120	0.061	0.093	0.050	0.093
	6	4	0.061	0.181	0.052	-.127	0.057	0.120	0.061	-.093	0.050	-.093
	6	6	0.056	0.132	0.013	0.0	0.017	0.0	0.044	0.0	0.017	0.0
3+	2	2	0.0	-.762	-.749	0.0	-.709	0.0	-.681	0.0	-.776	0.0
	2	4	-.696	0.404	0.424	-.689	0.444	-.675	0.454	-.689	0.405	-.685
	4	2	0.696	0.404	0.424	0.689	0.444	0.675	0.454	0.689	0.405	0.685
	4	4	0.0	-.225	-.233	0.0	-.251	0.0	-.263	0.0	-.221	0.0
	4	6	-.122	0.121	0.093	-.157	0.137	-.210	0.162	-.158	0.099	-.174
	6	4	0.122	0.121	0.093	0.157	0.137	0.210	0.162	0.158	0.099	0.174
	6	6	0.0	-.116	-.086	0.0	-.046	0.0	-.040	0.0	-.040	0.0
4+	0	4	0.499	0.378	0.456	0.412	0.480	0.384	0.513	-.357	0.460	0.416
	2	2	0.645	-.498	0.693	-.304	0.664	-.410	0.622	0.484	0.694	-.406
	2	4	-.155	0.354	-.194	0.380	-.180	0.403	-.161	-.388	-.183	0.387
	2	6	0.127	0.150	0.114	0.178	0.124	0.174	0.125	-.159	0.114	0.177
	4	0	0.499	0.378	0.456	0.412	0.480	0.384	0.513	-.357	0.460	0.416
	4	2	-.155	0.354	-.194	0.380	-.180	0.403	-.161	-.388	-.183	0.387
	4	4	0.006	-.262	0.035	-.264	0.026	-.240	0.005	0.262	0.032	-.224
	4	6	0.041	0.220	0.015	0.213	0.026	0.217	0.050	-.212	0.019	0.196
	6	2	0.127	0.150	0.114	0.178	0.124	0.174	0.125	-.159	0.114	0.177
	6	4	0.041	0.220	0.015	0.213	0.026	0.217	0.050	-.212	0.019	0.196
	6	6	0.023	-.074	0.022	-.003	0.006	0.005	-.000	0.031	0.010	-.007

WAVE FUNCTIONS

44TI – 52FE

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
5+	2	4	-.516	0.547	0.613	0.532	0.464	0.582	0.573	0.552	-.499	0.607
	2	6	0.480	-.415	-.333	-.460	-.533	-.388	-.390	-.431	0.501	-.351
	4	2	0.516	0.547	0.613	-.532	-.464	0.582	0.573	-.552	0.499	0.607
	4	4	0.0	-.067	-.024	0.0	0.0	-.065	-.046	0.0	0.0	-.057
	4	6	-.051	-.067	0.029	0.071	-.007	-.018	-.023	0.098	-.019	-.002
	6	2	-.480	-.415	-.333	0.460	0.533	-.388	-.390	0.431	-.501	-.351
	6	4	0.051	-.067	0.029	-.071	0.007	-.018	-.023	-.098	0.019	-.002
	6	6	0.0	0.208	0.157	0.0	0.0	0.129	0.186	0.0	0.0	0.109
6+	0	6	0.576	-.176	0.454	0.536	0.542	-.164	0.549	-.588	0.524	0.221
	2	4	0.339	0.563	0.526	0.057	0.375	0.533	0.393	-.063	0.421	-.506
	2	6	0.212	-.370	0.115	0.447	0.242	-.409	0.200	-.380	0.209	0.420
	4	2	0.339	0.563	0.526	-.057	0.375	0.533	0.393	0.063	0.421	-.506
	4	4	0.126	-.158	0.055	0.0	0.099	-.166	0.092	0.0	0.080	0.164
	4	6	-.003	-.033	0.031	0.099	0.046	-.086	0.019	-.075	0.037	0.072
	6	0	0.576	-.176	0.454	-.536	0.542	-.164	0.549	0.588	0.524	0.221
	6	2	0.212	-.370	0.115	-.447	0.242	-.409	0.200	0.380	0.209	0.420
	6	4	-.003	-.033	0.031	-.099	0.046	-.086	0.019	0.075	0.037	0.072
	6	6	-.024	0.066	0.045	0.0	0.014	0.022	-.014	0.0	0.014	-.025
7+	2	6	-.694	0.516	0.554	-.680	-.667	0.555	0.525	-.672	-.677	0.586
	4	4	0.0	0.266	0.256	0.0	0.0	0.254	0.245	0.0	0.0	0.749
	4	6	-.135	0.413	0.379	-.193	-.233	0.377	0.411	-.221	-.203	0.338
	6	2	0.694	0.516	0.554	0.680	0.667	0.555	0.525	0.672	0.677	0.586
	6	4	0.135	0.413	0.379	0.193	0.233	0.377	0.411	0.221	0.203	0.338
	6	6	0.0	0.237	0.180	0.0	0.0	0.184	0.222	0.0	0.0	0.149
8+	2	6	0.579	0.123	0.527	0.168	0.531	0.046	0.508	0.199	0.547	0.093
	4	4	0.495	-.697	0.612	-.607	0.556	-.598	0.662	-.550	0.553	-.616
	4	6	0.206	0.491	0.174	0.532	0.235	0.543	0.136	0.549	0.207	0.535
	6	2	0.579	0.123	0.527	0.168	0.531	0.046	0.508	0.199	0.547	0.093
	6	4	0.206	0.491	0.174	0.532	0.235	0.543	0.136	0.549	0.207	0.535
	6	6	0.020	0.039	0.097	0.099	0.129	0.222	0.100	0.124	0.095	0.173
9+	4	6	-.707	0.571	0.592	-.707	-.707	0.604	-.707	0.604	-.707	0.618
	6	4	0.707	0.571	0.592	0.707	0.707	0.604	0.707	0.604	0.707	0.618
	6	6	0.0	0.590	0.547	0.0	0.0	0.520	0.0	0.520	0.0	0.486
10+	4	6	0.701	-.094	0.700	-.102	0.690	-.152	0.696	-.122	0.693	-.138
	6	4	0.701	-.094	0.700	-.102	0.690	-.152	0.696	-.122	0.693	-.138
	6	6	0.133	0.991	0.144	0.990	0.215	0.977	0.173	0.985	0.195	0.981
11+	6	6	1.000		1.000		1.000		1.000		1.000	
12+	6	6	1.000		1.000		1.000		1.000		1.000	

45TI – 51MN

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
1/2-	2	3/2	0.827	0.391	0.857	-.363	0.806	0.434	0.813	0.421	0.840	0.325
	2	5/2	0.148	0.267	0.161	0.801	0.117	0.287	0.130	0.265	0.130	0.457
	4	7/2	-.538	0.693	-.475	-.294	-.567	0.658	-.560	0.675	-.517	0.647
	4	9/2	0.041	0.507	0.094	0.330	0.034	0.493	0.031	0.516	0.043	0.478
	6	11/2	0.056	-.197	0.068	0.178	0.117	-.231	0.088	-.174	0.092	-.199
3/2-	0	3/2	0.686	-.241	0.685	-.201	0.674	-.247	0.708	-.187	0.683	-.251
	2	7/2	-.543	-.473	-.512	-.479	-.545	-.459	-.490	-.537	-.546	-.450
	2	3/2	-.362	-.020	-.395	-.020	-.381	0.010	-.363	-.036	-.384	-.004
	2	5/2	-.042	0.702	-.071	0.712	-.036	0.694	-.092	0.663	-.039	0.730
	4	7/2	0.232	-.429	0.248	-.402	0.222	-.426	0.276	-.421	0.207	-.387
	4	5/2	-.010	0.042	-.033	0.047	-.005	0.087	-.026	0.097	-.007	0.078
	4	9/2	0.093	0.116	0.078	0.157	0.085	0.153	0.077	0.141	0.077	0.144
	4	11/2	0.182	0.139	0.186	0.158	0.203	0.158	0.177	0.161	0.186	0.139
	6	9/2	0.004	-.025	-.012	-.019	-.001	-.015	0.011	-.024	-.001	-.010
	6	11/2	-.077	0.073	-.058	0.091	-.056	0.089	-.069	0.052	-.050	0.074
	6	15/2	0.002	-.017	0.027	0.010	0.027	0.026	0.004	0.010	0.021	0.013
5/2-	0	5/2	0.709	-.218	0.677	-.255	0.679	-.242	0.699	-.196	0.694	-.269
	2	7/2	-.510	0.181	-.509	0.208	-.518	0.210	-.521	0.206	-.503	0.703
	2	3/2	0.062	-.112	0.054	-.152	0.053	-.093	0.058	-.082	0.053	-.122
	2	5/2	0.402	0.690	0.451	0.641	0.434	0.623	0.403	0.638	0.443	0.664
	2	9/2	0.156	-.266	0.162	-.294	0.165	-.301	0.167	-.299	0.154	-.288
	4	7/2	-.137	-.371	-.156	-.364	-.153	-.449	-.137	-.481	-.142	-.389
	4	3/2	0.019	0.068	0.022	0.098	0.021	0.091	0.014	0.130	0.019	0.079
	4	5/2	-.019	0.375	0.002	0.403	-.000	0.346	-.016	0.326	0.001	0.362
	4	9/2	0.054	0.123	0.075	0.104	0.076	0.107	0.066	0.103	0.068	0.100
	4	11/2	0.135	-.138	0.135	-.140	0.142	-.136	0.140	-.142	0.125	-.128
	6	7/2	0.070	-.167	0.026	-.169	0.017	-.188	0.044	-.154	0.018	-.153
	6	9/2	0.015	0.007	0.002	0.010	-.001	-.005	0.006	-.011	0.001	0.005
	6	11/2	-.008	0.137	0.022	0.076	0.019	0.123	-.000	0.119	0.014	0.095
	6	15/2	0.037	-.061	0.024	-.042	0.031	-.018	0.039	-.017	0.025	-.025
7/2-	0	7/2	0.766	-.162	0.711	-.205	0.733	-.186	0.766	-.153	0.729	-.216
	2	7/2	-.027	0.636	-.010	0.538	-.013	0.605	-.025	0.592	-.006	0.592
	2	3/2	-.120	0.334	-.125	0.467	-.120	0.379	-.127	0.410	-.113	0.403
	2	5/2	0.475	0.426	0.544	0.428	0.513	0.404	0.465	0.427	0.540	0.423
	2	9/2	-.165	0.319	-.191	-.029	-.190	-.015	-.176	-.027	-.182	-.096
	2	11/2	-.256	0.267	-.262	0.285	-.269	0.296	-.259	0.258	-.254	0.295
	4	7/2	-.128	-.319	-.139	-.331	-.142	-.312	-.132	-.354	-.137	-.294
	4	3/2	0.107	-.048	0.102	-.113	0.100	-.075	0.105	-.091	0.092	-.085
	4	5/2	0.115	0.214	0.154	0.130	0.137	0.215	0.126	0.172	0.138	0.198
	4	9/2	0.115	-.066	0.101	-.039	0.104	-.059	0.114	-.048	0.093	-.057
	4	11/2	0.036	-.143	0.008	-.170	0.016	-.171	0.037	-.151	0.017	-.156
	4	15/2	-.076	0.075	-.066	0.075	-.074	0.082	-.079	0.064	-.063	0.073
	6	7/2	-.089	-.084	-.075	-.001	-.077	-.064	-.087	-.030	-.066	-.041
	6	5/2	-.022	-.045	-.005	-.004	-.030	-.052	-.038	-.058	-.023	-.027
	6	9/2	-.035	0.039	-.008	0.035	-.013	0.045	-.027	0.047	-.011	0.042
	6	11/2	0.078	0.075	0.043	0.072	0.052	0.065	0.070	0.071	0.046	0.053
	6	15/2	0.056	-.389	0.015	-.049	0.030	-.054	0.056	-.063	0.024	-.043

WAVE FUNCTIONS

45TI - 51MN

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
9/2-	0	9/2	0.411	0.426	0.409	0.306	0.423	0.214	0.461	0.461	0.397	0.255
	2	7/2	0.652	-.448	0.623	-.437	0.634	-.410	0.643	-.439	0.637	-.453
	2	5/2	0.463	0.271	0.482	0.310	0.458	0.317	0.429	0.182	0.488	0.367
	2	9/2	-.116	-.124	-.112	-.157	-.114	-.130	-.122	-.146	-.107	-.143
	2	11/2	0.198	0.147	0.219	0.089	0.221	0.023	0.205	0.131	0.210	0.047
	4	7/2	-.120	-.526	-.135	-.500	-.137	-.513	-.147	-.534	-.126	-.501
	4	3/2	-.002	0.062	0.003	0.177	-.002	0.190	-.018	0.063	0.004	0.183
	4	5/2	0.316	-.286	0.333	-.300	0.327	-.171	0.298	-.344	0.328	-.217
	4	9/2	-.050	0.115	-.058	0.163	-.058	0.170	-.062	0.127	-.052	0.150
	4	11/2	-.101	0.128	-.093	0.078	-.104	0.089	-.107	0.098	-.094	0.084
	4	15/2	0.002	-.001	0.018	-.000	0.011	-.015	-.009	-.022	0.012	-.005
	6	7/2	-.065	0.007	-.073	-.117	-.064	-.281	-.036	0.036	-.062	-.188
	6	3/2	0.028	-.129	0.025	-.134	0.025	-.106	0.021	-.120	0.023	-.106
	6	5/2	-.019	-.273	-.022	-.350	0.005	-.399	0.013	-.215	0.000	-.365
	6	9/2	0.073	-.055	0.053	-.060	0.058	-.085	0.075	-.025	0.050	-.065
	6	11/2	-.020	0.123	0.004	0.136	0.010	0.200	-.002	0.147	0.007	0.151
	6	15/2	-.013	0.076	-.014	0.071	-.012	0.077	-.010	0.073	-.011	0.060
11/2-	0	11/2	-.552	0.519	-.509	0.467	-.537	0.492	-.542	0.491	-.522	0.531
	2	7/2	0.684	0.261	0.681	0.106	0.672	0.175	0.676	0.188	0.690	0.180
	2	9/2	0.195	0.030	0.227	0.081	0.225	0.052	0.221	0.072	0.220	0.038
	2	11/2	0.172	0.056	0.173	-.186	0.172	-.064	0.165	-.016	0.169	-.071
	2	15/2	-.151	0.146	-.141	0.193	-.151	0.194	-.145	0.172	-.138	0.188
	4	7/2	0.025	0.566	0.077	0.641	0.063	0.598	0.071	0.667	0.063	0.570
	4	3/2	-.130	-.102	-.146	-.138	-.138	-.134	-.139	-.141	-.134	-.125
	4	5/2	0.306	0.200	0.345	0.270	0.329	0.257	0.318	0.188	0.333	0.287
	4	9/2	-.073	-.081	-.080	-.021	-.083	-.053	-.077	-.065	-.077	-.043
	4	11/2	-.037	0.141	-.035	0.139	-.034	0.105	-.026	0.156	-.032	0.102
	4	15/2	0.033	0.014	0.027	-.015	0.029	0.004	0.032	0.020	0.026	-.001
	6	7/2	-.026	0.320	-.020	0.115	-.043	0.214	-.050	0.180	-.036	0.193
	6	3/2	0.069	0.108	0.071	0.152	0.073	0.131	0.073	0.128	0.067	0.120
	6	5/2	0.096	0.337	0.122	0.339	0.096	0.375	0.093	0.300	0.095	0.376
	6	9/2	0.027	-.047	0.023	-.054	0.022	-.014	0.014	-.080	0.021	-.013
	6	11/2	0.045	-.103	0.014	-.116	0.017	-.148	0.031	-.123	0.016	-.122
	6	15/2	0.034	-.025	-.000	-.041	0.005	-.037	0.024	-.028	0.006	-.030
13/2-	2	9/2	0.418	0.252	0.502	0.219	0.448	0.267	0.425	0.318	0.470	0.230
	2	11/2	-.422	0.036	-.426	0.043	-.439	0.031	-.395	-.037	-.447	0.073
	2	15/2	0.038	0.073	0.067	0.059	0.063	0.019	0.033	0.042	0.062	0.023
	4	7/2	0.701	-.296	0.631	-.390	0.678	-.262	0.730	-.249	0.645	-.336
	4	5/2	0.275	0.575	0.325	0.556	0.260	0.556	0.214	0.576	0.312	0.587
	4	9/2	0.109	-.151	0.080	-.156	0.105	-.145	0.119	-.139	0.088	-.141
	4	11/2	0.043	0.009	0.095	0.048	0.080	0.058	0.078	0.060	0.076	0.044
	4	15/2	-.034	0.057	-.022	0.011	-.037	0.022	-.051	0.029	-.032	0.023
	6	7/2	-.074	-.560	-.084	-.455	-.012	-.563	0.001	-.533	-.044	-.512
	6	3/2	-.118	0.371	-.078	0.465	-.121	0.413	-.158	0.415	-.084	0.408
	6	5/2	0.195	-.129	0.157	-.147	0.193	-.088	0.165	-.077	0.189	-.108
	6	9/2	-.071	-.018	-.062	-.036	-.059	-.033	-.080	-.014	-.082	-.022
	6	11/2	0.004	0.132	-.014	0.109	-.020	0.167	-.005	0.122	-.013	0.140
	6	15/2	-.042	0.004	-.032	0.027	-.032	0.032	-.042	0.023	-.026	0.024
15/2-	0	15/2	0.373	0.616	0.304	0.509	0.345	0.617	0.332	0.636	0.317	0.589
	2	11/2	0.570	0.122	0.599	0.342	0.587	0.149	0.545	0.175	0.606	0.218
	2	15/2	-.049	0.141	-.064	-.002	-.053	0.175	-.060	0.154	-.059	0.127
	4	7/2	-.658	0.254	-.646	0.271	-.646	0.235	-.681	0.208	-.646	0.263
	4	9/2	-.096	0.178	-.146	0.045	-.134	0.139	-.126	0.136	-.134	0.108
	4	11/2	0.028	-.196	0.040	-.308	0.034	-.185	0.048	-.196	0.030	-.204
	4	15/2	-.039	0.017	-.010	0.027	-.016	0.010	-.041	0.017	-.011	0.016
	6	7/2	-.074	0.605	-.120	0.533	-.089	0.595	-.118	0.595	-.085	0.593
	6	3/2	0.135	-.201	0.154	-.299	0.144	-.224	0.149	-.211	0.139	-.242
	6	5/2	-.241	0.068	-.244	0.161	-.249	0.068	-.243	0.047	-.249	0.101
	6	9/2	-.082	0.131	-.070	0.173	-.068	0.102	-.095	0.116	-.060	0.112
	6	11/2	0.026	-.147	0.024	-.134	0.024	-.190	0.024	-.160	0.023	-.177
	6	15/2	0.003	-.020	0.004	-.075	0.015	-.051	0.023	-.026	0.010	-.046
17/2-	2	15/2	0.015	-.454	-.001	0.394	0.044	0.447	0.057	0.388	0.028	-.424
	4	9/2	0.061	0.138	0.067	-.290	0.056	-.227	0.053	-.342	0.058	0.222
	4	11/2	0.170	-.522	0.156	0.639	0.167	0.595	0.184	0.615	0.149	-.593
	4	15/2	0.010	-.105	0.029	0.056	0.035	0.086	0.028	0.035	0.025	-.076
	6	7/2	-.672	0.431	-.632	-.376	-.660	-.347	-.695	-.313	-.631	0.406
	6	5/2	0.698	0.518	0.729	-.414	0.699	-.468	0.666	-.473	0.735	0.459
	6	9/2	0.109	0.182	0.127	-.186	0.129	-.196	0.116	-.176	0.122	0.170
	6	11/2	0.126	-.020	0.150	0.038	0.158	0.090	0.135	-.002	0.141	-.091
	6	15/2	-.020	0.063	0.013	0.023	0.006	0.033	-.021	0.012	0.004	-.021
19/2-	2	15/2	-.185	0.539	-.241	0.447	-.207	0.504	-.198	0.452	-.206	0.504
	4	11/2	-.298	0.701	-.384	0.680	-.345	0.676	-.324	0.709	-.352	0.684
	4	15/2	-.166	-.077	-.133	-.065	-.134	-.029	-.145	-.054	-.120	-.032
	6	7/2	0.838	0.179	0.802	0.255	0.819	0.203	0.829	0.189	0.829	0.231
	6	9/2	-.193	-.348	-.180	-.460	-.192	-.423	-.190	-.462	-.178	-.403
	6	11/2	-.319	-.219	-.313	-.218	-.327	-.245	-.322	-.188	-.310	-.235
	6	15/2	-.088	-.105	-.051	-.088	-.072	-.089	-.087	-.072	-.061	-.076
21/2-	4	15/2	0.165	-.656	0.138	-.682	0.213	-.683	0.110	-.693	0.186	-.657
	6	9/2	0.425	0.720	0.482	0.680	0.424	0.706	0.513	0.653	0.476	0.720
	6	11/2	0.876	-.226	0.840	-.262	0.843	-.147	0.825	-.289	0.853	-.290
	6	15/2	0.155	-.003	0.208	-.066	0.252	-.117	0.209	-.096	0.216	-.097
23/2-	4	15/2	0.377	0.867	0.464	0.824	0.456	0.828	0.494	0.806	0.474	0.854
	6	11/2	0.873	-.216	0.847	-.304	0.849	-.296	0.835	-.336	0.871	-.295
	6	15/2	0.308	-.449	0.260	-.478	0.265	-.476	0.242	-.488	0.247	-.428
25/2-	6	15/2	1.000		1.000		1.000		1.000		1.000	
27/2-	6	15/2	1.000		1.000		1.000		1.000		1.000	

WAVE FUNCTIONS

46TI - 50CR

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
0+	0	0	0.855	-.356	0.600	0.372	0.815	-.404	0.850	0.319	0.820	-.414
	2	2	0.496	0.580	0.568	-.423	0.551	0.470	0.503	-.498	0.547	0.592
	2	2*	-.047	-.394	-.073	0.611	-.072	-.489	-.055	0.579	-.069	-.484
	4	4	0.096	-.428	0.073	0.476	0.070	-.417	0.091	0.470	0.065	-.389
	4	4*	-.105	-.410	-.162	0.286	-.146	-.428	-.113	0.298	-.135	-.417
	6	6	0.024	-.174	-.028	0.045	-.008	-.138	0.021	0.071	-.005	-.133
1+	2	2	0.832	-.033	0.823	0.016	0.821	-.012	0.826	0.023	0.843	0.012
	2	2*	-.209	0.742	-.254	0.752	-.227	0.718	-.249	0.722	-.228	0.758
	4	4	-.058	0.468	-.093	0.426	-.085	0.513	-.110	0.489	-.089	0.464
	4	4*	-.468	-.376	-.472	-.400	-.492	-.359	-.468	-.382	-.461	-.373
	4	5	-.011	-.114	0.004	-.162	-.003	-.075	-.015	-.101	-.004	-.093
	6	6	-.162	-.261	-.140	-.248	-.144	-.292	-.131	-.286	-.118	-.247
	6	5	0.124	-.077	0.082	-.066	0.068	-.033	0.068	-.032	0.060	-.035
2+	0	2	0.640	0.521	0.619	0.468	0.619	0.498	0.631	0.517	0.627	0.506
	0	2*	-.051	0.117	-.075	0.282	-.076	0.206	-.069	0.216	-.071	0.202
	2	0	0.638	-.466	0.606	-.357	0.613	-.413	0.635	-.418	0.619	-.470
	2	2	-.205	0.411	-.233	0.573	-.234	0.486	-.214	0.465	-.234	0.502
	2	4	-.026	-.158	-.056	-.060	-.057	-.104	-.037	-.103	-.048	-.101
	2	2*	0.137	0.181	0.164	0.200	0.159	0.192	0.151	0.187	0.151	0.189
	2	4*	-.247	-.339	-.289	-.295	-.282	-.342	-.245	-.320	-.276	-.336
	4	2	0.224	-.249	0.250	-.151	0.247	-.221	0.237	-.221	0.231	-.205
	4	4	0.021	0.025	0.038	0.039	0.036	0.020	0.033	0.004	0.030	0.020
	4	6	-.044	-.109	-.068	-.095	-.063	-.122	-.044	-.122	-.054	-.103
	4	2*	0.003	0.066	-.005	0.078	-.006	0.069	-.002	0.067	-.005	0.064
	4	4*	0.017	-.194	0.030	-.257	0.034	-.225	0.019	-.224	0.030	-.212
	4	5	0.039	0.072	0.040	0.030	0.036	0.045	0.035	0.052	0.032	0.040
	6	4	0.033	-.068	0.030	-.022	0.030	-.045	0.031	-.061	0.026	-.037
	6	6	0.014	-.113	0.000	-.079	0.006	-.078	0.010	-.097	0.005	-.064
	6	4*	-.040	0.106	-.060	0.032	-.056	0.079	-.045	0.094	-.046	0.067
	6	5	0.000	0.070	-.015	0.043	-.010	0.039	-.004	0.052	-.008	0.035
	6	8	0.007	0.023	-.004	-.005	0.001	0.002	0.008	0.019	0.001	0.003
3+	2	2	0.787	0.114	0.765	0.111	0.768	0.079	0.778	0.093	0.786	-.054
	2	4	0.060	0.713	0.069	0.607	0.080	0.666	0.103	0.705	0.075	-.599
	2	2*	0.145	-.145	0.208	-.343	0.186	-.258	0.228	-.202	0.181	0.370
	2	4*	0.477	-.288	0.447	-.125	0.473	-.192	0.427	-.256	0.475	0.073
	2	5	-.070	-.330	-.036	-.298	-.038	-.329	-.050	-.338	-.042	0.264
	4	2	0.068	-.316	0.104	-.493	0.085	-.394	0.145	-.319	0.079	0.538
	4	4	-.075	0.050	-.038	-.057	-.046	-.022	0.004	0.052	-.045	0.085
	4	6	0.156	-.213	0.169	-.129	0.170	-.188	0.150	-.214	0.144	0.097
	4	2*	0.155	0.056	0.169	0.050	0.173	0.038	0.179	0.062	0.158	-.022
	4	4*	-.199	-.249	-.214	-.268	-.246	-.280	-.226	-.252	-.227	0.253
	4	5	-.023	-.237	-.015	-.210	-.021	-.220	-.030	-.218	-.016	0.179
	6	4	0.075	0.034	0.056	0.067	0.063	0.027	0.061	0.031	0.081	-.024
	6	6	0.038	-.081	-.005	-.049	-.035	-.082	-.015	-.065	-.022	0.050
	6	4*	-.120	-.005	-.092	0.071	-.091	0.089	-.123	0.040	-.079	-.133
	6	5	-.002	0.010	0.006	0.051	0.022	0.033	-.010	-.009	0.015	-.041
	6	8	0.049	-.039	0.027	-.031	0.029	-.046	0.035	-.041	0.023	0.024
4+	0	4	0.062	0.715	0.081	0.682	0.092	0.684	0.112	0.738	0.092	0.672
	0	4*	0.636	-.231	0.586	-.234	0.595	-.257	0.562	-.254	0.606	-.290
	2	2	-.551	-.138	-.582	-.115	-.561	-.114	-.566	-.063	-.584	-.122
	2	4	-.222	0.182	-.217	0.213	-.223	0.224	-.200	0.189	-.211	0.233
	2	6	0.227	-.147	0.225	-.140	0.237	-.161	0.199	-.162	0.220	-.150
	2	2*	0.054	0.138	0.081	0.162	0.078	0.141	0.082	0.144	0.077	0.141
	2	4*	-.160	-.424	-.187	-.455	-.191	-.432	-.188	-.377	-.194	-.456
	2	5	0.029	-.298	0.029	-.325	0.028	-.328	0.006	-.313	0.021	-.310
	4	0	-.334	-.033	-.342	0.030	-.342	-.023	-.403	0.047	-.322	-.025
	4	2	-.020	0.111	0.009	0.136	0.011	0.109	0.016	0.099	0.009	0.115
	4	4	0.079	0.072	0.070	0.068	0.073	0.074	0.079	0.067	0.063	0.077
	4	6	-.021	-.156	-.017	-.155	-.030	-.167	-.046	-.154	-.076	-.150
	4	2*	-.106	-.099	-.130	-.074	-.125	-.074	-.131	-.081	-.115	-.069
	4	4*	0.104	0.011	0.113	0.003	0.117	0.003	0.117	0.022	0.107	-.002
	4	5	0.032	-.028	0.029	-.043	0.033	-.044	0.029	-.039	0.029	-.043
	4	8	0.027	-.078	0.034	-.063	0.035	-.074	0.018	-.088	0.028	-.061
	6	2	-.092	-.034	-.112	0.021	-.110	-.014	-.120	-.007	-.092	-.017
	6	4	-.034	-.071	-.048	-.030	-.053	-.041	-.071	-.052	-.041	-.035
	6	6	0.054	-.006	0.023	-.008	0.035	-.000	0.053	0.005	0.027	-.004
	6	2*	-.025	-.030	-.028	0.005	-.028	-.008	-.030	-.017	-.022	-.008
	6	4*	0.016	-.048	0.016	-.049	0.017	-.025	0.020	-.022	0.015	-.026
	6	5	-.039	-.049	-.023	-.012	-.032	-.030	-.045	-.045	-.025	-.025
	6	8	-.004	-.043	-.001	-.022	-.004	-.032	-.012	-.044	-.004	-.026
5+	0	5	0.597	0.396	0.568	0.352	0.583	0.366	0.642	0.315	0.559	0.395
	2	4	0.504	0.184	0.528	0.227	0.518	0.209	0.525	0.083	0.519	0.248
	2	6	0.402	-.124	0.386	-.094	0.399	-.081	0.381	-.095	0.386	-.067
	2	4*	-.389	0.610	-.404	0.598	-.384	0.599	-.309	0.596	-.435	0.610
	2	5	-.003	-.103	0.024	-.130	0.022	-.116	0.007	-.172	0.028	-.098
	4	2	0.038	-.530	0.021	-.524	0.038	-.510	-.024	-.534	0.054	-.598
	4	4	0.097	-.281	0.119	-.330	0.115	-.347	0.076	-.398	0.124	-.291
	4	6	-.125	-.327	-.114	0.010	-.120	0.038	-.122	-.025	-.108	0.034
	4	2*	0.038	0.008	0.054	0.020	0.046	0.018	0.050	-.005	0.046	0.013
	4	4*	-.123	-.082	-.139	-.086	-.144	-.069	-.139	0.042	-.139	-.098
	4	5	-.119	-.032	-.144	-.065	-.142	-.054	-.128	-.047	-.129	-.056
	4	8	0.063	-.035	0.065	-.028	0.072	-.024	0.064	-.027	0.062	-.018
	6	2	0.102	-.101	0.094	-.060	0.066	-.089	0.056	-.119	0.049	-.076
	6	4	0.064	-.022	0.026	-.046	0.030	-.007	0.054	-.071	0.028	-.002
	6	6	0.017	-.029	-.015	-.013	-.033	0.001	-.016	0.007	-.026	-.008
	6	2*	-.000	-.041	-.013	-.055	-.008	-.050	-.010	-.031	-.005	-.051
	6	4*	0.007	0.165	-.012	0.187	-.017	0.202	0.016	0.173	-.023	0.174
	6	5	0.026	-.008	-.000	0.004	0.006	0.027	0.017	-.004	0.004	0.019
	6	8	-.023	-.027	-.026	-.007	-.034	0.014	-.032	0.014	-.026	0.003

WAVE FUNCTIONS

46TI - 50CR

			42SC-INT		54CO-INT		48SC-INT		42SC*-INT		48SC*-INT	
J	JP	JN	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)
6+	0	6	0.545	0.501	0.505	0.370	0.533	0.446	0.540	0.504	0.516	0.407
	2	4	-.053	0.056	-.013	0.160	-.026	0.082	-.051	0.088	0.002	0.115
	2	6	-.149	-.150	-.160	-.181	-.170	-.138	-.157	-.133	-.169	-.125
	2	4*	0.469	0.198	0.556	0.223	0.507	0.199	0.455	0.200	0.567	0.204
	2	5	-.166	-.153	-.170	-.126	-.179	-.143	-.173	-.150	-.163	-.121
	2	8	0.135	0.138	0.135	0.116	0.149	0.139	0.139	0.137	0.130	0.114
	4	2	-.321	0.133	-.389	0.117	-.352	0.131	-.343	0.122	-.376	0.147
	4	4	-.197	0.034	-.198	0.024	-.199	0.012	-.199	0.012	-.186	0.018
	4	6	0.046	-.049	0.027	-.023	0.030	-.023	0.040	-.027	0.031	-.019
	4	2*	-.063	0.041	-.041	0.109	-.048	0.074	-.055	0.066	-.035	0.089
	4	4*	0.027	-.067	0.005	-.126	0.009	-.078	0.022	-.071	-.001	-.088
	4	5	0.117	0.002	0.085	-.016	0.091	-.001	0.109	0.007	0.075	-.011
	4	8	-.055	-.045	-.041	-.042	-.052	-.041	-.061	-.046	-.043	-.032
	6	0	-.392	0.637	-.327	0.617	-.351	0.636	-.395	0.638	-.316	0.659
	6	2	-.234	0.412	-.184	0.495	-.215	0.465	-.230	0.416	-.184	0.471
	6	4	0.068	-.025	0.046	-.035	0.050	-.042	0.057	-.039	0.041	-.039
	6	6	0.100	-.043	0.047	-.046	0.065	-.046	0.095	-.044	0.050	-.046
	6	2*	0.008	-.050	-.021	-.085	-.007	-.070	-.001	-.059	-.015	-.065
	6	4*	0.139	-.174	0.117	-.207	0.141	-.187	0.153	-.157	0.121	-.187
	6	5	0.012	0.009	0.006	0.015	0.005	0.010	0.002	0.007	0.004	0.010
	6	8	0.059	0.011	0.018	-.004	0.033	-.001	0.057	0.008	0.025	-.002
7+	2	6	-.683	0.200	-.621	0.103	-.642	0.197	-.594	-.132	-.659	0.160
	2	5	0.411	-.169	0.513	-.128	0.461	-.121	0.511	0.091	0.466	-.142
	2	8	0.107	-.025	0.119	-.025	0.125	-.033	0.110	0.036	0.117	-.026
	4	4	0.272	-.013	0.388	-.009	0.361	0.035	0.440	0.178	0.331	0.016
	4	6	0.136	-.148	0.118	-.088	0.111	-.106	0.129	-.047	0.106	-.103
	4	4*	-.324	0.107	-.261	0.044	-.302	0.056	-.188	-.041	-.325	0.025
	4	5	0.144	-.127	0.168	-.128	0.165	-.160	0.201	-.044	0.162	-.133
	4	8	-.051	0.008	-.059	0.015	-.057	0.030	-.023	-.003	-.053	0.020
	6	2	0.254	0.693	0.113	0.702	0.175	0.653	-.191	0.695	0.165	0.698
	6	4	0.043	-.295	0.039	-.276	0.049	-.260	0.105	-.254	0.063	-.246
	6	6	-.058	-.155	-.038	-.189	-.061	-.228	0.081	-.193	-.052	-.194
	6	2*	0.016	-.157	0.067	-.194	0.047	-.167	0.160	-.140	0.044	-.165
	6	4*	-.242	-.506	-.219	-.549	-.227	-.560	0.008	-.571	-.200	-.555
	6	5	-.036	0.048	-.059	0.014	-.070	0.022	-.102	-.006	-.055	0.022
	6	8	0.054	-.078	0.027	-.042	0.016	-.067	0.040	-.059	0.018	-.051
8+	0	8	0.327	0.289	0.282	0.218	0.323	0.261	0.335	0.300	0.275	0.260
	2	6	0.666	0.372	0.643	0.372	0.659	0.333	0.660	0.353	0.651	0.389
	2	8	-.123	-.131	-.116	-.141	-.132	-.112	-.130	-.113	-.117	-.111
	4	4	-.070	0.069	-.053	0.186	-.056	0.142	-.061	0.198	-.046	0.141
	4	6	-.043	-.096	-.029	-.129	-.037	-.139	-.034	-.161	-.027	-.111
	4	4*	0.481	-.141	0.534	-.100	0.499	-.120	0.487	-.138	0.532	-.102
	4	5	-.168	-.080	-.175	-.124	-.178	-.114	-.174	-.093	-.165	-.115
	4	8	0.044	0.005	0.032	0.034	0.040	0.029	0.042	0.020	0.034	0.026
	6	2	-.362	0.660	-.376	0.594	-.352	0.619	-.356	0.654	-.376	0.637
	6	4	-.086	-.049	-.097	-.108	-.102	-.128	-.104	-.070	-.091	-.106
	6	6	0.044	-.231	0.032	-.249	0.042	-.248	0.052	-.183	0.039	-.209
	6	2*	-.091	0.112	-.092	0.135	-.090	0.127	-.088	0.169	-.085	0.124
	6	4*	0.101	-.464	0.093	-.518	0.100	-.511	0.096	-.427	0.106	-.484
	6	5	0.079	0.005	0.058	0.018	0.054	0.021	0.056	0.013	0.047	0.014
	6	8	0.033	-.034	0.003	-.046	0.010	-.056	0.029	-.046	0.008	-.040
9+	2	8	0.090	-.049	0.109	-.306	0.115	0.007	0.076	-.248	0.117	-.082
	4	6	0.479	0.128	0.505	-.411	0.498	0.123	0.526	-.462	0.475	-.005
	4	5	0.088	0.356	0.186	0.491	0.139	0.343	0.191	0.430	0.145	0.412
	4	8	-.090	-.147	-.054	-.054	-.049	-.108	-.088	-.046	-.038	-.091
	6	4	0.370	0.632	0.393	0.669	0.363	0.590	0.449	0.684	0.339	0.690
	6	6	0.442	-.451	0.345	-.151	0.380	-.496	0.325	-.192	0.367	-.375
	6	4*	0.603	-.338	0.592	-.138	0.610	-.360	0.525	-.168	0.662	-.316
	6	5	-.214	-.337	-.257	-.064	-.247	-.351	-.295	-.065	-.212	-.310
	6	8	0.065	-.052	0.074	0.015	0.085	-.090	0.056	0.001	0.074	-.052
10+	2	8	0.205	0.406	0.218	0.392	0.236	0.391	-.259	0.327	0.212	0.380
	4	6	0.459	0.642	0.458	0.624	0.472	0.616	-.512	0.621	0.459	0.625
	4	8	0.077	-.041	0.075	-.059	0.076	-.061	-.083	-.046	0.062	-.051
	6	4	-.474	0.435	-.465	0.484	-.462	0.467	0.481	0.558	-.444	0.496
	6	6	0.218	-.322	0.224	-.241	0.241	-.278	-.196	-.204	0.217	-.238
	6	4*	0.670	-.072	0.668	-.037	0.648	-.040	-.607	-.052	0.691	-.055
	6	5	0.144	-.344	0.158	-.395	0.157	-.402	-.155	-.384	0.136	-.393
	6	8	0.002	-.069	0.019	-.051	0.014	-.067	0.025	-.039	0.012	-.049
11+	4	8	0.269	-.380	0.237	-.505	0.248	-.456	0.244	-.491	0.227	-.432
	6	6	0.827	-.240	0.790	-.318	0.816	-.266	0.819	-.256	0.810	-.323
	6	5	0.436	0.845	0.534	0.771	0.470	0.816	0.464	0.809	0.502	0.809
	6	8	0.234	-.288	0.184	-.220	0.225	-.237	0.233	-.200	0.198	-.233
12+	4	8	0.232	0.935	0.303	0.907	0.307	0.881	0.290	0.904	0.279	0.918
	6	6	0.952	-.162	0.922	-.202	0.921	-.180	0.934	-.196	0.938	-.198
	6	8	0.200	-.315	0.239	-.369	0.236	-.437	0.208	-.379	0.207	-.343
13+	6	8	1.000		1.000		1.000		1.000		1.000	
14+	6	8	1.000		1.000		1.000		1.000		1.000	

WAVE FUNCTIONS

47TI - 49V

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
1/2-	2	3/2	0.099	0.526	0.185	0.558	0.176	0.442	0.216	0.437	0.158	0.513
	2	5/2	0.931	-.264	0.906	-.353	0.899	-.382	0.865	-.455	0.932	-.339
	4	7/2	0.257	0.806	0.321	0.743	0.340	0.799	0.402	0.771	0.268	0.793
	4	9/2	-.206	0.052	-.192	0.110	-.198	0.074	-.187	0.077	-.177	0.067
	6	11/2	0.125	-.023	0.072	-.008	0.078	0.119	0.097	0.039	0.058	0.090
3/2-	0	3/2	0.579	0.131	0.586	0.115	0.578	0.093	0.656	-.073	0.578	0.130
	2	7/2	0.557	-.626	0.511	-.648	0.533	-.629	0.514	0.609	0.517	-.664
	2	3/2	0.191	0.460	0.243	0.518	0.231	0.461	0.235	-.451	0.232	0.482
	2	5/2	0.526	0.280	0.542	0.206	0.530	0.252	0.472	-.245	0.554	0.252
	4	7/2	0.139	0.413	0.144	0.354	0.152	0.422	0.103	-.468	0.143	0.369
	4	5/2	-.019	0.134	-.001	0.193	0.005	0.157	0.033	-.164	-.001	0.150
	4	9/2	-.070	-.161	-.078	-.109	-.076	-.145	-.075	0.150	-.070	-.127
	4	11/2	0.121	-.257	0.125	-.271	0.132	-.285	0.094	0.267	0.111	-.263
	6	9/2	-.023	-.072	-.009	-.042	-.017	-.054	-.034	0.084	-.012	-.042
	6	11/2	0.009	0.117	0.010	0.077	0.009	0.102	-.001	-.106	0.009	0.082
	6	15/2	0.004	0.042	0.004	0.019	0.004	0.035	0.013	-.049	0.004	0.026
5/2-	0	5/2	0.820	-.129	0.784	-.081	0.782	-.112	0.793	-.150	0.803	-.084
	2	7/2	0.455	0.621	0.450	0.600	0.474	0.593	0.479	0.593	0.444	0.610
	2	3/2	-.199	0.061	-.259	-.040	-.247	-.001	-.236	-.010	-.234	-.023
	2	5/2	-.232	0.606	-.271	0.652	-.246	0.645	-.224	0.623	-.263	0.664
	2	9/2	-.097	0.181	-.108	0.176	-.107	0.168	-.098	0.176	-.105	0.160
	4	7/2	-.070	0.222	-.128	0.223	-.120	0.257	-.110	0.224	-.105	0.227
	4	3/2	-.037	-.006	-.038	-.064	-.036	-.041	-.035	-.056	-.031	-.045
	4	5/2	0.023	-.237	0.014	-.270	0.004	-.269	0.005	-.291	0.015	-.248
	4	9/2	0.071	-.020	0.085	-.018	0.081	-.027	0.074	-.031	0.071	-.022
	4	11/2	0.059	0.173	0.076	0.146	0.090	0.170	0.082	0.169	0.071	0.153
	6	7/2	-.032	-.211	0.003	-.149	-.003	-.136	-.014	-.179	-.003	-.108
	6	9/2	-.007	0.060	-.010	0.056	-.005	0.052	-.001	0.048	-.005	0.042
	6	11/2	0.005	-.087	-.024	-.020	-.018	-.015	-.006	-.060	-.010	-.015
	6	15/2	-.008	0.040	-.004	0.012	-.008	0.014	-.012	0.035	-.006	0.011
7/2-	0	7/2	0.851	0.083	0.790	0.022	0.809	-.035	0.848	0.047	0.809	-.022
	2	7/2	-.224	0.700	-.259	-.556	-.249	-.604	-.228	0.620	-.241	-.640
	2	3/2	0.160	-.157	0.200	0.077	0.193	0.107	0.175	-.132	0.194	0.121
	2	5/2	-.340	-.358	-.391	0.484	-.370	0.425	-.330	-.393	-.390	0.453
	2	9/2	0.078	0.029	0.076	-.013	0.075	-.042	0.082	0.053	0.070	-.032
	2	11/2	0.232	-.176	0.255	0.251	0.263	0.228	0.238	-.211	0.247	0.229
	4	7/2	-.098	-.500	-.101	0.523	-.101	0.539	-.099	-.558	-.099	0.495
	4	3/2	-.010	0.015	0.025	-.110	0.021	-.076	0.006	0.063	0.022	-.070
	4	5/2	0.083	-.096	0.139	-.093	0.120	-.019	0.081	0.001	0.119	-.005
	4	9/2	-.051	0.107	-.043	-.145	-.038	-.143	-.050	0.134	-.033	-.132
	4	11/2	-.072	0.137	-.091	-.162	-.083	-.158	-.079	0.132	-.072	-.153
	4	15/2	0.006	0.044	-.012	-.064	-.012	-.069	0.003	0.066	-.008	-.053
	6	7/2	-.016	-.041	0.025	-.097	0.014	-.065	-.011	0.066	0.011	-.035
	6	5/2	-.006	0.011	-.011	0.005	-.003	-.013	0.004	0.020	-.004	-.011
	6	9/2	-.002	-.052	-.023	0.095	-.015	0.096	-.004	-.092	-.013	0.069
	6	11/2	-.016	-.150	0.002	0.150	-.007	0.166	-.016	-.160	-.006	0.129
	6	15/2	-.015	0.010	0.010	0.022	-.000	0.018	-.014	-.010	-.002	0.012
9/2-	0	9/2	-.079	-.556	-.115	-.543	-.128	-.561	0.058	-.605	-.127	-.506
	2	7/2	-.535	0.585	-.457	0.596	-.481	0.577	0.535	0.509	-.455	0.641
	2	5/2	0.717	0.337	0.756	0.230	0.711	0.220	-.644	0.228	0.771	0.241
	2	9/2	0.013	-.025	0.037	-.044	0.018	-.061	0.005	-.092	0.037	-.020
	2	11/2	0.120	0.385	0.126	0.112	0.159	0.124	-.167	0.198	0.130	0.064
	4	7/2	0.330	-.015	0.321	-.083	0.353	-.068	-.388	-.059	0.302	-.066
	4	3/2	-.194	-.063	-.216	-.018	-.214	-.027	0.219	-.051	-.189	-.013
	4	5/2	-.061	-.395	-.109	-.424	-.095	-.412	0.065	-.330	-.114	-.434
	4	9/2	-.069	0.028	-.072	0.046	-.080	0.043	0.085	0.026	-.071	0.045
	4	11/2	-.063	0.125	-.077	0.130	-.084	0.134	0.087	0.114	-.070	0.121
	4	15/2	-.037	-.054	-.023	-.059	-.049	-.064	0.072	-.096	-.032	-.038
	6	7/2	-.059	-.204	-.067	-.204	-.083	-.226	0.105	-.149	-.064	-.186
	6	3/2	-.058	-.065	-.052	-.027	-.060	-.048	0.072	-.039	-.043	-.027
	6	5/2	-.002	0.142	0.007	0.165	0.009	0.170	-.010	0.095	0.014	0.149
	6	9/2	0.085	0.007	0.069	-.001	0.091	0.018	-.115	0.025	0.065	0.008
	6	11/2	0.062	-.017	0.059	-.063	0.079	-.051	-.094	-.015	0.056	-.041
	6	15/2	-.007	-.023	0.010	-.010	0.011	-.014	-.008	-.019	0.005	-.011
11/2-	0	11/2	0.525	0.600	0.488	0.591	0.515	0.575	0.524	0.594	0.488	0.626
	2	7/2	0.722	-.238	0.716	-.250	0.699	-.217	0.714	-.249	0.734	-.236
	2	9/2	0.086	0.297	0.095	0.376	0.100	0.316	0.087	0.335	0.080	0.345
	2	11/2	-.181	-.024	-.198	-.033	-.197	-.036	-.181	-.024	-.193	-.026
	2	15/2	-.109	-.256	-.123	-.276	-.140	-.279	-.119	-.265	-.113	-.270
	4	7/2	-.178	0.342	-.166	-.125	-.164	-.020	-.156	-.038	-.143	-.054
	4	3/2	0.102	-.145	0.130	-.125	0.122	-.118	0.120	-.125	0.120	-.117
	4	5/2	-.281	0.343	-.326	0.381	-.312	0.369	-.294	0.354	-.319	0.375
	4	9/2	0.043	0.024	0.043	0.029	0.045	0.015	0.045	0.020	0.041	0.019
	4	11/2	0.032	-.191	0.029	-.162	0.032	-.155	0.031	-.176	0.032	-.159
	4	15/2	0.031	0.069	0.044	0.040	0.041	0.044	0.032	0.049	0.033	0.037
	6	7/2	-.098	0.360	-.093	0.321	-.112	0.375	-.118	0.356	-.095	0.300
	6	3/2	-.024	0.047	-.008	0.035	-.011	0.057	-.012	0.048	-.009	0.038
	6	5/2	0.112	-.314	0.136	-.243	0.137	-.338	0.117	-.297	0.121	-.289
	6	9/2	-.031	0.363	-.040	-.014	-.032	0.015	-.026	0.024	-.026	0.009
	6	11/2	-.055	0.082	-.042	0.030	-.048	0.073	-.051	0.064	-.038	0.048
	6	15/2	-.010	0.087	-.004	0.027	-.005	0.036	-.009	0.068	-.005	0.032

WAVE FUNCTIONS

47TI - 49V

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CC-INT A1(JP,JN)	54CC-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)
13/2-	2	9/2	-.197	-.170	0.307	-.229	-.268	-.193
	2	11/2	0.210	-.494	-.076	-.570	0.078	-.547
	2	15/2	0.052	-.105	-.007	-.137	0.003	-.193
	4	7/2	0.641	-.361	-.552	-.470	C.565	-.460
	4	5/2	0.271	0.439	-.413	0.441	0.358	0.387
	4	9/2	-.026	-.178	0.069	-.192	-.064	-.204
	4	11/2	0.015	0.085	-.024	0.119	0.028	0.125
	4	15/2	-.031	C.110	0.031	0.115	-.021	0.115
	6	7/2	0.158	0.533	-.221	0.313	0.263	0.419
	6	3/2	0.046	-.060	-.029	-.112	0.044	-.076
	6	5/2	-.614	-.141	0.587	0.047	-.603	0.029
	6	9/2	0.118	-.004	-.113	-.061	0.132	-.058
	6	11/2	0.099	0.178	-.103	0.C72	0.131	0.128
	6	15/2	-.002	-.053	0.008	-.053	-.006	-.072
15/2-	0	15/2	-.283	0.549	-.275	-.397	-.302	0.461
	2	11/2	0.488	-.430	0.542	0.424	0.519	-.399
	2	15/2	0.137	-.251	0.143	0.221	0.158	-.231
	4	7/2	0.497	0.043	0.525	0.043	0.500	-.041
	4	9/2	0.250	0.021	0.245	-.060	0.241	0.056
	4	11/2	-.096	-.024	-.072	-.016	-.082	-.001
	4	15/2	-.095	0.058	-.C74	-.050	-.088	0.061
	6	7/2	-.398	-.431	-.318	0.460	-.354	-.509
	6	3/2	-.094	-.174	-.077	0.300	-.082	-.265
	6	5/2	-.366	-.444	-.370	0.525	-.366	-.448
	6	9/2	0.042	0.039	0.034	-.066	0.039	0.054
	6	11/2	-.151	-.168	-.107	0.153	-.135	-.180
	6	15/2	0.098	-.006	0.051	-.018	0.076	0.027
17/2-	2	15/2	-.037	-.345	-.045	-.394	-.035	-.408
	4	9/2	-.111	0.262	-.171	0.304	-.159	0.281
	4	11/2	0.189	0.629	0.205	0.660	0.201	0.652
	4	15/2	0.035	0.033	0.050	0.067	0.044	0.072
	6	7/2	0.830	0.145	0.789	0.146	0.804	0.115
	6	5/2	0.441	-.514	0.464	-.424	0.439	-.422
	6	9/2	0.002	0.342	-.023	0.323	-.006	0.357
	6	11/2	0.239	-.032	0.278	-.068	0.285	-.051
	6	15/2	-.089	-.108	-.085	-.041	-.100	-.052
19/2-	2	15/2	-.193	0.651	-.317	0.598	-.307	0.608
	4	11/2	0.420	-.483	0.546	-.377	0.520	-.375
	4	15/2	0.088	-.096	0.077	-.101	0.081	-.121
	6	7/2	0.833	0.375	0.706	0.525	0.732	0.485
	6	9/2	0.240	-.176	0.283	-.081	0.270	-.108
	6	11/2	0.161	0.396	0.111	0.443	0.126	0.464
	6	15/2	-.040	-.067	-.067	-.105	-.060	-.112
21/2-	4	15/2	-.294	0.331	0.276	0.043	-.285	-.240
	6	9/2	-.589	0.549	0.656	0.647	-.626	-.543
	6	11/2	0.739	0.451	-.688	0.522	0.708	-.424
	6	15/2	-.141	-.621	0.141	-.553	-.159	0.684
23/2-	4	15/2	-.387	-.391	-.430	-.760	-.422	-.664
	6	11/2	0.870	0.144	0.867	-.198	0.849	-.052
	6	15/2	-.305	0.909	-.251	0.619	-.317	0.746
25/2-	6	15/2	1.000		1.000		1.000	
27/2-	6	15/2	1.000		1.000		1.000	

J	JP	JN	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
13/2-	2	9/2	-.275	-.244	0.307	-.213
	2	11/2	0.138	-.476	-.049	-.572
	2	15/2	0.006	-.142	0.005	-.161
	4	7/2	0.746	-.361	-.515	-.506
	4	5/2	0.235	0.509	-.447	0.427
	4	9/2	-.060	-.179	0.058	-.171
	4	11/2	0.010	0.129	-.036	0.116
	4	15/2	-.024	0.089	0.013	0.097
	6	7/2	0.151	0.443	-.230	0.300
	6	3/2	0.079	-.093	-.020	-.095
	6	5/2	-.484	-.149	0.599	0.081
	6	9/2	0.131	-.015	-.108	-.063
	6	11/2	0.C66	0.126	-.095	0.067
	6	15/2	0.023	-.059	0.004	-.049
15/2-	0	15/2	-.286	0.436	-.269	-.418
	2	11/2	0.491	-.381	9.546	0.426
	2	15/2	0.137	-.204	0.143	0.205
	4	7/2	0.527	-.144	0.539	0.030
	4	9/2	0.246	0.077	0.221	-.051
	4	11/2	-.085	-.010	-.070	0.003
	4	15/2	-.095	0.059	-.073	-.048
	6	7/2	-.373	-.572	-.311	0.479
	6	3/2	-.082	-.295	-.067	0.260
	6	5/2	-.350	-.371	-.376	0.521
	6	9/2	0.030	0.047	0.038	-.062
	6	11/2	-.153	-.195	-.110	0.152
	6	15/2	0.105	0.028	0.058	-.019
17/2-	2	15/2	-.022	-.351	-.031	-.357
	4	9/2	-.153	0.354	-.159	0.276
	4	11/2	0.205	0.621	0.186	0.657
	4	15/2	0.041	-.010	0.037	0.055
	6	7/2	0.828	0.121	0.798	0.170
	6	5/2	0.415	-.456	0.48C	-.471
	6	9/2	-.002	0.375	-.012	C.329
	6	11/2	0.252	0.015	0.255	-.005
	6	15/2	-.101	-.052	-.076	-.058
19/2-	2	15/2	-.217	0.629	-.277	0.636
	4	11/2	0.464	-.455	0.511	-.416
	4	15/2	0.073	-.116	0.069	-.106
	6	7/2	0.803	0.412	0.758	0.480
	6	9/2	0.261	-.138	0.252	-.097
	6	11/2	0.135	0.433	0.131	0.407
	6	15/2	-.032	-.088	-.047	-.078
21/2-	4	15/2	-.311	0.032	-.260	-.001
	6	9/2	-.692	0.573	-.638	0.693
	6	11/2	0.648	0.574	0.712	0.527
	6	15/2	-.059	-.584	-.135	-.491
23/2-	4	15/2	-.419	-.751	-.385	0.765
	6	11/2	0.843	-.112	0.886	0.151
	6	15/2	-.338	0.651	-.256	-.626
25/2-	6	15/2	1.000		1.900	
27/2-	6	15/2	1.000		1.000	

WAVE FUNCTIONS

48TI - 48TI

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
0+	0	0	0.928	0.252	0.900	-.275	0.905	0.280	0.925	0.236	0.907	0.303
	2	2	-.370	0.676	-.435	-.570	-.426	0.566	-.379	0.595	-.422	0.630
	4	4	-.025	-.688	0.004	0.749	0.016	-.750	-.013	-.745	0.013	-.703
	6	6	-.007	0.083	0.016	-.194	0.000	0.195	-.010	0.186	0.000	0.135
1+	2	2	0.930	0.308	0.888	0.413	0.875	0.441	0.872	0.447	0.912	0.373
	4	4	-.367	0.792	-.456	0.744	-.479	0.730	-.484	0.726	-.409	0.786
	6	6	-.007	-.527	0.053	-.524	0.070	-.522	0.073	-.522	0.037	-.494
2+	0	2	-.687	0.571	-.677	0.529	-.675	0.536	-.681	0.558	-.680	0.539
	2	0	0.687	0.571	0.677	0.529	0.675	0.536	0.681	0.558	0.680	0.539
	2	2	0.0	0.480	0.0	0.556	-.000	0.547	0.0	0.502	0.0	0.563
	2	4	0.168	-.234	0.204	-.233	0.211	-.229	0.189	-.233	0.194	-.207
	4	2	-.168	-.234	-.204	-.233	-.211	-.229	-.189	-.233	-.194	-.207
	4	4	0.0	-.085	0.0	-.145	0.0	-.146	0.0	-.132	0.0	-.127
	4	6	0.006	-.006	-.000	0.024	-.010	0.013	-.007	-.005	-.006	0.007
	6	4	-.006	-.006	0.000	0.024	0.010	0.013	0.007	-.005	0.006	0.007
	6	6	0.0	-.038	0.0	0.007	0.0	0.001	0.0	-.010	0.0	-.003
3+	2	2	0.922	0.0	0.896	0.0	0.890	0.0	0.886	0.0	0.913	0.0
	2	4	0.219	-.660	0.266	-.647	0.274	-.637	0.289	-.648	0.253	-.659
	4	2	0.219	0.660	0.266	0.647	0.274	0.637	0.289	0.648	0.253	0.659
	4	4	-.224	0.0	-.219	0.0	-.219	0.0	-.194	0.0	-.187	0.0
	4	6	-.024	0.254	-.059	0.286	-.066	0.307	-.069	0.284	-.044	0.256
	6	4	-.024	-.254	-.059	-.286	-.066	-.307	-.069	-.284	-.044	-.256
	6	6	0.045	0.0	0.012	0.0	0.009	0.0	0.011	0.0	0.008	0.0
4+	0	4	0.508	-.655	0.483	-.631	0.505	-.626	0.538	-.656	0.484	-.638
	2	2	-.638	0.0	-.665	0.0	-.624	0.0	-.583	0.0	-.670	0.0
	2	4	-.133	-.040	-.149	-.048	-.137	-.022	-.103	-.021	-.142	-.025
	2	6	-.116	0.262	-.129	0.312	-.156	0.327	-.143	0.259	-.125	0.307
	4	0	0.508	0.655	0.483	0.631	0.505	0.626	0.538	0.656	0.484	0.638
	4	2	-.133	0.040	-.149	0.048	-.137	0.022	-.103	0.021	-.142	0.025
	4	4	0.116	0.0	0.115	0.0	0.114	0.0	0.116	0.0	0.100	0.0
	4	6	-.020	0.031	0.001	0.049	-.009	0.025	-.040	0.039	-.007	0.027
	6	2	-.116	-.262	-.129	-.312	-.156	-.327	-.143	-.259	-.125	-.302
	6	4	-.020	-.031	0.001	-.049	-.009	-.025	-.040	-.039	-.007	-.027
	6	6	0.033	0.0	0.009	0.0	0.014	0.0	0.030	0.0	0.014	0.0
5+	2	4	-.580	0.430	0.618	0.433	-.585	0.408	-.582	0.404	-.612	0.449
	2	6	-.302	0.539	0.290	0.532	-.323	0.534	-.312	0.535	-.300	0.519
	4	2	0.580	0.430	-.618	0.433	0.585	0.408	0.582	0.404	0.612	0.449
	4	4	0.0	-.027	0.0	-.097	0.0	-.094	0.0	-.185	0.0	-.061
	4	6	0.269	-.108	-.184	-.145	0.232	-.200	0.253	-.171	0.188	-.159
	6	2	0.302	0.539	-.290	0.532	0.323	0.534	0.312	0.535	0.300	0.519
	6	4	-.269	-.108	0.184	-.145	-.232	-.200	-.253	-.171	-.188	-.159
	6	6	0.0	0.160	0.0	0.090	0.0	0.085	0.0	0.092	0.0	0.051
6+	0	6	0.555	0.612	0.470	0.589	0.512	0.594	0.544	0.607	0.497	0.594
	2	4	-.329	-.194	-.434	-.221	-.383	-.205	-.354	-.204	-.413	-.216
	2	6	-.278	-.265	-.277	-.298	-.282	-.302	-.264	-.276	-.269	-.298
	4	2	0.329	-.194	0.434	-.221	0.383	-.205	0.354	-.204	0.413	-.216
	4	4	0.0	-.118	0.0	-.084	0.0	-.071	0.0	-.091	0.0	-.068
	4	6	0.084	0.098	0.118	0.108	0.110	0.105	0.095	0.097	0.096	0.094
	6	0	-.555	0.612	-.470	0.589	-.512	0.594	-.544	0.607	-.498	0.594
	6	2	0.278	-.265	0.277	-.298	0.282	-.302	0.264	-.276	0.269	-.298
	6	4	-.084	0.098	-.118	0.108	-.110	0.105	-.095	0.097	-.096	0.094
	6	6	0.0	0.035	0.0	-.029	0.0	-.006	0.0	0.030	0.0	-.001
7+	2	6	0.517	-.612	0.498	-.562	0.489	-.555	0.504	-.547	0.522	0.595
	4	4	-.322	0.0	-.457	0.0	-.417	0.0	-.500	0.0	-.444	0.0
	4	6	-.361	0.354	-.315	0.429	-.334	0.438	-.291	0.448	-.304	-.381
	6	2	0.517	0.612	0.498	0.562	0.489	0.555	0.504	0.547	0.522	-.595
	6	4	-.361	-.354	-.315	-.429	-.334	-.438	-.291	-.448	-.304	0.381
	6	6	0.316	0.0	0.313	0.0	0.354	0.0	0.267	0.0	0.269	0.0
8+	2	6	0.550	-.686	0.556	-.679	0.544	-.670	0.523	-.669	0.573	-.681
	4	4	-.439	0.0	-.473	0.0	-.448	0.0	-.464	0.0	-.440	0.0
	4	6	-.259	0.173	-.241	0.198	-.262	0.226	-.270	0.228	-.234	0.190
	6	2	0.550	0.686	0.556	0.679	0.544	0.670	0.523	0.669	0.573	0.681
	6	4	-.259	-.173	-.241	-.198	-.262	-.226	-.270	-.228	-.234	-.190
	6	6	0.260	0.0	0.204	0.0	0.263	0.0	0.303	0.0	0.202	0.0
9+	4	6	-.422	-.707	0.488	-.707	-.436	-.707	-.477	-.707	-.472	-.707
	6	4	-.422	0.707	0.488	0.707	-.436	0.707	-.477	0.707	-.472	0.707
	6	6	0.802	0.0	-.724	0.0	0.787	0.0	0.739	0.0	0.744	0.0
10+	4	6	-.707	-.311	0.707	-.333	0.707	-.306	-.707	-.389	0.707	-.361
	6	4	0.707	-.311	-.707	-.333	-.707	-.306	0.707	-.389	-.707	-.361
	6	6	0.0	0.898	0.0	0.882	0.0	0.902	0.0	0.835	0.0	0.860
11+	6	6	1.000		1.000		1.000		1.000		1.000	
12+	6	6	1.000		1.000		1.000		1.000		1.000	

WAVE FUNCTIONS

46V - 50MN

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
0+	7/2	7/2	0.698	0.290	0.653	0.304	0.666	0.330	0.694	0.261	0.642	0.380
	3/2	3/2	0.228	0.263	0.236	0.531	0.223	0.340	0.224	0.481	0.213	0.423
	5/2	5/2	0.569	-.774	0.653	-.672	0.636	-.713	0.580	-.735	0.681	-.676
	9/2	9/2	0.216	0.239	0.192	0.120	0.196	0.189	0.215	0.128	0.174	0.183
	11/2	11/2	0.279	0.345	0.227	0.362	0.242	0.434	0.271	0.327	0.213	0.399
	15/2	15/2	0.113	0.265	0.057	0.167	0.076	0.207	0.110	0.194	0.059	0.164
1+	7/2	7/2	0.526	0.420	0.506	0.372	0.567	-.421	0.592	0.401	0.515	0.428
	7/2	5/2	-.270	0.560	-.257	0.542	-.248	-.546	-.249	0.549	-.268	0.548
	7/2	9/2	0.067	-.076	0.085	-.111	0.094	0.146	0.089	-.137	0.093	-.116
	3/2	3/2	0.065	0.163	0.084	0.284	0.079	-.215	0.085	0.243	0.070	0.221
	3/2	5/2	0.029	-.185	0.011	-.230	0.022	0.158	0.021	-.179	0.020	-.180
	5/2	7/2	0.270	-.560	0.257	-.542	0.248	0.546	0.249	-.549	0.268	-.548
	5/2	3/2	-.029	0.185	-.011	0.230	-.022	-.158	-.021	0.179	-.020	0.180
	5/2	5/2	0.724	0.073	0.741	0.081	0.685	-.006	0.662	0.003	0.776	0.075
	9/2	7/2	-.067	0.376	-.085	0.111	-.094	-.146	-.089	0.137	-.093	0.116
	9/2	9/2	0.101	0.180	0.109	0.163	0.123	-.168	0.123	0.158	0.102	0.158
	9/2	11/2	-.045	0.089	-.061	0.071	-.072	-.089	-.070	0.084	-.063	0.079
	11/2	9/2	0.045	-.089	0.061	-.071	0.072	0.089	0.070	-.084	0.063	-.079
	11/2	11/2	0.144	0.179	0.144	0.140	0.180	-.199	0.181	0.183	0.144	0.175
	15/2	15/2	0.054	0.053	0.030	0.037	0.056	-.057	0.077	0.055	0.039	0.044
2+	7/2	7/2	-.082	0.872	-.089	0.733	-.083	0.0	-.077	0.829	-.082	0.0
	7/2	3/2	0.149	-.055	0.129	-.159	0.128	0.229	0.134	-.121	0.118	0.211
	7/2	5/2	0.493	0.112	0.505	0.102	0.506	0.367	0.502	0.118	0.514	0.398
	7/2	9/2	-.168	-.072	-.161	-.154	-.162	0.087	-.170	-.114	-.151	0.099
	7/2	11/2	0.264	0.026	0.224	-.030	0.228	-.452	0.253	-.012	0.201	-.431
	3/2	7/2	0.149	-.055	0.129	-.159	0.128	-.229	0.134	-.122	0.118	-.211
	3/2	3/2	0.125	0.021	0.126	-.009	0.120	0.0	0.121	0.013	0.115	0.0
	3/2	5/2	-.097	0.218	-.100	0.337	-.095	0.139	-.099	0.256	-.089	0.141
	5/2	7/2	-.493	-.112	-.505	-.102	-.506	0.367	-.502	-.118	-.514	0.398
	5/2	3/2	0.097	-.218	0.100	-.337	0.095	0.139	0.099	-.255	0.089	0.142
	5/2	5/2	-.388	0.060	-.435	-.062	-.431	0.0	-.390	0.020	-.469	0.0
	5/2	9/2	-.138	-.068	-.146	-.370	-.143	0.237	-.147	-.056	-.136	0.249
	9/2	7/2	0.168	0.072	0.161	0.154	0.162	0.087	0.170	0.114	0.151	0.099
	9/2	5/2	-.138	-.368	-.146	-.070	-.143	-.237	-.147	-.056	-.136	-.249
	9/2	9/2	0.047	0.056	0.038	0.056	0.038	0.0	0.045	0.061	0.031	0.0
	9/2	11/2	0.113	-.071	0.103	-.056	0.104	-.090	0.109	-.067	0.093	-.083
	11/2	7/2	0.264	0.026	0.224	-.030	0.228	0.452	0.253	-.012	0.201	0.431
	11/2	9/2	-.113	0.071	-.103	0.056	-.104	-.090	-.109	0.067	-.093	-.083
	11/2	11/2	0.008	0.266	0.001	0.295	0.005	0.0	0.010	0.271	0.002	0.0
	11/2	15/2	-.085	0.016	-.057	0.014	-.064	0.131	-.079	0.021	-.051	0.113
	15/2	11/2	-.085	0.016	-.057	0.014	-.064	-.131	-.079	0.021	-.051	-.113
	15/2	15/2	-.024	0.066	-.006	0.065	-.011	0.0	-.022	0.065	-.009	0.0
3+	7/2	7/2	0.281	0.697	0.253	0.581	0.276	0.651	0.385	0.603	0.249	0.638
	7/2	3/2	0.054	-.172	0.092	-.243	0.075	-.214	0.061	-.253	0.075	-.214
	7/2	5/2	0.551	-.150	0.522	-.089	0.521	-.127	0.507	-.198	0.532	-.107
	7/2	9/2	-.088	0.049	-.110	0.027	-.112	0.030	-.084	0.035	-.103	0.022
	7/2	11/2	0.125	-.064	0.164	-.072	0.189	-.101	0.155	-.113	0.169	-.083
	3/2	7/2	0.054	-.172	0.092	-.243	0.075	-.214	0.061	-.253	0.075	-.214
	3/2	3/2	0.140	0.070	0.175	0.054	0.157	0.049	0.180	0.010	0.152	0.054
	3/2	5/2	0.082	0.384	0.079	0.478	0.076	0.417	0.128	0.395	0.067	0.444
	3/2	9/2	-.045	-.389	-.038	-.058	-.045	-.067	-.053	-.058	-.036	-.064
	5/2	7/2	-.551	0.150	-.522	0.089	-.521	0.127	-.507	0.198	-.532	0.107
	5/2	3/2	-.082	-.384	-.079	-.478	-.076	-.417	-.128	-.395	-.067	-.444
	5/2	5/2	-.415	0.160	-.440	0.146	-.398	0.132	-.371	0.190	-.427	0.131
	5/2	9/2	-.136	-.002	-.140	0.019	-.156	-.004	-.140	0.012	-.150	-.002
	5/2	11/2	0.067	0.046	0.052	0.026	0.074	0.051	0.080	0.034	0.068	0.048
	9/2	7/2	0.088	-.049	0.110	-.027	0.112	-.030	0.084	-.035	0.103	-.022
	9/2	3/2	0.045	0.089	0.038	0.058	0.045	0.067	0.053	0.058	0.036	0.064
	9/2	5/2	-.136	-.002	-.140	0.019	-.156	-.004	-.140	0.012	-.150	-.007
	9/2	9/2	0.025	-.047	0.035	-.020	0.043	-.037	0.029	-.052	0.038	-.027
	9/2	11/2	0.035	-.127	0.044	-.079	0.039	-.112	0.013	-.112	0.039	-.096
	9/2	15/2	0.010	0.030	0.013	-.003	0.021	0.011	0.024	0.018	0.016	0.010
	11/2	7/2	0.125	-.364	0.164	-.072	0.189	-.101	0.155	-.113	0.169	-.083
	11/2	5/2	-.067	-.046	-.052	-.026	-.074	-.051	-.080	-.034	-.068	-.048
	11/2	5/2	-.035	0.127	-.044	0.079	-.039	0.112	-.013	0.112	-.039	0.096
	11/2	11/2	0.025	0.112	0.065	0.111	0.072	0.134	0.064	0.101	0.057	0.124
	11/2	15/2	-.023	0.033	-.035	0.012	-.042	0.032	-.029	0.042	-.034	0.023
	15/2	9/2	-.010	-.030	-.013	0.003	-.021	-.011	-.024	-.018	-.016	-.010
	15/2	11/2	-.023	0.033	-.035	0.012	-.042	0.032	-.029	0.042	-.034	0.023
	15/2	15/2	-.006	0.012	0.010	0.023	0.004	0.027	-.005	0.018	0.003	0.021
4+	7/2	7/2	0.0	-.331	0.356	0.0	0.0	0.366	0.435	0.0	0.0	0.334
	7/2	3/2	0.384	0.166	-.158	-.404	-.397	-.154	-.164	-.417	-.388	-.150
	7/2	5/2	0.378	-.517	0.499	-.334	-.354	0.510	0.482	-.347	-.362	0.537
	7/2	9/2	0.019	-.062	0.075	-.040	-.013	0.072	0.092	-.040	-.016	0.068
	7/2	11/2	-.273	-.188	0.163	0.236	0.263	0.164	0.144	0.245	0.249	0.158
	7/2	15/2	-.008	-.112	0.083	-.026	-.027	0.081	0.098	-.026	-.018	0.068
	3/2	7/2	-.384	0.166	-.158	0.404	0.397	-.154	-.164	0.417	0.388	-.150
	3/2	5/2	-.359	-.024	0.025	0.396	0.370	0.024	0.029	0.368	0.384	0.022
	3/2	9/2	0.008	0.005	-.012	-.039	-.029	-.011	-.014	-.032	-.030	-.007
	3/2	11/2	-.048	0.368	-.064	0.045	0.357	-.063	-.064	0.048	0.047	-.057
	5/2	7/2	0.378	0.517	-.499	-.334	-.354	-.510	-.482	-.347	-.362	-.537
	5/2	3/2	-.359	0.024	-.025	0.396	0.370	-.024	-.029	0.368	0.384	-.022
	5/2	5/2	0.0	0.033	-.048	0.0	0.0	-.055	-.050	0.0	0.0	-.052
	5/2	9/2	-.005	0.158	-.193	-.011	0.004	-.186	-.182	-.013	0.002	-.175
	5/2	11/2	0.024	-.249	0.272	-.064	-.037	0.253	0.250	-.042	-.034	0.241
	9/2	7/2	0.019	0.062	-.075	-.040	-.013	-.072	-.092	-.040	-.016	-.068
	9/2	3/2	0.008	-.005	0.012	-.039	-.029	0.011	0.014	-.032	-.030	0.007
	9/2	5/2	0.005	0.158	-.193	0.011	-.004	-.186	-.182	0.013	-.002	-.175
	9/2	9/2	0.0	-.064	0.066	0.0	0.0	0.069	0.061	0.0	0.0	0.064
	9/2	11/2	-.021	0.010	-.009	0.021	0.036	-.006	-.020	0.034	0.030	0.001
	9/2	15/2	-.027	-.028	0.031	0.016	0.025	0.029	0.027	0.031	0.020	0.024
	11/2	7/2	0.273	-.188	0.163	-.236	-.263	0.164	0.144	-.245	-.249	0.158
	11/2	3/2	0.048	0.368	-.064	-.045	-.057	-.063	-.064	-.048	-.047	-.057
	11/2	5/2	0.024	0.249	-.272	-.064	-.037	-.253	-.250	-.042	-.034	-.241
	11/2	9/2	-.021	-.010	0.009	0.021	0.036	0.006	0.020	0.034	0.030	-.001
	11/2	11/2	0.0	-.342	0.048	0.0	0.0	0.048	0.043	0.0	0.0	0.040
	11/2	15/2	0.034	0.042	-.040	-.047	-.050	-.039	-.032	-.035	-.042	-.034
	15/2	7/2	0.008	-.112	0.083	0.026	0.027	0.081	0.098	0.026	0.018	0.068
	15/2	9/2	-.027	0.028	-.031	0.016	0.025	-.029	-.027	0.031	0.020	-.024
	15/2	11/2	-.034	0.042	-.040	0.047	0.050	-.039	-.032	0.035	0.042	-.034
	15/2	15/2	0.0	-.005	0.013	0.0	0.0	0.013	0.011	0.0	0.0	0.010

WAVE FUNCTIONS

46V - 50MN

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
5+	7/2	7/2	0.448	-.549	-.386	-.490	0.417	-.522	0.474	-.504	-.394	-.515
	7/2	3/2	0.020	0.211	-.032	0.281	0.030	0.245	0.032	0.284	-.025	0.247
	7/2	5/2	-.404	-.402	0.415	-.364	-.411	-.363	-.399	-.390	0.412	-.373
	7/2	9/2	-.115	-.094	0.129	-.068	-.128	-.093	-.119	-.072	0.123	-.083
	7/2	11/2	-.131	-.333	0.129	-.009	-.138	-.018	-.128	-.013	0.127	-.019
	7/2	15/2	0.007	-.030	0.010	-.061	-.018	-.072	-.008	-.055	0.012	-.060
	3/2	7/2	0.020	0.211	-.032	0.281	0.030	0.245	0.032	0.284	-.025	0.247
	3/2	9/2	0.043	-.013	-.042	0.001	0.041	-.002	0.042	0.004	-.038	-.000
	3/2	11/2	0.067	0.067	-.065	0.111	0.069	0.089	0.071	0.096	-.060	0.088
	5/2	7/2	0.404	0.402	-.415	0.364	0.411	0.363	0.399	0.390	-.412	0.373
	5/2	5/2	-.615	0.149	0.631	0.230	-.610	0.185	-.593	0.148	0.639	0.206
	5/2	9/2	-.075	0.211	0.076	0.232	-.080	0.221	-.088	0.203	0.076	0.220
	5/2	11/2	-.003	-.250	0.029	-.252	-.021	-.280	-.001	-.250	0.024	-.272
	5/2	15/2	0.004	-.012	0.004	-.003	0.017	-.018	0.025	-.025	-.010	-.014
	9/2	7/2	0.115	0.094	-.129	0.068	0.128	0.393	0.119	0.072	-.123	0.083
	9/2	3/2	-.043	0.013	0.042	-.001	-.041	0.002	-.042	-.004	0.038	0.000
	9/2	5/2	-.075	0.211	0.076	0.232	-.080	0.221	-.088	0.203	0.076	0.220
	9/2	9/2	-.057	-.051	0.070	-.059	-.071	-.051	-.065	-.060	0.064	-.047
	9/2	11/2	-.031	-.012	0.042	0.012	-.042	0.018	-.037	-.014	0.038	0.015
	9/2	15/2	0.005	-.026	-.007	-.020	0.010	-.025	0.013	-.024	-.007	-.022
	11/2	7/2	-.131	-.033	0.129	-.009	-.138	-.018	-.128	-.013	0.127	-.019
	11/2	3/2	0.067	0.067	-.065	0.111	0.069	0.089	0.071	0.096	-.060	0.088
	11/2	5/2	0.003	0.250	-.029	0.252	0.021	0.280	0.001	0.250	-.024	0.272
	11/2	9/2	0.031	0.012	-.042	-.012	0.042	-.018	0.037	0.014	-.038	-.015
	11/2	11/2	0.066	-.076	-.071	-.063	0.074	-.064	0.068	-.074	-.066	-.064
	11/2	15/2	-.007	0.041	-.013	0.015	0.010	0.023	-.009	0.031	-.008	0.020
	15/2	7/2	0.007	-.030	0.010	-.061	-.018	-.072	-.008	-.055	0.012	-.060
	15/2	5/2	-.004	0.012	-.004	0.003	-.017	0.018	-.025	0.025	0.009	0.014
	15/2	9/2	-.005	0.026	0.007	0.020	-.010	0.025	-.013	0.024	0.007	0.022
	15/2	11/2	-.007	0.041	-.013	0.015	0.010	0.023	-.009	0.031	-.008	0.020
	15/2	15/2	-.004	-.031	-.003	-.018	0.001	-.020	-.005	-.027	-.001	-.017
6+	7/2	7/2	0.0	0.834	0.0	0.744	0.0	0.789	0.0	0.831	0.0	0.804
	7/2	5/2	0.610	-.056	0.598	-.024	0.599	-.034	0.602	-.054	0.608	-.036
	7/2	9/2	-.103	0.055	-.115	0.112	-.116	0.090	-.123	0.066	-.108	0.080
	7/2	11/2	-.162	-.144	-.167	-.177	-.173	-.158	-.174	-.154	-.162	-.145
	7/2	15/2	-.081	0.039	-.068	0.058	-.064	0.052	-.061	0.036	-.059	0.047
	3/2	9/2	-.032	-.045	-.037	-.036	-.036	-.042	-.037	-.048	-.034	-.041
	3/2	11/2	0.076	0.089	0.075	0.107	0.075	0.099	0.072	0.096	0.072	0.092
	3/2	15/2	0.014	-.038	0.012	-.044	0.009	-.039	0.006	-.039	0.009	-.034
	5/2	7/2	0.610	0.056	0.598	0.024	0.599	0.034	0.602	0.054	0.608	0.036
	5/2	9/2	-.207	-.055	-.230	-.064	-.226	-.064	-.219	-.048	-.221	-.061
	5/2	11/2	-.162	0.300	-.171	0.361	-.170	0.334	-.160	0.296	-.167	0.335
	5/2	15/2	0.038	0.102	0.035	0.129	0.030	0.103	0.033	0.094	0.027	0.093
	9/2	7/2	-.103	-.055	-.115	-.112	-.116	-.090	-.123	-.066	-.108	-.080
	9/2	3/2	-.032	0.045	-.037	0.036	-.036	0.042	-.037	0.048	-.034	0.041
	9/2	5/2	0.207	-.055	0.230	-.064	0.226	-.064	0.219	-.048	0.221	-.061
	9/2	9/2	0.0	-.054	0.0	-.085	0.0	-.080	0.0	-.070	0.0	-.071
	9/2	11/2	-.071	-.060	-.070	-.051	-.071	-.065	-.073	-.056	-.065	-.060
	9/2	15/2	0.007	0.036	-.006	0.041	-.007	0.042	-.001	0.038	-.005	0.037
	11/2	7/2	0.162	-.144	0.167	-.177	0.173	-.158	0.174	-.154	0.162	-.145
	11/2	3/2	-.076	0.089	-.075	0.107	-.075	0.099	-.072	0.096	-.072	0.092
	11/2	5/2	-.162	-.300	-.171	-.361	-.170	-.334	-.160	-.296	-.167	-.335
	11/2	9/2	-.071	0.069	-.070	0.051	-.071	0.065	-.073	0.056	-.065	0.060
	11/2	11/2	0.0	0.055	0.0	0.054	0.0	0.074	0.0	0.073	0.0	0.070
	11/2	15/2	0.046	-.001	0.026	0.012	0.031	0.010	0.040	-.001	0.028	0.006
	15/2	7/2	0.081	0.039	0.068	0.058	0.064	0.052	0.061	0.036	0.059	0.047
	15/2	3/2	-.014	-.038	-.012	-.044	-.009	-.039	-.006	-.039	-.009	-.034
	15/2	5/2	0.038	-.102	0.035	-.129	0.030	-.103	0.033	-.094	0.027	-.093
	15/2	9/2	0.007	-.036	-.006	-.041	-.007	-.042	-.001	-.038	-.005	-.037
	15/2	11/2	-.046	-.001	-.026	0.012	-.031	0.010	-.040	-.001	-.028	0.006
	15/2	15/2	0.0	0.020	0.0	0.010	0.0	0.022	0.0	0.029	0.0	0.017
7+	7/2	7/2	0.804	-.029	0.767	-.041	0.777	0.021	0.803	-.017	0.780	0.032
	7/2	9/2	0.002	-.351	0.007	-.433	0.006	0.387	-.000	-.456	0.006	0.382
	7/2	11/2	-.002	0.490	0.013	0.361	-.002	-.446	-.004	0.383	-.001	-.438
	7/2	15/2	0.016	-.008	0.021	-.012	0.029	-.016	0.018	0.006	0.027	-.009
	3/2	11/2	0.143	-.071	0.155	-.147	0.150	0.110	0.149	-.122	0.145	0.116
	3/2	15/2	-.081	-.019	-.079	0.007	-.080	0.010	-.080	-.020	-.072	0.004
	5/2	9/2	0.144	0.340	0.172	0.383	0.161	-.343	0.147	0.337	0.164	-.362
	5/2	11/2	0.313	-.360	0.345	-.070	0.339	0.063	0.307	-.067	0.344	0.364
	5/2	15/2	0.066	-.071	0.076	-.044	0.077	0.091	0.073	-.065	0.073	0.081
	9/2	7/2	-.002	0.351	-.007	0.433	-.006	-.387	0.000	0.456	-.006	-.382
	9/2	5/2	0.144	0.340	0.172	0.383	0.161	-.343	0.147	0.337	0.164	-.362
	9/2	9/2	-.132	0.083	-.138	0.078	-.136	-.085	-.137	0.081	-.127	-.079
	9/2	11/2	-.077	-.035	-.071	-.022	-.071	0.049	-.081	-.036	-.065	0.041
	9/2	15/2	0.071	0.001	0.052	0.014	0.055	-.017	0.067	0.002	0.069	-.015
	11/2	7/2	-.002	0.490	0.013	0.361	-.002	-.446	-.004	0.383	-.001	-.437
	11/2	3/2	0.143	-.071	0.155	-.147	0.150	0.110	0.149	-.122	0.145	0.116
	11/2	5/2	-.313	0.360	-.345	0.070	-.339	-.063	-.307	0.067	-.344	-.064
	11/2	9/2	0.077	0.035	0.071	0.022	0.071	-.049	0.081	0.036	0.065	-.041
	11/2	11/2	0.092	0.012	0.076	0.062	0.080	-.057	0.097	0.077	0.074	-.051
	11/2	15/2	0.039	-.037	0.012	-.018	0.018	0.030	0.033	-.014	0.016	0.028
	15/2	7/2	0.016	-.008	0.021	-.012	0.029	-.016	0.018	0.006	0.027	-.009
	15/2	3/2	-.081	-.019	-.079	0.007	-.080	0.010	-.080	-.020	-.072	0.004
	15/2	5/2	-.066	0.071	-.076	0.044	-.077	-.091	-.073	0.065	-.073	-.081
	15/2	9/2	-.071	-.001	-.052	-.014	-.055	0.017	-.067	-.002	-.049	0.015
	15/2	11/2	0.039	-.037	0.012	-.018	0.018	0.030	0.033	-.014	0.016	0.028
	15/2	15/2	0.049	0.008	0.018	-.009	0.028	-.001	0.049	0.001	0.023	0.0

WAVE FUNCTIONS

46V - 50MN

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
8+	7/2	9/2	-.500	0.061	-.498	-.096	-.501	0.059	0.527	-.110	-.489	0.097
	7/2	11/2	-.225	0.494	-.211	0.613	-.227	0.477	0.248	0.632	-.212	0.488
	7/2	15/2	0.099	0.273	0.107	0.128	0.098	0.263	-.097	0.093	0.095	0.230
	3/2	15/2	-.000	-.120	-.007	-.081	-.006	-.174	-.013	-.071	-.013	-.162
	5/2	11/2	0.405	0.347	0.413	-.019	0.400	0.354	-.351	-.028	0.427	0.361
	5/2	15/2	0.1u3	-.027	0.C97	-.246	0.102	-.047	-.077	-.222	0.103	-.035
	9/2	7/2	-.500	C.061	-.498	0.096	-.501	0.059	0.527	0.110	-.489	0.097
	9/2	9/2	0.0	0.0	0.0	0.041	0.0	C.0	0.0	0.040	0.0	0.0
	9/2	11/2	-.114	0.166	-.122	-.155	-.127	0.175	0.134	-.142	-.116	0.176
	9/2	15/2	-.037	0.101	-.028	0.023	-.030	0.065	0.052	0.027	-.023	0.069
	11/2	7/2	0.225	-.494	0.211	0.613	0.227	-.477	-.248	0.632	0.212	-.487
	11/2	5/2	0.405	0.347	0.413	0.019	0.400	0.354	-.351	0.028	0.427	0.361
	11/2	9/2	-.114	0.166	-.122	0.155	-.127	0.175	0.134	0.142	-.116	0.177
	11/2	11/2	0.0	0.0	0.0	-.086	0.0	0.0	0.0	-.049	0.0	0.0
	11/2	15/2	0.002	-.068	0.009	-.046	0.020	-.084	-.025	-.038	0.014	-.076
	15/2	7/2	-.099	-.273	-.137	0.128	-.098	-.263	0.097	0.093	-.095	-.230
	15/2	3/2	0.000	0.120	0.007	-.081	0.006	0.174	0.013	-.071	0.013	0.162
	15/2	5/2	0.103	-.027	0.C97	0.246	0.102	-.047	-.077	0.222	0.103	-.035
	15/2	9/2	-.037	0.101	-.028	-.023	-.030	0.065	0.052	-.027	-.023	0.069
	15/2	11/2	-.002	0.068	-.009	-.046	-.020	0.084	0.025	-.038	-.014	0.076
	15/2	15/2	0.0	0.0	0.0	0.006	0.0	0.0	0.0	C.000	0.0	0.0
9+	7/2	11/2	0.652	0.002	0.644	0.000	0.644	-.009	0.648	-.022	0.648	-.006
	7/2	15/2	0.002	0.604	0.018	0.178	0.027	0.523	0.035	0.521	0.023	0.484
	3/2	15/2	-.109	-.057	-.117	-.054	-.118	-.067	-.114	-.083	-.111	-.060
	5/2	15/2	-.193	0.102	-.201	0.024	-.205	0.091	-.191	0.112	-.201	0.074
	9/2	9/2	-.095	-.063	-.115	0.625	-.111	0.116	-.112	0.238	-.107	0.183
	9/2	11/2	-.122	-.131	-.139	-.347	-.137	-.141	-.133	-.233	-.132	-.171
	9/2	15/2	0.039	-.031	0.034	-.041	0.035	-.089	0.035	-.035	0.032	-.084
	11/2	7/2	0.652	0.002	0.644	0.000	0.644	-.009	0.648	-.022	0.648	-.006
	11/2	9/2	0.122	0.131	0.139	0.347	0.137	0.141	0.133	0.233	0.132	0.171
	11/2	11/2	0.051	-.439	0.058	-.542	0.042	-.580	0.043	-.497	0.040	-.626
	11/2	15/2	-.060	-.070	-.046	-.004	-.044	-.102	-.055	-.038	-.042	-.086
	15/2	7/2	0.002	0.604	0.018	0.178	0.027	0.523	0.035	0.521	0.023	0.484
	15/2	3/2	-.109	-.057	-.117	-.054	-.118	-.067	-.114	-.083	-.111	-.060
	15/2	5/2	0.193	-.102	0.201	-.024	0.205	-.091	0.191	-.112	0.201	-.074
	15/2	9/2	-.039	0.031	-.034	0.041	-.035	0.089	-.035	0.035	-.032	0.084
	15/2	11/2	-.060	-.070	-.046	-.004	-.044	-.102	-.055	-.038	-.042	-.086
	15/2	15/2	-.029	-.001	-.002	-.032	-.006	-.037	-.021	-.025	-.007	-.033
10+	7/2	15/2	0.507	0.281	-.111	0.533	0.464	0.313	-.552	-.174	0.287	-.457
	5/2	15/2	0.482	-.394	0.414	0.327	0.526	-.264	-.140	-.533	0.604	0.024
	9/2	11/2	-.092	-.515	0.558	0.019	0.010	-.575	0.415	-.420	0.219	0.537
	9/2	15/2	0.012	-.016	-.021	-.010	0.043	0.029	-.042	0.017	0.029	-.044
	11/2	9/2	-.092	-.515	0.558	-.018	0.010	-.575	0.415	-.420	0.219	0.537
	11/2	11/2	0.0	0.0	0.0	-.422	C.000	0.0	0.0	0.0	0.0	0.0
	11/2	15/2	-.042	-.003	-.067	-.140	-.077	0.023	0.040	0.097	-.062	0.0
	15/2	7/2	-.507	-.281	0.111	0.533	-.464	-.313	0.552	0.174	-.287	0.457
	15/2	5/2	0.482	-.394	0.414	-.327	0.526	-.264	-.140	-.532	0.604	0.024
	15/2	9/2	0.012	-.016	-.021	0.010	0.043	0.029	-.042	0.017	0.029	-.044
	15/2	11/2	0.042	0.003	0.067	-.140	0.077	-.023	-.040	-.097	0.062	0.0
	15/2	15/2	0.0	0.0	0.0	-.025	0.0	0.0	0.0	0.0	0.0	0.0
11+	7/2	15/2	0.570	0.299	0.531	0.324	0.552	0.273	0.570	0.281	0.538	0.318
	9/2	15/2	0.021	0.395	-.017	0.450	-.003	0.441	0.010	0.452	-.013	0.422
	11/2	11/2	-.588	0.639	-.656	0.530	-.618	0.543	-.586	0.601	-.644	0.556
	11/2	15/2	-.042	-.206	-.043	-.227	-.064	-.288	-.058	-.188	-.054	-.257
	15/2	7/2	0.570	0.299	0.531	0.324	0.552	0.273	0.570	0.281	0.538	0.318
	15/2	9/2	-.021	-.395	0.017	-.450	0.003	-.441	-.010	-.452	0.013	-.422
	15/2	11/2	-.042	-.206	-.043	-.227	-.064	-.288	-.058	-.188	-.054	-.257
	15/2	15/2	0.008	0.120	-.022	0.013	-.006	-.031	0.014	0.038	-.008	0.002
12+	9/2	15/2	-.536	-.211	-.194	0.662	-.192	0.618	-.186	0.667	-.188	0.611
	11/2	15/2	0.461	0.622	0.647	-.248	0.648	-.343	0.642	-.236	0.658	-.355
	15/2	9/2	-.536	0.211	0.194	0.662	0.192	0.618	0.186	0.667	0.188	0.611
	15/2	11/2	-.461	0.622	0.647	0.248	0.648	0.343	0.642	0.236	0.659	0.355
	15/2	15/2	0.0	0.369	0.294	0.0	0.293	0.0	0.327	0.0	0.252	0.0
13+	11/2	15/2	0.703	-.075	0.701	-.707	0.699	-.108	0.702	0.707	0.701	-.092
	15/2	11/2	0.703	-.075	0.701	0.707	0.699	-.108	0.702	-.707	0.701	-.092
	15/2	15/2	0.106	0.994	0.129	0.0	0.153	0.988	0.117	0.0	0.131	0.991
14+	15/2	15/2	1.000		1.000		1.000		1.000		1.000	
15+	15/2	15/2	1.C00		1.000		1.000		1.000		1.?00	

WAVE FUNCTIONS

47V - 49CR

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
1/2-	7/2	4	-.128	0.678	-.102	0.593	-.163	0.692	0.146	0.729	0.125	0.638
	7/2	4*	0.655	-.092	0.561	-.223	0.586	-.063	-.563	-.114	-.558	-.106
	3/2	2	0.244	0.511	0.373	0.512	0.289	0.493	-.371	0.443	-.296	0.555
	3/2	2*	0.048	-.399	-.009	-.457	0.038	-.426	-.005	-.434	-.027	-.434
	5/2	2	-.629	-.011	-.604	0.106	-.616	-.011	0.603	0.038	0.661	0.063
	5/2	2*	-.250	-.164	-.356	-.221	-.308	-.143	0.343	-.124	0.315	-.156
	9/2	4	0.019	-.038	-.032	-.113	0.001	-.044	0.047	-.015	0.004	-.063
	9/2	4*	0.100	0.075	0.089	0.003	0.124	0.071	-.096	0.077	-.123	0.033
	9/2	5	-.004	0.208	-.009	0.152	-.043	0.207	0.016	0.189	0.025	0.182
	11/2	6	-.155	0.058	-.187	0.131	-.225	0.110	0.176	0.091	0.180	0.103
	11/2	5	-.016	0.052	-.006	0.112	-.018	0.085	-.015	0.057	0.013	0.084
	15/2	8	-.017	0.306	-.032	0.046	-.040	0.042	0.026	0.020	0.027	0.031
3/2-	7/2	2	0.442	-.508	-.394	-.472	-.422	-.464	-.434	-.482	-.417	0.486
	7/2	4	-.158	-.238	0.170	-.168	0.151	-.172	0.178	-.242	0.139	0.165
	7/2	2*	0.180	-.317	-.180	0.0	-.178	-.004	-.180	-.007	-.170	0.092
	7/2	4*	0.216	0.412	-.250	0.406	-.267	0.439	-.204	0.441	-.261	-.431
	7/2	5	-.064	0.175	0.038	0.234	0.030	0.236	0.082	0.183	0.028	-.298
	3/2	0	-.597	0.042	0.576	0.121	0.571	0.107	0.621	0.015	0.572	-.111
	3/2	2	0.270	0.185	-.313	0.108	-.296	0.134	-.289	0.200	-.295	-.141
	3/2	2*	0.041	0.052	-.050	0.085	-.046	0.071	-.040	0.090	-.046	-.073
	5/2	2	-.435	-.254	0.451	-.227	0.441	-.190	0.390	-.226	0.464	0.215
	5/2	4	-.009	0.427	-.006	0.474	-.016	0.454	0.048	0.421	-.017	-.447
	5/2	2*	-.190	0.110	0.215	0.157	0.205	0.135	0.196	0.124	0.205	-.137
	5/2	4*	-.063	-.364	0.093	-.356	0.067	-.344	0.041	-.350	0.068	0.362
	9/2	4	0.077	0.034	-.064	0.054	-.064	0.072	-.071	0.050	-.056	-.061
	9/2	6	0.027	-.086	0.001	-.095	-.013	-.094	-.038	-.077	-.010	0.081
	9/2	4*	0.059	-.019	-.056	0.016	-.057	0.022	-.045	-.020	-.058	-.023
	9/2	5	-.016	-.083	0.016	-.090	0.021	-.091	0.016	-.084	0.017	0.078
	11/2	4	-.059	0.058	0.059	0.033	0.059	0.030	0.076	0.035	0.052	-.029
	11/2	6	-.031	-.092	0.054	-.134	0.071	-.174	0.039	-.135	0.059	0.143
	11/2	4*	0.132	-.159	-.111	-.166	-.133	-.189	-.119	-.170	-.126	0.184
	11/2	5	-.054	0.327	0.037	-.012	0.039	-.012	0.044	0.010	0.035	0.006
	15/2	6	0.030	-.022	-.021	-.034	-.031	-.038	-.036	-.023	-.025	0.032
	15/2	8	-.001	-.023	0.012	-.024	0.013	-.036	0.006	-.034	0.009	0.026
5/2-	7/2	2	0.466	0.152	0.475	-.128	0.481	0.145	0.479	-.124	0.469	-.175
	7/2	4	0.023	0.244	0.009	-.240	0.010	0.305	0.006	-.269	0.008	-.270
	7/2	6	-.047	0.279	-.013	-.255	-.006	0.328	-.024	-.262	-.011	-.275
	7/2	2*	-.055	0.216	-.062	-.269	-.063	0.221	-.060	-.320	-.061	-.222
	7/2	4*	-.255	-.035	-.252	0.043	-.253	-.014	-.255	0.049	-.239	0.005
	7/2	5	-.066	-.032	-.047	0.026	-.046	-.047	-.054	0.033	-.040	0.039
	3/2	2	-.155	-.303	-.173	0.368	-.163	-.289	-.164	0.392	-.158	0.310
	3/2	4	-.033	-.012	-.019	0.004	-.023	-.002	-.021	0.010	-.020	-.002
	3/2	2*	-.071	-.070	-.089	0.091	-.084	-.079	-.083	0.092	-.079	0.080
	3/2	4*	-.013	-.193	-.026	0.205	-.025	-.186	-.024	0.192	-.021	0.185
	5/2	0	0.607	0.033	0.660	-.022	0.662	0.001	0.675	-.023	0.681	-.030
	5/2	2	0.360	-.501	0.379	0.480	0.373	-.442	0.358	0.471	0.385	0.480
	5/2	4	-.122	-.255	-.127	0.234	-.123	-.233	-.128	0.211	-.112	0.228
	5/2	2*	-.098	0.074	-.120	-.101	-.116	0.086	-.109	-.117	-.112	-.078
	5/2	4*	0.014	0.515	0.024	-.484	0.019	0.504	0.016	-.434	0.013	-.527
	5/2	5	0.012	-.188	0.013	0.162	-.002	-.191	0.005	0.143	0.002	0.167
	9/2	2	0.131	0.031	0.137	-.019	0.137	0.019	0.133	-.012	0.131	-.023
	9/2	4	-.058	-.030	-.061	0.004	-.062	-.019	-.059	-.022	-.054	0.015
	9/2	6	0.006	0.039	0.000	-.047	-.005	0.070	-.004	-.057	-.004	-.062
	9/2	2*	-.019	-.051	-.024	0.057	-.025	-.059	-.023	0.059	-.021	0.056
	9/2	4*	-.069	0.118	-.078	-.142	-.082	0.129	-.076	-.138	-.078	-.121
	9/2	5	0.040	0.051	0.041	-.056	0.038	0.075	0.038	-.053	0.033	-.060
	11/2	4	-.032	-.369	-.018	0.083	-.016	-.057	-.021	0.088	-.016	0.056
	11/2	6	0.094	0.034	0.069	-.015	0.079	0.023	0.090	-.029	0.068	-.015
	11/2	4*	0.115	0.039	0.135	-.070	0.138	0.098	0.121	-.072	0.126	-.092
	11/2	5	-.002	0.010	-.006	-.011	-.003	0.039	-.006	-.005	-.004	-.025
	11/2	8	0.013	-.051	0.003	0.055	0.003	-.082	0.008	0.061	0.003	0.059
	15/2	6	0.000	-.009	0.020	-.009	0.017	0.029	0.004	-.023	0.013	-.019
	15/2	5	-.005	-.008	-.015	-.003	-.011	-.003	-.006	0.004	-.009	0.003
	15/2	8	0.015	0.029	0.009	-.010	0.013	0.025	0.015	-.034	0.010	-.017
7/2-	7/2	0	0.725	-.175	0.668	0.221	0.690	-.210	0.727	-.142	0.689	-.239
	7/2	2	0.190	-.479	0.173	0.406	0.182	-.396	0.193	-.440	0.175	-.408
	7/2	4	0.135	0.155	0.132	-.144	0.130	0.109	0.135	0.190	0.119	0.107
	7/2	6	0.118	0.084	0.104	-.025	0.110	0.054	0.117	0.047	0.099	0.048
	7/2	2*	0.025	0.028	0.036	0.042	0.034	-.029	0.030	-.043	0.034	-.025
	7/2	4*	0.106	0.479	0.154	-.478	0.139	0.539	0.102	0.487	0.144	0.522
	7/2	5	-.008	0.021	-.007	-.069	0.001	0.071	-.006	0.059	-.001	0.056
	3/2	2	-.144	0.112	-.160	-.251	-.155	0.182	-.153	0.210	-.152	0.193
	3/2	4	0.082	0.034	0.080	-.045	0.077	0.070	0.076	0.051	0.072	0.053
	3/2	2*	-.066	0.012	-.073	-.012	-.068	0.012	-.068	0.005	-.064	0.013
	3/2	4*	-.071	0.041	-.089	-.129	-.077	0.068	-.074	0.102	-.077	0.071
	3/2	5	-.041	-.025	-.030	0.037	-.035	-.042	-.035	-.034	-.030	-.033
	5/2	2	-.427	-.452	-.492	0.382	-.463	-.390	-.415	-.421	-.488	-.406
	5/2	4	-.005	0.210	0.004	-.294	0.006	0.283	-.013	0.256	0.009	0.276
	5/2	6	0.004	-.010	-.008	0.003	0.013	-.001	0.018	0.020	0.010	-.007
	5/2	2*	0.051	0.175	0.071	-.235	0.065	0.187	0.053	0.230	0.067	0.195
	5/2	4*	0.225	0.170	0.258	-.136	0.246	0.141	0.222	0.144	0.251	0.142
	5/2	5	-.036	-.002	-.031	-.058	-.037	0.045	-.043	0.011	-.033	0.042
	9/2	2	0.124	-.075	0.128	0.039	0.133	-.053	0.132	-.009	0.126	-.055
	9/2	4	-.083	0.110	-.065	-.109	-.065	0.115	-.082	0.103	-.058	0.107
	9/2	6	0.042	0.340	0.035	-.066	0.039	0.068	0.040	0.050	0.037	0.058
	9/2	2*	-.085	0.026	-.093	-.027	-.091	0.023	-.088	0.016	-.083	0.024
	9/2	4*	0.016	0.170	0.035	-.165	0.027	0.147	0.014	0.171	0.029	0.143
	9/2	5	0.047	-.058	0.032	0.062	0.033	-.062	0.044	-.058	0.028	-.056
	9/2	8	0.014	-.002	0.006	-.003	0.012	0.005	0.017	0.003	0.009	0.032
	11/2	2	-.236	0.140	-.240	-.156	-.251	0.166	-.242	0.139	-.238	0.173
	11/2	4	0.054	-.004	0.049	0.004	0.048	0.025	0.056	0.013	0.043	0.015
	11/2	6	0.023	-.141	-.018	0.143	-.009	-.181	0.018	-.147	-.010	-.155
	11/2	2*	-.025	0.035	-.023	-.050	-.022	0.042	-.025	0.050	-.019	0.040
	11/2	4*	0.106	-.191	0.091	0.164	0.100	-.176	0.169	-.158	0.090	-.173
	11/2	5	0.051	0.036	0.037	-.023	0.038	0.015	0.045	0.036	0.034	0.015
	11/2	8	-.030	-.029	-.020	0.006	-.025	-.014	-.031	-.024	-.020	-.011
	15/2	4	-.053	0.074	-.042	-.056	-.045	0.051	-.054	0.051	-.018	0.047
	15/2	6	0.053	-.358	0.019	0.042	0.033	-.047	0.053	-.042	0.027	-.047
	15/2	4*	0.050	-.101	0.052	0.076	0.058	-.082	0.055	-.088	0.049	-.078
	15/2	5	-.026	0.047	-.013	-.032	-.018	0.024	-.025	0.027	-.015	0.025
	15/2	8	0.026	-.022	0.006	0.015	0.012	-.025	0.025	-.019	0.009	-.019

WAVE FUNCTIONS

47V - 49CR

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	49SC*-INT A1(JP,JN)	49SC*-INT A2(JP,JN)
9/2-	7/2	2	0.541	0.519	0.474	0.536	0.514	0.491	0.564	0.481	0.488	0.517
	7/2	4	0.014	0.173	0.025	0.196	0.046	0.209	-.016	0.220	0.042	0.176
	7/2	6	0.116	-.116	0.142	-.076	0.167	-.073	0.122	-.107	0.155	-.067
	7/2	2*	-.210	0.139	-.235	0.148	-.221	0.169	-.231	0.192	-.216	0.142
	7/2	4*	0.171	-.397	0.205	-.340	0.167	-.382	0.113	-.397	0.198	-.369
	7/2	5	-.038	-.017	-.022	-.023	-.034	0.001	-.052	-.009	-.076	-.007
	7/2	8	0.044	-.005	0.022	0.021	0.024	0.032	0.034	0.016	0.021	0.023
	3/2	4	-.021	-.096	0.007	-.133	-.002	-.121	-.031	-.126	0.008	-.118
	3/2	6	-.051	-.047	-.026	-.058	-.036	-.065	-.041	-.055	-.039	-.057
	3/2	4*	0.011	0.251	-.025	0.286	-.007	0.278	0.014	0.275	-.021	0.272
	3/2	5	-.061	-.339	-.060	-.030	-.063	-.032	-.057	-.021	-.056	-.031
	5/2	2	-.408	0.532	-.451	0.478	-.401	0.499	-.342	0.520	-.457	0.506
	5/2	4	0.205	-.008	0.228	0.010	0.217	-.021	0.213	-.032	0.211	-.001
	5/2	6	0.093	0.397	0.084	0.124	0.081	0.150	0.069	0.119	0.078	0.134
	5/2	2*	0.119	0.220	0.118	0.270	0.125	0.237	0.138	0.233	0.109	0.251
	5/2	4*	0.396	-.301	0.420	0.069	0.420	0.055	0.336	0.017	0.441	0.068
	5/2	5	0.027	-.072	0.027	-.072	0.016	-.089	0.036	-.076	0.017	-.072
	9/2	0	-.381	0.052	-.352	0.040	-.365	0.081	-.441	0.131	-.341	0.035
	9/2	2	0.051	-.004	0.061	0.021	0.060	-.001	0.062	-.003	0.053	0.009
	9/2	4	-.013	-.022	-.017	-.040	-.027	-.049	-.008	-.044	-.025	-.040
	9/2	6	0.061	-.039	0.070	-.025	0.064	-.034	0.041	-.022	0.062	-.028
	9/2	2*	-.013	0.055	-.023	0.050	-.018	0.050	-.004	0.050	-.023	0.050
	9/2	4*	-.117	-.107	-.107	-.114	-.114	-.100	-.135	-.102	-.098	-.110
	9/2	5	-.014	-.032	-.007	-.022	-.003	-.021	-.011	-.018	-.004	-.020
	9/2	8	0.017	0.011	0.018	0.007	0.023	0.014	0.019	0.012	0.019	0.011
	11/2	2	0.170	-.049	0.172	-.088	0.176	-.098	0.204	-.111	0.161	-.067
	11/2	4	0.092	-.033	0.085	-.027	0.082	-.049	0.076	-.027	0.074	-.038
	11/2	6	0.007	0.119	-.012	0.109	0.007	0.110	0.035	0.101	-.004	0.101
	11/2	2*	-.097	-.110	-.092	-.118	-.100	-.110	-.107	-.104	-.087	-.110
	11/2	4*	0.062	0.171	0.072	0.195	0.093	0.179	0.074	0.167	0.078	0.172
	11/2	5	-.004	0.021	0.011	0.037	0.016	0.042	-.004	0.038	0.013	0.031
	11/2	8	-.007	0.037	-.018	0.012	-.023	0.016	-.006	0.028	-.019	0.015
	15/2	4	-.035	-.027	-.036	-.024	-.044	-.014	-.059	-.001	-.033	-.018
	15/2	6	-.003	0.047	0.002	0.042	0.010	0.045	0.003	0.043	0.006	0.036
	15/2	4*	-.027	0.012	-.023	0.043	-.024	0.039	-.024	0.027	-.021	0.029
	15/2	5	-.035	-.048	-.019	-.026	-.026	-.023	-.034	-.034	-.020	-.023
	15/2	8	0.016	0.026	0.003	0.016	0.012	0.022	0.020	0.028	0.008	0.017
11/2-	7/2	2	0.643	0.229	0.633	0.199	0.629	0.203	0.641	0.222	0.644	0.204
	7/2	4	-.043	0.343	-.025	0.443	-.034	0.506	-.017	0.593	-.031	0.444
	7/2	6	0.109	0.352	0.128	-.127	0.105	-.160	0.081	-.079	0.107	-.174
	7/2	2*	0.032	-.039	0.020	0.259	0.021	0.211	0.030	0.199	0.019	0.233
	7/2	4*	-.201	0.243	-.199	0.279	-.207	0.263	-.208	0.282	-.199	0.265
	7/2	5	0.050	-.068	0.033	0.211	0.039	0.213	0.051	0.135	0.033	0.217
	7/2	8	0.052	-.003	0.042	0.023	0.050	0.020	0.054	0.009	0.042	0.017
	3/2	4	-.066	0.044	-.072	0.178	-.068	0.176	-.064	0.159	-.067	0.174
	3/2	6	-.055	-.095	-.073	-.125	-.062	-.115	-.060	-.143	-.060	-.099
	3/2	4*	0.111	0.132	0.130	0.372	0.123	0.340	0.126	0.335	0.125	0.346
	3/2	5	0.022	-.071	0.007	0.012	0.011	0.003	0.013	-.038	0.008	0.019
	5/2	4	0.039	0.175	0.062	-.395	0.055	-.344	0.033	-.230	0.061	-.409
	5/2	6	0.173	0.082	0.175	0.053	0.185	0.055	0.176	0.051	0.178	0.034
	5/2	4*	0.390	0.394	0.444	-.164	0.411	-.160	0.362	-.070	0.438	-.220
	5/2	5	-.003	-.070	-.013	-.186	-.009	-.215	-.020	-.218	-.010	-.190
	5/2	8	0.005	-.012	-.001	-.013	0.011	-.010	0.015	-.014	0.008	-.011
	9/2	2	-.182	0.242	-.193	0.211	-.195	0.219	-.191	0.261	-.185	0.197
	9/2	4	-.058	-.053	-.067	-.001	-.063	-.029	-.062	-.018	-.059	-.017
	9/2	6	-.027	0.072	-.005	0.019	-.010	0.009	-.025	0.024	-.006	0.008
	9/2	2*	0.044	0.032	0.052	0.039	0.052	0.041	0.059	0.053	0.049	0.033
	9/2	4*	-.018	-.055	-.035	0.128	-.035	0.129	-.016	0.085	-.036	0.135
	9/2	5	-.044	-.021	-.040	-.012	-.038	-.031	-.044	-.049	-.035	-.019
	9/2	8	0.020	0.060	0.018	0.010	0.019	0.018	0.020	0.044	0.017	0.008
	11/2	0	-.483	0.497	-.436	-.000	-.469	0.003	-.496	0.153	-.445	-.064
	11/2	2	-.075	0.057	-.060	-.187	-.063	-.136	-.073	-.108	-.058	-.159
	11/2	4	-.103	0.110	-.087	-.007	-.087	-.020	-.104	-.002	-.077	-.023
	11/2	6	0.006	-.036	0.019	-.103	0.023	-.106	0.015	-.076	0.019	-.098
	11/2	2*	-.098	-.071	-.112	-.079	-.111	-.088	-.108	-.102	-.105	-.077
	11/2	4*	-.000	0.151	-.001	0.145	-.001	0.204	-.002	0.192	0.002	0.170
	11/2	5	0.039	0.100	0.030	0.105	0.024	0.106	0.034	0.113	0.023	0.086
	11/2	8	0.007	-.042	-.010	-.005	-.002	0.004	0.010	-.007	-.003	0.036
	15/2	2	-.125	0.166	-.121	-.023	-.137	-.022	-.136	0.025	-.119	-.040
	15/2	4	0.015	-.037	0.006	-.011	0.005	-.023	0.008	-.023	0.005	-.015
	15/2	6	0.022	-.029	0.005	0.028	0.009	0.041	0.018	0.014	0.008	0.031
	15/2	2*	-.028	-.005	-.025	-.029	-.026	-.027	-.028	-.028	-.072	-.027
	15/2	4*	0.056	-.035	0.041	0.044	0.047	0.033	0.059	0.018	0.040	0.040
	15/2	5	0.011	0.018	-.002	0.009	-.000	0.016	0.006	0.032	0.000	0.014
	15/2	8	0.010	0.014	0.004	-.003	0.007	-.302	0.012	0.009	0.006	-.003

WAVE FUNCTIONS

47V - 49CR

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
13/2-	7/2	4	-.006	0.520	0.362	0.351	C.219	0.465	-.029	0.614	-.029	-.496
	7/2	6	-0.173	-.199	-.233	0.020	0.097	-.248	0.198	-.136	0.180	0.164
	7/2	4*	0.710	0.128	-.359	0.579	0.668	-.179	0.664	0.158	0.684	-.172
	7/2	5	0.070	-.152	-.197	-.031	-.003	-.202	0.140	-.141	0.096	0.158
	7/2	8	-.018	-.080	-.048	-.083	-.079	-.075	-.024	-.078	-.027	0.089
	3/2	6	-.084	0.084	0.106	0.014	-.025	0.112	-.066	0.096	-.072	-.082
	3/2	5	-.064	-.065	-.008	-.117	-.105	-.04C	-.072	-.106	-.068	0.078
	3/2	8	-.005	0.000	0.003	-.006	-.002	0.0	-.002	-.010	-.001	-.000
	5/2	4	-.453	0.205	0.498	-.222	-.326	0.403	-.510	0.159	-.492	-.192
	5/2	6	-.242	-.308	-.082	-.372	-.361	-.179	-.197	-.266	-.221	0.328
	5/2	4*	0.096	-.608	-.509	-.338	-.165	-.566	0.125	-.530	0.133	0.619
	5/2	5	0.135	-.149	-.229	0.017	0.076	-.214	0.165	-.140	0.164	0.144
	5/2	8	-.074	-.015	0.033	-.066	-.075	0.028	-.073	0.006	-.070	0.016
	9/2	2	0.123	0.204	0.061	0.261	0.211	0.129	0.142	0.217	0.124	-.223
	9/2	4	-.021	0.075	0.078	0.021	0.006	0.081	-.050	0.071	-.034	-.068
	9/2	6	0.070	-.022	-.075	0.056	0.079	-.056	0.084	-.024	0.086	0.011
	9/2	2*	-.079	-.052	0.021	-.117	-.110	-.013	-.092	-.087	-.085	0.056
	9/2	4*	0.011	-.027	-.050	-.011	-.018	-.045	0.029	-.030	0.012	0.042
	9/2	5	0.060	-.036	-.086	0.015	0.049	-.077	0.074	-.057	0.071	0.039
	9/2	8	-.013	0.008	0.010	-.010	-.012	0.009	-.013	0.029	-.013	0.001
	11/2	2	0.271	0.064	-.102	0.247	0.271	-.027	0.232	0.122	0.248	-.098
	11/2	4	0.147	0.046	-.068	0.146	0.182	-.016	0.148	0.054	0.154	-.064
	11/2	6	-.121	-.006	0.081	-.058	-.076	0.062	-.112	-.004	-.092	-.010
	11/2	2*	-.024	-.029	-.019	-.055	-.042	-.029	-.033	-.045	-.022	0.046
	11/2	4*	0.036	0.187	0.095	0.170	0.110	0.144	0.036	0.182	0.028	-.170
	11/2	5	-.005	C.070	0.056	0.043	0.030	0.068	-.006	0.105	-.007	-.063
	11/2	8	-.018	0.098	0.025	-.019	-.028	0.018	-.023	-.009	-.027	-.004
	15/2	2	0.029	-.024	-.052	0.003	0.010	-.029	0.015	-.016	0.022	0.020
	15/2	4	-.052	-.011	0.011	-.034	-.027	-.003	-.026	-.002	-.022	0.015
	15/2	6	-.020	0.039	0.024	0.018	0.007	0.025	-.007	0.030	-.006	-.023
	15/2	2*	0.033	0.041	0.004	0.054	0.053	0.019	0.029	0.058	0.033	-.034
	15/2	4*	-.066	0.012	0.048	-.052	-.070	0.009	-.057	-.034	-.059	0.017
	15/2	5	-.015	0.011	0.010	-.015	-.020	0.011	-.020	0.019	-.018	-.000
	15/2	8	-.014	-.003	0.005	-.001	-.006	0.003	-.011	-.007	-.006	0.030
15/2-	7/2	4	-.159	0.698	-.162	0.647	-.152	0.658	-.197	0.682	-.138	0.663
	7/2	6	0.072	0.323	0.049	0.323	0.071	0.344	0.062	0.341	0.067	0.327
	7/2	4*	0.676	0.108	0.664	0.102	0.660	0.084	0.658	0.129	0.682	0.075
	7/2	5	-.043	-.100	-.073	-.095	-.065	-.093	-.074	-.110	-.063	-.086
	7/2	8	-.074	-.020	-.070	-.003	-.062	0.011	-.047	-.005	-.059	0.013
	3/2	6	-.130	-.032	-.149	-.059	-.149	-.054	-.158	-.057	-.142	-.053
	3/2	8	0.055	-.377	0.063	-.057	0.059	-.064	0.061	-.068	0.052	-.057
	5/2	6	-.389	0.037	-.402	0.060	-.393	0.073	-.374	0.029	-.393	0.089
	5/2	5	-.106	0.374	-.131	0.428	-.114	0.414	-.121	0.369	-.111	0.435
	5/2	8	-.073	-.033	-.074	-.034	-.084	-.035	-.078	-.034	-.076	-.032
	9/2	4	-.115	0.098	-.122	0.120	-.120	0.110	-.125	0.099	-.112	0.110
	9/2	6	0.021	0.110	0.022	0.092	0.025	0.095	0.016	0.109	0.024	0.087
	9/2	4*	-.101	-.258	-.109	-.302	-.110	-.281	-.090	-.269	-.112	-.280
	9/2	5	0.054	-.063	0.066	-.059	0.064	-.064	0.064	-.054	0.057	-.062
	9/2	8	-.012	0.044	-.023	0.045	-.021	0.048	-.019	0.048	-.018	0.042
	11/2	2	0.433	0.174	0.433	0.214	0.441	0.200	0.429	0.194	0.443	0.204
	11/2	4	0.148	C.079	0.157	0.052	0.155	0.047	0.153	0.082	0.148	0.038
	11/2	6	0.020	0.107	0.008	0.107	-.002	0.102	0.004	0.095	-.000	0.093
	11/2	2*	0.041	-.146	0.038	-.147	0.037	-.146	0.045	-.149	0.032	-.139
	11/2	4*	-.083	0.165	-.094	0.157	-.086	0.169	-.094	0.165	-.079	0.170
	11/2	5	0.002	0.111	-.013	0.129	-.012	0.129	-.011	0.109	-.009	0.123
	11/2	8	-.004	-.073	-.010	-.051	-.011	-.061	-.002	-.076	-.010	-.052
	15/2	0	0.240	-.383	0.209	-.042	0.235	-.020	0.257	-.045	0.206	-.015
	15/2	2	0.106	-.082	0.085	-.073	0.092	-.079	0.100	-.082	0.079	-.070
	15/2	4	0.010	-.032	0.009	-.024	0.002	-.031	0.012	-.037	0.003	-.027
	15/2	6	0.023	0.008	-.008	0.012	-.005	0.022	0.011	0.016	-.002	0.018
	15/2	2*	0.032	0.087	0.040	0.083	0.042	0.083	0.034	0.090	0.040	0.074
	15/2	4*	-.035	-.045	-.038	-.041	-.048	-.027	-.037	-.036	-.042	-.027
	15/2	5	-.028	-.062	-.028	-.032	-.026	-.043	-.022	-.060	-.023	-.035
	15/2	8	0.010	-.013	0.006	0.011	0.006	0.005	0.010	-.012	0.005	0.003
17/2-	7/2	6	0.630	-.467	-.384	0.588	0.537	0.505	0.504	-.588	-.487	0.539
	7/2	5	0.343	0.466	-.495	-.328	0.408	-.427	0.478	0.425	-.427	-.383
	7/2	8	0.005	-.102	0.034	0.111	-.018	0.126	-.030	-.121	0.026	0.113
	3/2	8	0.030	0.050	-.043	-.032	0.035	-.053	0.035	0.033	-.038	-.049
	5/2	6	-.462	-.392	0.540	0.158	-.488	0.297	-.483	-.213	0.533	0.282
	5/2	8	-.260	0.065	0.216	-.169	-.260	-.123	-.222	0.162	0.241	-.125
	9/2	4	0.005	0.199	-.071	-.253	0.028	-.221	0.061	0.238	-.033	-.218
	9/2	6	0.031	0.203	-.091	-.222	0.036	-.239	0.081	0.219	-.046	-.218
	9/2	4*	-.271	-.086	0.328	-.055	-.299	0.046	-.280	0.004	0.316	0.022
	9/2	5	0.122	-.001	-.117	0.009	0.116	-.011	0.122	-.010	-.109	-.007
	9/2	8	0.002	-.053	0.003	0.070	0.011	0.071	-.004	-.062	-.005	0.061
	11/2	4	-.168	-.283	0.309	0.155	-.240	0.256	-.261	-.248	0.251	0.219
	11/2	6	-.037	-.065	0.055	0.087	-.049	0.082	-.077	-.089	0.044	0.067
	11/2	4*	-.219	0.413	0.088	-.529	-.196	-.457	-.147	0.409	0.173	-.503
	11/2	5	0.109	-.023	-.086	0.081	0.119	0.073	0.098	-.055	-.195	0.075
	11/2	8	-.097	C.041	0.041	-.036	-.061	-.03C	-.074	0.058	0.053	-.031
	15/2	2	0.110	-.111	-.094	0.129	0.110	0.123	0.121	-.090	-.095	0.136
	15/2	4	0.039	-.057	-.020	0.107	0.054	0.095	0.048	-.059	-.041	0.095
	15/2	6	0.003	0.108	-.030	-.064	0.008	-.063	0.006	0.077	-.012	-.059
	15/2	2*	-.005	-.016	0.022	0.027	-.015	0.025	-.020	-.029	0.015	0.021
	15/2	4*	0.023	0.101	-.063	-.037	0.033	-.087	0.025	0.093	-.039	-.075
	15/2	5	-.024	C.088	-.018	-.061	0.006	-.066	0.008	0.075	-.009	-.057
	15/2	8	0.027	-.014	-.003	0.019	0.010	0.025	0.015	-.034	-.009	0.019

WAVE FUNCTIONS

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J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)
19/2-	7/2	6	0.768	-.302	0.721	0.271
	7/2	8	0.025	0.112	0.025	-.157
	3/2	8	-.116	0.387	-.121	-.085
	5/2	8	-.210	0.095	-.218	-.097
	9/2	6	-.121	-.222	-.133	0.339
	9/2	5	-.109	0.151	-.112	-.343
	9/2	8	0.095	-.114	0.076	0.051
	11/2	4	0.069	-.088	0.081	0.431
	11/2	6	0.051	-.370	0.026	0.301
	11/2	4*	-.459	-.524	-.513	0.458
	11/2	5	0.199	-.211	0.206	0.165
	11/2	8	-.002	0.036	-.017	-.093
	15/2	2	0.180	0.534	0.216	-.318
	15/2	4	0.124	-.006	0.121	-.046
	15/2	6	0.050	-.086	0.029	0.073
	15/2	2*	0.057	-.008	0.051	0.086
	15/2	4*	-.022	-.158	-.043	-.000
	15/2	5	-.044	0.077	-.038	-.102
	15/2	8	0.058	-.075	0.019	0.040
21/2-	7/2	8	-.498	-.155	-.398	-.183
	5/2	8	0.201	0.275	0.315	-.111
	9/2	6	0.388	0.628	0.643	-.283
	9/2	8	0.084	-.093	0.020	0.178
	11/2	6	0.661	-.493	0.272	0.763
	11/2	5	0.099	0.386	0.410	-.291
	11/2	8	0.004	-.055	-.016	0.031
	15/2	4	0.063	0.111	0.219	-.070
	15/2	6	-.013	0.019	0.032	-.004
	15/2	4*	0.310	-.234	0.192	0.357
	15/2	5	-.064	0.161	-.001	-.189
	15/2	8	0.049	-.087	-.006	0.077
23/2-	7/2	8	-.498	0.392	-.471	-.031
	9/2	8	0.107	-.079	0.117	0.185
	11/2	6	0.753	-.052	0.753	0.207
	11/2	8	-.042	0.165	-.027	-.064
	15/2	4	-.099	-.397	-.089	0.735
	15/2	6	0.010	0.458	0.029	-.204
	15/2	4*	0.376	0.628	0.407	-.440
	15/2	5	-.141	0.213	-.149	-.378
	15/2	8	-.012	0.049	0.009	-.011
25/2-	9/2	8	-.120	0.156	-.078	0.456
	11/2	8	0.298	-.633	0.267	-.488
	15/2	6	0.861	-.190	0.820	-.216
	15/2	5	0.390	0.752	0.485	0.712
	15/2	8	0.057	0.014	0.121	-.012
27/2-	11/2	8	0.533	0.757	0.594	0.710
	15/2	6	0.030	-.380	0.795	-.448
	15/2	8	0.165	-.531	0.120	-.543
29/2-	15/2	8	1.000		1.000	
31/2-	15/2	8	1.000		1.000	

J	JP	JN	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)
19/2-	7/2	6	0.740	-.320	0.775	0.147
	7/2	8	0.034	0.114	0.028	-.207
	3/2	8	-.124	0.087	-.126	-.057
	5/2	8	-.223	0.127	-.208	-.077
	9/2	6	-.131	-.237	-.120	0.377
	9/2	5	-.108	0.188	-.117	-.353
	9/2	8	0.082	-.093	0.096	-.008
	11/2	4	0.068	-.066	0.069	0.603
	11/2	6	0.040	-.346	0.060	0.224
	11/2	4*	-.488	-.480	-.436	0.385
	11/2	5	0.204	-.244	0.213	0.064
	11/2	8	-.019	0.034	-.016	-.075
	15/2	2	0.204	0.533	0.175	-.200
	15/2	4	0.126	-.015	0.124	-.079
	15/2	6	0.029	-.126	0.047	0.044
	15/2	2*	0.051	0.014	0.050	0.135
	15/2	4*	-.023	-.190	-.011	-.110
	15/2	5	-.045	0.074	-.051	-.082
	15/2	8	0.032	-.048	0.058	0.039
21/2-	7/2	8	-.485	-.047	-.502	-.179
	5/2	8	0.222	0.272	0.275	-.137
	9/2	6	0.430	0.578	0.622	-.392
	9/2	8	0.101	-.144	0.046	0.144
	11/2	6	0.597	-.533	0.372	0.702
	11/2	5	0.199	0.400	0.287	-.364
	11/2	8	-.005	-.061	-.028	0.056
	15/2	4	0.122	0.150	0.140	-.177
	15/2	6	0.051	-.011	0.035	-.003
	15/2	4*	0.312	-.251	0.203	0.272
	15/2	5	-.091	0.176	0.006	-.186
	15/2	8	0.037	-.066	0.011	0.078
23/2-	7/2	8	-.492	-.158	-.515	0.039
	9/2	8	0.120	0.144	0.117	0.194
	11/2	6	0.749	0.146	0.752	0.175
	11/2	8	-.030	-.068	-.045	0.011
	15/2	4	-.084	0.669	-.076	0.796
	15/2	6	0.007	-.317	-.013	-.185
	15/2	4*	0.390	-.510	0.353	-.366
	15/2	5	-.148	-.347	-.150	-.357
	15/2	8	0.009	-.030	-.006	-.030
25/2-	9/2	8	-.082	0.224	-.074	0.550
	11/2	8	0.358	-.592	0.306	-.380
	15/2	6	0.835	-.087	0.844	-.178
	15/2	5	0.392	0.769	0.426	0.721
	15/2	8	0.117	0.009	0.080	0.004
27/2-	11/2	8	0.569	0.730	0.542	0.750
	15/2	6	0.810	-.420	0.825	-.391
	15/2	8	0.139	-.539	0.159	-.533
29/2-	15/2	8	1.000		1.000	
31/2-	15/2	8	1.000		1.000	

J	JP	JN	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
19/2-	7/2	6	0.732	0.365
	7/2	8	0.032	-.097
	3/2	8	-.113	-.090
	5/2	8	-.212	-.138
	9/2	6	-.129	0.230
	9/2	5	-.100	-.197
	9/2	8	0.071	0.086
	11/2	4	0.064	0.092
	11/2	6	0.030	0.322
	11/2	4*	-.518	0.499
	11/2	5	0.193	0.244
	11/2	8	-.016	-.038
	15/2	2	0.209	-.515
	15/2	4	0.115	0.007
	15/2	6	0.023	0.102
	15/2	2*	0.046	-.005
	15/2	4*	-.026	0.163
	15/2	5	-.037	-.072
	15/2	8	0.026	0.043
21/2-	7/2	8	-.452	-.026
	5/2	8	0.233	0.277
	9/2	6	0.438	0.562
	9/2	8	0.090	-.130
	11/2	6	0.601	-.542
	11/2	5	0.222	0.421
	11/2	8	-.004	-.051
	15/2	4	0.128	0.153
	15/2	6	0.046	0.000
	15/2	4*	0.324	-.256
	15/2	5	-.086	0.156
	15/2	8	0.031	-.057
23/2-	7/2	8	-.467	-.216
	9/2	8	0.112	0.127
	11/2	6	0.759	0.164
	11/2	8	-.026	-.082
	15/2	4	-.081	0.619
	15/2	6	0.016	-.308
	15/2	4*	0.407	-.567
	15/2	5	-.139	-.321
	15/2	8	0.008	-.026
25/2-	9/2	8	-.075	0.215
	11/2	8	0.348	-.592
	15/2	6	0.834	-.111
	15/2	5	0.409	0.768
	15/2	8	0.101	0.006
27/2-	11/2	8	0.573	0.754
	15/2	6	0.810	-.462
	15/2	8	0.123	-.467
29/2-	15/2	8	1.000	
31/2-	15/2	8	1.000	

WAVE FUNCTIONS

48V - 48V

J	JP	JN	42SC-INT		54CO-INT		48SC-INT		42SC*-INT		48SC*-INT	
			A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)
0+	7/2	7/2	C.875	0.0	0.849	0.0	0.853	0.0	0.872	0.0	C.849	-.139
	3/2	3/2	-.126	0.469	-.122	0.610	-.110	0.415	-.119	-.597	-.097	0.500
	5/2	5/2	-.376	-.419	-.431	-.327	-.427	-.442	-.385	0.339	-.482	-.504
	9/2	9/2	-.109	-.473	-.C85	-.577	-.077	-.432	-.100	0.568	-.073	-.350
	11/2	11/2	-.253	0.604	-.267	0.433	-.269	0.649	-.257	-.453	-.217	0.592
	15/2	15/2	-.020	-.127	0.023	-.024	0.007	-.158	-.019	0.035	-.005	-.108
1+	7/2	7/2	0.499	0.0	0.482	0.0	0.559	0.0	0.546	0.0	0.532	0.0
	7/2	5/2	-.389	0.531	-.379	-.378	-.346	0.451	-.368	-.420	-.354	-.461
	7/2	9/2	-.093	-.208	-.097	0.264	-.084	-.284	-.100	0.293	-.077	0.247
	3/2	3/2	-.063	0.0	-.056	0.0	-.064	0.0	-.061	0.0	-.056	0.0
	3/2	5/2	-.310	-.412	-.334	0.535	-.310	-.461	-.317	0.486	-.313	0.472
	5/2	7/2	0.389	0.531	0.379	-.378	0.346	0.451	0.368	-.420	0.354	-.461
	5/2	3/2	0.310	-.412	0.334	0.535	0.310	-.461	0.317	0.486	0.313	0.472
	5/2	5/2	-.454	0.0	-.446	0.0	-.445	0.0	-.417	0.0	-.473	0.0
	9/2	7/2	0.093	-.208	0.097	0.264	0.084	-.284	0.100	0.293	0.077	0.247
	9/2	9/2	0.026	0.0	0.025	0.0	0.015	0.0	0.009	0.0	0.018	0.0
	9/2	11/2	0.103	0.070	0.106	-.037	0.103	0.057	0.103	-.029	0.092	-.055
	11/2	9/2	-.103	0.070	-.106	-.037	-.103	0.057	-.103	-.029	-.092	-.055
	11/2	11/2	-.072	0.0	-.111	0.0	-.137	0.0	-.103	0.0	-.116	0.0
	15/2	15/2	-.031	0.0	-.002	0.0	-.006	0.0	-.027	0.0	-.007	0.0
2+	7/2	7/2	0.636	0.0	-.556	0.0	0.565	0.0	0.624	0.0	-.538	0.0
	7/2	3/2	-.123	0.462	0.156	0.458	-.155	-.445	-.133	0.478	0.149	0.433
	7/2	5/2	-.276	-.329	0.275	-.323	-.291	0.336	-.285	-.305	0.295	-.363
	7/2	9/2	0.032	0.182	-.033	0.144	0.026	-.152	0.030	0.227	-.024	0.126
	7/2	11/2	0.003	0.212	-.064	0.187	0.072	-.211	0.023	0.203	-.067	0.181
	3/2	7/2	-.123	-.462	0.156	-.458	-.155	0.444	-.133	-.478	0.149	-.433
	3/2	3/2	0.041	0.0	-.010	0.0	0.019	0.0	0.013	0.0	-.013	0.0
	3/2	5/2	-.233	-.227	0.260	-.279	-.250	0.242	-.243	-.217	0.253	-.267
	5/2	7/2	0.276	-.329	-.275	-.323	0.291	0.336	0.285	-.305	-.295	-.363
	5/2	3/2	0.233	-.227	-.260	-.279	0.250	0.242	0.243	-.218	-.253	-.267
	5/2	5/2	-.496	0.0	0.547	0.0	-.528	0.0	-.491	0.0	0.562	0.0
	5/2	9/2	0.012	0.213	-.050	0.224	0.038	-.244	0.001	0.191	-.041	0.240
	9/2	7/2	-.032	0.182	0.033	0.144	-.026	-.152	-.030	0.227	0.024	0.126
	9/2	5/2	0.012	-.213	-.C50	-.224	0.038	0.244	0.001	-.191	-.041	-.240
	9/2	9/2	0.041	0.0	-.045	0.0	0.050	0.0	0.045	0.0	-.047	0.0
	9/2	11/2	0.124	-.004	-.106	-.037	0.110	0.035	0.124	-.002	-.098	-.037
	11/2	7/2	0.003	-.212	-.064	-.187	0.072	0.212	0.023	-.203	-.067	-.181
	11/2	9/2	-.124	-.004	0.106	-.037	-.110	0.035	-.124	-.002	0.098	-.037
	11/2	11/2	-.131	0.0	0.127	0.0	-.132	0.0	-.128	0.0	0.116	0.0
	11/2	15/2	-.035	0.056	-.007	0.034	0.003	-.049	-.026	0.038	-.001	0.039
	15/2	11/2	-.035	-.056	-.007	-.034	0.003	0.049	-.026	-.038	-.001	-.039
	15/2	15/2	-.019	0.0	0.004	0.0	-.006	0.0	-.019	0.0	0.005	0.0
3+	7/2	7/2	-.347	0.0	-.272	0.0	-.351	0.0	0.477	0.0	-.247	0.0
	7/2	3/2	0.180	-.127	0.235	-.162	0.219	-.129	-.217	-.171	0.222	-.121
	7/2	5/2	0.361	0.644	0.323	0.612	0.319	0.619	-.309	0.620	0.320	0.632
	7/2	9/2	-.064	-.057	-.082	-.073	-.078	-.075	0.040	-.064	-.095	-.064
	7/2	11/2	-.220	0.123	-.204	0.159	-.211	0.194	0.203	0.160	-.183	0.172
	3/2	7/2	0.180	0.127	0.235	0.162	0.219	0.129	-.217	0.171	0.222	0.121
	3/2	3/2	-.014	0.0	-.061	0.0	-.046	0.0	0.057	0.0	-.047	0.0
	3/2	5/2	0.117	0.134	0.149	0.149	0.152	0.139	-.178	0.141	0.135	0.142
	3/2	9/2	-.002	0.057	0.016	0.083	0.009	0.078	0.002	0.083	0.016	0.070
	5/2	7/2	-.361	0.644	-.323	0.612	-.319	0.619	0.309	0.620	-.320	0.632
	5/2	3/2	-.117	0.135	-.149	0.149	-.152	0.139	0.178	0.141	-.135	0.142
	5/2	5/2	0.597	0.0	0.640	0.0	0.603	0.0	-.505	0.0	0.686	0.0
	5/2	9/2	-.090	-.038	-.104	-.036	-.118	-.021	0.130	-.039	-.097	-.028
	5/2	11/2	-.077	0.153	-.052	0.180	-.095	0.158	0.069	0.153	-.062	0.146
	9/2	7/2	0.064	-.057	0.082	-.073	0.078	-.075	-.040	-.064	0.095	-.064
	9/2	3/2	0.002	0.057	-.016	0.083	-.009	0.078	-.002	0.083	-.016	0.070
	9/2	5/2	-.090	0.038	-.104	0.036	-.118	0.021	0.130	0.039	-.097	0.028
	9/2	9/2	-.094	0.0	-.092	0.0	-.089	0.0	0.100	0.0	-.080	0.0
	9/2	11/2	-.068	0.052	-.065	0.049	-.074	0.057	0.070	0.053	-.059	0.054
	9/2	15/2	0.043	-.039	0.023	-.047	0.025	-.042	-.034	-.037	0.018	-.034
	11/2	7/2	-.220	-.123	-.204	-.159	-.211	-.194	0.203	-.160	-.183	-.172
	11/2	5/2	0.077	0.153	0.052	0.180	0.095	0.158	-.069	0.153	0.062	0.146
	11/2	9/2	0.068	0.052	0.065	0.049	0.074	0.057	-.070	0.053	0.059	0.054
	11/2	11/2	0.116	0.0	0.065	0.0	0.084	0.0	-.115	0.0	0.050	0.0
	11/2	15/2	-.021	0.004	-.037	0.021	-.036	0.033	0.022	0.024	-.025	0.024
	15/2	9/2	-.043	-.339	-.023	-.047	-.025	-.042	0.034	-.037	-.018	-.034
	15/2	11/2	-.021	-.304	-.037	-.021	-.036	-.033	0.022	-.024	-.025	-.024
	15/2	15/2	-.006	0.0	0.006	0.0	0.005	0.0	-.002	0.0	0.005	0.0
4+	7/2	7/2	0.0	0.628	0.0	0.563	0.0	0.606	0.0	0.655	0.0	0.566
	7/2	3/2	-.052	0.176	-.022	0.191	-.038	0.185	-.025	0.188	-.032	0.178
	7/2	5/2	0.609	-.013	0.606	0.011	0.606	-.005	0.608	-.016	0.614	-.000
	7/2	9/2	-.042	-.170	-.017	-.168	-.020	-.175	-.016	-.173	-.018	-.163
	7/2	11/2	0.252	0.044	0.217	0.012	0.229	0.029	0.239	0.051	0.210	0.021
	7/2	15/2	0.018	-.034	-.014	-.009	-.016	-.018	-.001	-.034	-.012	-.012
	3/2	7/2	0.052	0.176	0.022	0.191	0.038	0.185	0.025	0.187	0.032	0.178
	3/2	5/2	0.183	-.200	0.235	-.247	0.211	-.227	0.212	-.215	0.221	-.234
	3/2	9/2	0.096	0.095	0.110	0.075	0.106	0.082	0.103	0.090	0.099	0.071
	3/2	11/2	-.017	-.084	-.030	-.066	-.034	-.072	-.027	-.083	-.029	-.060
	5/2	7/2	0.609	0.013	0.606	-.011	0.606	0.005	0.608	0.016	0.614	0.000
	5/2	3/2	0.183	0.200	0.235	0.247	0.211	0.227	0.212	0.215	0.221	0.234
	5/2	5/2	0.0	0.571	0.0	0.619	0.0	0.577	0.0	0.501	0.0	0.639
	5/2	9/2	0.042	0.052	0.037	0.049	0.036	0.057	0.031	0.076	0.034	0.039
	5/2	11/2	0.109	0.023	0.111	0.018	0.123	0.031	0.105	0.049	0.118	0.020
	9/2	7/2	-.042	0.170	-.017	0.168	-.020	0.175	-.016	0.173	-.014	0.163
	9/2	3/2	0.096	-.095	0.110	-.075	0.106	-.082	0.103	-.090	0.099	-.071
	9/2	5/2	-.042	0.052	-.037	0.049	-.036	0.057	-.031	0.076	-.034	0.039
	9/2	9/2	0.0	0.021	0.C	0.016	0.0	0.017	0.0	0.027	0.0	0.009
	9/2	11/2	0.033	0.034	0.037	0.035	0.043	0.044	0.044	0.046	3.040	0.037
	9/2	15/2	-.028	-.046	-.031	-.020	-.033	-.034	-.026	-.055	-.077	-.025
	11/2	7/2	-.252	0.044	-.217	0.012	-.229	0.029	-.239	0.051	-.210	0.021
	11/2	3/2	0.017	-.084	0.030	-.066	0.034	-.072	0.027	-.083	0.029	-.060
	11/2	5/2	0.109	-.023	0.111	-.018	0.123	-.031	0.105	-.049	0.118	-.020
	11/2	9/2	0.033	-.034	0.037	-.035	0.043	-.044	0.044	-.046	0.040	-.037
	11/2	11/2	0.0	-.158	0.0	-.131	0.0	-.156	0.0	-.165	0.0	-.130
	11/2	15/2	0.042	0.023	0.027	0.017	0.035	0.026	0.041	0.036	0.029	0.018
	15/2	7/2	-.018	-.034	0.014	-.009	0.016	-.018	0.001	-.034	0.012	-.012
	15/2	9/2	-.028	0.046	-.031	0.020	-.033	0.034	-.026	0.055	-.027	0.025
	15/2	11/2	-.042	0.023	-.C27	0.017	-.035	0.026	-.041	0.036	-.029	0.018
	15/2	15/2	0.0	0.030	0.0	0.011	0.0	0.021	0.0	0.032	0.0	0.015

WAVE FUNCTIONS

48V - 48V

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
5+	7/2	7/2	0.448	0.0	0.347	0.0	0.383	C.0	0.351	0.0	0.359	0.0
	7/2	3/2	-.188	-.178	-.223	-.244	-.214	-.228	-.230	-.277	-.206	-.220
	7/2	5/2	-.389	0.610	-.397	0.581	-.393	0.584	-.397	0.579	-.403	0.599
	7/2	9/2	0.064	0.024	0.055	-.011	0.065	-.012	0.081	-.021	0.048	-.002
	7/2	11/2	0.195	0.182	0.237	0.163	0.225	0.181	0.236	0.151	0.194	0.169
	7/2	15/2	-.001	-.080	0.005	-.065	-.002	-.064	-.018	-.058	-.002	-.053
	3/2	7/2	-.188	0.178	-.223	0.244	-.214	0.228	-.230	0.277	-.206	0.220
	3/2	9/2	0.072	0.032	C.096	0.034	0.094	0.038	0.092	0.032	0.086	0.035
	3/2	11/2	-.039	-.084	-.017	-.108	-.021	-.105	-.020	-.107	-.019	-.096
	5/2	7/2	0.389	0.610	0.397	0.581	0.393	0.584	0.397	0.578	0.403	0.599
	5/2	5/2	0.542	0.0	0.557	0.0	0.530	0.0	0.494	0.0	0.574	0.0
	5/2	9/2	-.089	0.078	-.117	0.101	-.107	0.103	-.099	0.102	-.108	0.099
	5/2	11/2	-.032	0.195	-.024	0.212	-.029	0.209	-.026	0.190	-.014	0.196
	5/2	15/2	0.003	-.031	0.000	-.024	-.004	-.019	-.014	-.015	-.004	-.017
	9/2	7/2	-.064	0.024	-.055	-.011	-.065	-.012	-.081	-.021	-.048	-.002
	9/2	3/2	-.072	0.032	-.096	0.034	-.094	0.038	-.092	0.032	-.086	0.035
	9/2	5/2	-.089	-.078	-.117	-.101	-.107	-.103	-.099	-.102	-.108	-.099
	9/2	9/2	-.034	0.0	-.040	0.0	-.037	0.0	-.040	0.0	-.026	0.0
	9/2	11/2	0.069	0.034	0.068	0.040	0.074	0.036	0.066	0.034	0.064	0.032
	9/2	15/2	-.027	-.027	-.021	-.037	-.028	-.039	-.036	-.031	-.022	-.031
	11/2	7/2	0.195	-.182	0.207	-.163	C.225	-.181	0.236	-.152	0.194	-.169
	11/2	3/2	-.039	0.084	-.017	0.108	-.021	0.105	-.020	0.107	-.019	0.096
	11/2	5/2	0.032	0.195	0.024	0.212	0.029	0.209	0.026	0.190	0.014	0.196
	11/2	9/2	-.069	0.034	-.068	0.040	-.074	0.036	-.066	0.034	-.064	0.032
	11/2	11/2	0.007	0.0	-.003	0.0	-.001	0.0	0.015	0.0	-.002	0.0
	11/2	15/2	0.041	0.010	0.037	0.010	0.046	0.015	0.048	0.010	0.033	0.012
	15/2	7/2	-.001	C.080	0.005	0.065	-.002	0.064	-.018	0.058	-.002	0.053
	15/2	5/2	-.003	-.031	-.000	-.024	0.004	-.019	0.014	-.015	0.004	-.017
	15/2	9/2	0.027	-.027	0.021	-.037	0.028	-.039	0.036	-.031	0.022	-.031
	15/2	11/2	0.041	-.010	0.037	-.010	0.046	-.015	0.048	-.010	0.033	-.012
	15/2	15/2	-.007	0.0	-.012	0.0	-.012	0.0	-.011	0.0	-.007	0.0
6+	7/2	7/2	0.625	0.374	-.540	0.437	-.568	0.393	0.626	0.363	0.552	0.459
	7/2	5/2	0.393	-.504	-.455	-.417	-.411	-.458	0.386	-.483	0.457	-.437
	7/2	9/2	0.036	0.238	0.003	0.295	-.016	0.275	0.027	0.280	0.001	0.259
	7/2	11/2	0.036	0.251	0.013	0.238	-.011	0.259	0.033	0.256	-.007	0.244
	7/2	15/2	0.104	0.096	-.090	0.075	-.105	0.065	0.113	0.060	0.085	0.073
	3/2	9/2	0.136	0.011	-.151	0.019	-.145	-.001	0.146	-.005	0.137	0.015
	3/2	11/2	0.033	-.075	-.052	-.104	-.038	-.113	0.039	-.100	0.041	-.102
	3/2	15/2	0.027	0.001	-.019	-.019	-.019	-.013	0.022	-.008	0.016	-.010
	5/2	7/2	-.393	0.504	0.455	0.417	0.411	0.458	-.386	0.483	-.457	0.437
	5/2	9/2	0.042	-.021	-.054	-.006	-.051	-.019	0.041	-.025	0.052	-.010
	5/2	11/2	-.316	-.133	C.318	-.208	0.331	-.163	-.317	-.133	-.315	-.199
	5/2	15/2	0.050	C.034	-.045	0.045	-.059	0.059	0.057	0.046	0.050	0.058
	9/2	7/2	-.036	-.238	-.003	-.295	0.016	-.275	-.027	-.280	-.001	-.259
	9/2	3/2	-.136	-.011	0.151	-.019	0.145	0.001	-.146	0.005	-.137	-.015
	9/2	5/2	0.042	-.021	-.054	-.006	-.051	-.019	0.041	-.025	0.052	-.010
	9/2	9/2	-.095	-.038	0.083	-.036	0.081	-.030	-.090	-.034	-.073	-.033
	9/2	11/2	0.067	0.395	-.039	0.101	-.052	0.101	0.062	0.097	0.041	0.095
	9/2	15/2	-.003	-.025	-.001	-.024	-.001	-.026	-.004	-.025	0.003	-.020
	11/2	7/2	0.036	0.251	0.013	0.238	-.011	0.259	0.033	0.256	-.007	0.244
	11/2	3/2	0.033	-.075	-.052	-.104	-.038	-.113	0.039	-.100	0.041	-.102
	11/2	5/2	0.316	0.133	-.318	0.208	-.331	0.163	0.317	0.133	0.315	0.199
	11/2	9/2	-.067	-.095	0.039	-.101	0.052	-.101	-.062	-.097	-.041	-.095
	11/2	11/2	-.018	0.097	0.056	0.120	0.046	0.106	-.031	0.107	-.046	0.084
	11/2	15/2	0.050	0.073	-.021	0.067	-.034	0.073	0.049	0.073	0.025	0.063
	15/2	7/2	0.104	0.096	-.090	0.075	-.105	0.065	0.113	0.060	0.085	0.073
	15/2	3/2	0.027	0.001	-.019	-.019	-.019	-.013	0.022	-.008	0.016	-.010
	15/2	5/2	-.050	-.034	0.045	-.045	0.059	-.059	-.057	-.046	-.050	-.058
	15/2	9/2	0.003	0.025	0.001	0.024	0.001	0.026	0.004	0.025	-.003	0.020
	15/2	11/2	0.050	0.373	-.021	0.067	-.034	0.073	0.049	0.073	0.025	0.063
	15/2	15/2	-.038	-.051	0.003	-.041	0.015	-.044	-.036	-.051	-.011	-.035
7+	7/2	7/2	0.847	0.0	0.797	0.0	0.803	-.000	0.846	0.0	0.814	0.0
	7/2	9/2	0.074	-.102	0.089	0.095	0.096	-.133	0.084	-.192	0.089	-.115
	7/2	11/2	0.106	0.494	0.123	-.391	0.121	0.469	0.108	0.474	0.110	0.426
	7/2	15/2	0.052	-.166	0.067	0.167	0.070	-.162	0.051	-.153	0.061	-.145
	3/2	11/2	-.140	-.032	-.162	0.066	-.158	-.042	-.156	-.036	-.153	-.048
	3/2	15/2	0.007	0.052	-.006	-.042	-.007	0.043	-.001	0.039	-.006	0.040
	5/2	9/2	-.087	-.367	-.093	0.446	-.086	-.396	-.090	-.386	-.086	-.434
	5/2	11/2	-.284	0.261	-.316	-.315	-.313	0.256	-.272	0.237	-.315	0.293
	5/2	15/2	0.074	C.064	0.093	-.036	0.090	0.061	0.065	0.058	0.080	0.039
	9/2	7/2	-.074	-.102	-.089	0.095	-.096	-.133	-.084	-.192	-.089	-.115
	9/2	5/2	-.087	0.367	-.093	-.446	-.086	0.396	-.090	0.386	-.086	0.434
	9/2	9/2	0.028	0.0	0.011	0.0	0.009	0.0	0.027	0.0	0.011	0.0
	9/2	11/2	0.079	-.367	0.095	0.047	0.090	-.054	0.088	-.028	0.082	-.039
	9/2	15/2	-.022	-.051	-.011	0.048	-.015	-.056	-.023	-.049	-.013	-.047
	11/2	7/2	0.106	-.494	0.123	0.391	0.121	-.469	0.108	-.474	0.110	-.426
	11/2	3/2	-.140	0.032	-.162	-.066	-.158	0.042	-.156	0.036	-.153	0.048
	11/2	5/2	0.284	0.261	0.316	-.315	0.313	0.256	0.272	0.237	0.315	0.293
	11/2	9/2	-.079	-.067	-.095	0.047	-.090	-.054	-.088	-.028	-.082	-.039
	11/2	11/2	-.026	0.0	-.021	0.0	-.015	0.0	-.023	0.0	-.018	0.0
	11/2	15/2	0.023	-.003	0.042	-.001	0.039	0.015	0.029	0.012	0.031	0.012
	15/2	7/2	0.052	0.167	0.067	-.167	0.070	0.162	0.051	0.153	0.061	0.145
	15/2	3/2	0.007	-.052	-.006	0.042	-.007	-.043	-.001	-.039	-.006	-.040
	15/2	5/2	-.074	0.064	-.093	-.036	-.090	0.061	-.065	0.058	-.080	0.039
	15/2	9/2	0.022	-.051	0.011	0.048	0.015	-.056	0.023	-.049	0.013	-.047
	15/2	11/2	0.023	0.003	0.042	0.001	0.039	-.015	0.029	-.012	0.031	-.012
	15/2	15/2	-.025	0.0	-.005	0.0	-.016	0.0	-.027	0.0	-.012	0.0

WAVE FUNCTIONS

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J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
8+	7/2	9/2	-.323	C.365	0.354	0.460	0.330	0.309	-.345	0.533	-.342	-.278
	7/2	11/2	0.496	0.455	-.440	0.415	-.478	0.362	0.481	0.386	0.458	-.401
	7/2	15/2	-.041	0.106	0.006	0.036	0.032	-.152	-.047	-.016	-.021	0.138
	3/2	15/2	-.042	0.024	0.048	0.027	0.036	0.095	-.042	0.026	-.036	-.083
	5/2	11/2	-.291	-.197	0.352	-.090	0.307	0.383	-.293	-.012	-.340	-.384
	5/2	15/2	0.214	0.286	-.218	0.251	-.234	0.061	0.219	0.175	0.220	-.080
	9/2	7/2	-.323	-.365	0.354	-.460	0.330	0.309	-.345	-.533	-.342	-.278
	9/2	9/2	0.0	0.008	0.0	0.070	0.0	0.0	0.0	0.095	0.0	0.0
	9/2	11/2	-.119	0.387	0.082	0.067	0.099	-.278	-.103	0.050	-.083	0.267
	9/2	15/2	-.039	-.065	0.021	-.091	0.031	-.112	-.025	-.081	-.023	0.100
	11/2	7/2	-.496	0.455	0.440	0.415	0.478	-.362	-.481	0.386	-.458	0.401
	11/2	5/2	-.291	0.197	0.352	0.090	0.307	0.383	-.293	0.012	-.340	-.384
	11/2	9/2	-.119	-.087	0.082	-.067	0.099	-.278	-.103	-.050	-.083	0.267
	11/2	11/2	0.0	0.140	0.0	0.199	0.0	0.0	0.0	0.186	0.0	0.0
	11/2	15/2	-.022	0.072	-.002	0.085	0.006	-.035	-.025	0.067	-.003	0.031
	15/2	7/2	0.041	0.106	-.006	0.036	-.032	0.152	0.047	-.016	0.021	-.139
	15/2	3/2	0.042	0.024	-.048	0.027	-.036	-.095	0.042	0.026	0.036	0.083
	15/2	5/2	0.214	-.286	-.218	-.251	-.234	0.061	0.219	-.175	0.220	-.080
	15/2	9/2	-.039	0.065	0.021	0.091	0.031	-.112	-.025	0.081	-.023	0.100
	15/2	11/2	0.022	0.072	0.002	0.085	-.006	0.035	0.025	0.067	0.003	-.031
	15/2	15/2	0.0	-.014	0.0	-.033	0.0	0.0	0.0	-.028	0.0	0.0
9+	7/2	11/2	-.649	0.526	0.635	0.477	0.634	-.476	-.651	0.486	0.644	0.516
	7/2	15/2	0.116	0.119	-.111	0.213	-.110	-.216	0.091	0.231	-.094	0.126
	3/2	15/2	-.057	0.173	0.071	0.179	0.070	-.186	-.074	0.192	0.067	0.158
	5/2	15/2	-.208	0.304	0.227	0.263	0.229	-.256	-.200	0.223	0.217	0.316
	9/2	9/2	0.0	0.219	0.0	0.300	0.0	-.278	0.0	0.287	0.0	0.245
	9/2	11/2	0.128	0.192	-.152	0.233	-.155	-.228	0.139	0.234	-.145	0.205
	9/2	15/2	0.049	-.089	-.065	-.078	-.063	0.087	0.054	-.080	-.055	-.075
	11/2	7/2	0.649	0.526	-.635	0.477	-.634	-.476	0.651	0.486	-.644	0.516
	11/2	9/2	0.128	-.192	-.152	-.233	-.155	0.228	0.139	-.234	-.145	-.205
	11/2	11/2	0.0	0.093	0.0	0.164	0.0	-.190	0.0	0.140	0.9	0.130
	11/2	15/2	0.001	0.105	-.010	0.088	-.012	-.099	0.005	0.101	-.008	0.082
	15/2	7/2	-.116	0.119	0.111	0.213	0.110	-.216	-.091	0.231	0.094	0.126
	15/2	3/2	0.057	0.173	-.071	0.179	-.070	-.186	0.074	0.192	-.067	0.158
	15/2	5/2	-.208	-.304	0.227	-.263	0.229	0.256	-.200	-.223	0.217	-.316
	15/2	9/2	0.049	0.089	-.065	0.078	-.063	-.087	0.054	0.080	-.055	0.075
	15/2	11/2	-.001	0.105	0.010	0.088	0.012	-.099	-.005	0.101	0.008	0.082
	15/2	15/2	0.0	0.073	0.0	0.015	0.0	-.009	0.0	0.054	0.0	0.017
10+	7/2	15/2	0.472	0.540	0.420	-.522	0.470	0.532	0.483	0.541	0.449	0.519
	5/2	15/2	-.251	-.280	-.279	0.292	-.254	-.291	-.257	-.255	-.268	-.319
	9/2	11/2	0.247	0.272	0.338	-.318	0.286	0.283	0.303	0.288	0.308	0.297
	9/2	15/2	-.089	0.117	-.077	-.087	-.083	0.085	-.069	0.096	-.075	0.077
	11/2	9/2	-.247	0.272	-.338	-.318	-.286	0.283	-.303	0.288	-.308	0.297
	11/2	11/2	0.516	0.0	0.488	0.0	0.487	0.0	0.444	0.0	0.490	0.0
	11/2	15/2	0.105	0.207	0.072	-.183	0.077	0.211	0.072	0.222	0.069	0.186
	15/2	7/2	0.472	-.540	0.420	0.522	C.470	-.532	0.483	-.541	0.449	-.519
	15/2	5/2	0.251	-.280	0.279	0.292	0.254	-.291	0.257	-.255	0.268	-.319
	15/2	9/2	0.089	0.117	0.077	-.087	0.083	0.085	0.069	0.096	0.075	0.077
	15/2	11/2	0.105	-.207	0.072	0.183	0.077	-.211	0.072	-.222	0.069	-.186
	15/2	15/2	-.048	0.0	-.047	0.0	-.055	0.0	-.042	0.0	-.044	0.0
11+	7/2	15/2	0.497	-.674	0.475	-.648	0.487	-.657	0.500	-.668	0.477	-.668
	9/2	15/2	-.190	0.049	-.194	0.052	-.197	0.049	-.154	0.060	-.181	0.048
	11/2	11/2	0.648	0.0	0.685	0.0	0.662	0.0	0.639	0.0	0.688	0.C
	11/2	15/2	0.037	-.208	0.029	-.278	0.041	-.257	0.047	-.225	0.037	-.227
	15/2	7/2	0.497	0.674	0.475	0.640	0.487	0.657	0.500	0.668	0.477	0.668
	15/2	9/2	0.190	0.049	0.194	0.052	0.197	0.049	0.194	0.060	0.181	0.048
	15/2	11/2	0.037	0.208	0.029	0.278	0.041	0.257	0.047	0.225	0.037	0.227
	15/2	15/2	-.104	0.0	-.050	0.0	-.074	0.0	-.106	0.0	-.060	0.0
12+	9/2	15/2	0.217	-.628	0.298	0.634	0.272	-.619	0.361	-.618	0.264	-.622
	11/2	15/2	0.673	-.322	0.641	0.311	0.653	-.334	0.608	-.335	0.656	-.331
	15/2	9/2	0.216	0.628	0.298	-.634	0.272	0.619	0.361	0.618	0.264	0.622
	15/2	11/2	-.673	-.322	-.641	0.311	-.653	-.334	-.608	-.335	-.656	-.331
	15/2	15/2	0.0	0.373	0.0	-.052	0.0	0.098	0.0	0.102	0.0	0.079
13+	11/2	15/2	0.707	0.624	0.707	0.591	0.707	0.551	0.707	0.590	0.707	0.618
	15/2	11/2	-.707	0.624	-.707	0.591	-.707	0.551	-.707	0.590	-.707	0.618
	15/2	15/2	0.0	-.470	0.0	-.550	0.0	-.627	0.0	-.551	0.0	-.487
14+	15/2	15/2	1.000		1.000		1.000		1.000		1.000	
15+	15/2	15/2	1.000		1.000		1.000		1.000		1.000	

WAVE FUNCTIONS

48CR - 48CR

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
0+	0	0	0.749	0.0	0.713	0.0	0.723	0.0	0.746	0.0	0.731	0.0
	2	2	0.545	0.0	0.594	0.0	0.584	0.0	0.549	0.0	0.587	0.0
	2	2*	0.0	0.672	0.0	0.678	0.0	0.601	0.0	0.658	0.0	0.620
	4	4	0.195	0.0	0.183	0.0	0.176	0.0	0.193	0.0	0.160	0.0
	4	4*	0.0	-.219	0.0	-.201	0.0	-.372	0.0	-.260	0.0	-.339
	6	6	0.123	0.0	0.072	0.0	0.093	0.0	0.120	0.0	0.082	0.0
	2*	2	0.0	0.672	0.0	0.678	0.0	0.601	0.0	0.658	0.0	0.620
	2*	2*	0.121	0.0	0.140	0.0	0.131	0.0	0.126	0.0	0.122	0.0
	4*	4	0.0	-.219	0.0	-.201	0.0	-.372	0.0	-.260	0.0	-.339
	4*	4*	0.252	0.0	0.274	0.0	0.271	0.0	0.256	0.0	0.263	0.0
	5	5	0.093	0.0	0.068	0.0	0.072	0.0	0.085	0.0	0.064	0.0
	8	8	0.039	0.0	0.016	0.0	0.024	0.0	0.039	0.0	0.019	0.0
1+	2	2	0.757	0.0	0.741	0.0	0.694	0.0	0.735	0.0	0.752	0.0
	2	2*	0.0	-.284	0.0	-.438	0.0	-.381	0.0	-.419	0.0	-.413
	4	4	0.238	0.0	0.222	0.0	0.260	0.0	0.240	0.0	0.208	0.0
	4	4*	0.0	0.616	0.0	0.547	0.0	0.568	0.0	0.547	0.0	0.555
	4	5	0.0	-.117	0.0	-.082	0.0	-.144	0.0	-.125	0.0	-.119
	6	6	0.194	0.0	0.190	0.0	0.258	0.0	0.247	0.0	0.195	0.0
	6	5	0.0	-.160	0.0	-.044	0.0	-.108	0.0	-.099	0.0	-.081
	2*	2	0.0	-.284	0.0	-.438	0.0	-.381	0.0	-.419	0.0	-.413
	2*	2*	0.104	0.0	0.124	0.0	0.120	0.0	0.124	0.0	0.111	0.0
	4*	4	0.0	0.616	0.0	0.547	0.0	0.568	0.0	0.547	0.0	0.555
	4*	4*	0.552	0.0	0.582	0.0	0.589	0.0	0.552	0.0	0.574	0.0
	4*	5	-.026	0.0	0.003	0.0	0.002	0.0	0.002	0.0	0.009	0.0
	5	4	0.0	0.117	0.0	0.082	0.0	0.144	0.0	0.125	0.0	0.119
	5	6	0.0	0.160	0.0	0.044	0.0	0.108	0.0	0.099	0.0	0.081
	5	4*	0.026	0.0	-.003	0.0	-.002	0.0	-.002	0.0	-.009	0.0
	5	5	0.113	0.0	0.100	0.0	0.135	0.0	0.120	0.0	0.097	0.0
	8	8	0.053	0.0	0.033	0.0	0.065	0.0	0.078	0.0	0.041	0.0
2+	0	2	0.591	0.0	0.577	0.0	0.580	0.0	0.588	0.0	0.587	0.0
	0	2*	0.0	0.421	0.0	0.425	0.0	0.418	0.0	0.450	0.0	0.408
	2	0	0.591	0.0	0.577	0.0	0.580	0.0	0.588	0.0	0.587	0.0
	2	2	0.0	0.671	0.0	0.659	0.0	0.662	0.0	0.629	0.0	0.683
	2	4	0.0	0.203	0.0	0.213	0.0	0.211	0.0	0.217	0.0	0.202
	2	2*	0.173	0.0	0.195	0.0	0.187	0.0	0.182	0.0	0.181	0.0
	2	4*	-.285	0.0	-.305	0.0	-.307	0.0	-.287	0.0	-.305	0.0
	4	2	0.0	0.203	0.0	0.213	0.0	0.211	0.0	0.217	0.0	0.202
	4	4	0.0	-.099	0.0	-.090	0.0	-.067	0.0	-.117	0.0	-.057
	4	6	0.0	-.026	0.0	-.039	0.0	-.046	0.0	-.059	0.0	-.038
	4	2*	0.063	0.0	0.068	0.0	0.067	0.0	0.065	0.0	0.063	0.0
	4	4*	-.118	0.0	-.124	0.0	-.115	0.0	-.123	0.0	-.108	0.0
	4	5	0.081	0.0	0.069	0.0	0.065	0.0	0.072	0.0	0.059	0.0
	6	4	0.0	-.026	0.0	-.039	0.0	-.046	0.0	-.059	0.0	-.038
	6	6	0.0	0.071	0.0	0.065	0.0	0.080	0.0	0.065	0.0	0.072
	6	4*	0.106	0.0	0.099	0.0	0.107	0.0	0.107	0.0	0.099	0.0
	6	5	0.046	0.0	0.022	0.0	0.027	0.0	0.037	0.0	0.024	0.0
	6	8	0.036	0.0	0.017	0.0	0.025	0.0	0.035	0.0	0.021	0.0
	2*	0	0.0	0.421	0.0	0.425	0.0	0.418	0.0	0.450	0.0	0.438
	2*	2	0.173	0.0	0.195	0.0	0.187	0.0	0.182	0.0	0.181	0.0
	2*	4	0.063	0.0	0.068	0.0	0.067	0.0	0.065	0.0	0.063	0.0
	2*	2*	0.0	-.023	0.0	-.026	0.0	-.025	0.0	-.025	0.0	-.024
	2*	4*	0.0	-.126	0.0	-.139	0.0	-.138	0.0	-.128	0.0	-.134
	4*	2	-.285	0.0	-.305	0.0	-.307	0.0	-.287	0.0	-.305	0.0
	4*	4	-.118	0.0	-.124	0.0	-.115	0.0	-.123	0.0	-.108	0.0
	4*	6	0.106	0.0	0.099	0.0	0.107	0.0	0.107	0.0	0.099	0.0
	4*	2*	0.0	-.126	0.0	-.139	0.0	-.138	0.0	-.128	0.0	-.134
	4*	4*	0.0	0.215	0.0	0.217	0.0	0.246	0.0	0.187	0.0	0.250
	4*	5	0.0	0.091	0.0	0.079	0.0	0.071	0.0	0.076	0.0	0.068
	5	4	-.081	0.0	-.069	0.0	-.065	0.0	-.072	0.0	-.059	0.0
	5	6	-.046	0.0	-.022	0.0	-.027	0.0	-.037	0.0	-.024	0.0
	5	4*	0.0	-.091	0.0	-.079	0.0	-.071	0.0	-.076	0.0	-.068
	5	5	0.0	-.024	0.0	-.010	0.0	-.008	0.0	-.023	0.0	-.037
	8	6	0.036	0.0	0.017	0.0	0.025	0.0	0.035	0.0	0.021	0.0
	8	8	0.0	0.011	0.0	0.004	0.0	0.010	0.0	0.008	0.0	0.008
3+	2	2	0.0	0.0	0.773	0.0	0.0	0.786	0.0	0.793	0.0	0.827
	2	4	0.0	0.631	0.095	0.0	0.0	0.058	0.0	-.002	0.0	0.058
	2	2*	0.407	0.0	0.0	-.550	-.450	0.0	-.547	0.0	0.450	0.0
	2	4*	0.458	0.0	0.0	-.319	-.422	0.0	-.318	0.0	0.440	0.0
	2	5	0.144	0.0	0.0	-.158	-.145	0.0	-.169	0.0	0.140	0.0
	4	2	0.0	-.631	0.095	0.0	0.0	0.058	0.0	-.002	0.0	0.058
	4	4	0.0	0.0	0.138	0.0	0.0	0.143	0.0	0.215	0.0	0.108
	4	6	0.0	0.024	-.078	0.0	0.0	-.112	0.0	-.141	0.0	-.084
	4	2*	-.074	0.0	0.0	0.141	0.111	0.0	0.160	0.0	-.101	0.0
	4	4*	0.110	0.0	0.0	-.151	-.085	0.0	-.125	0.0	0.085	0.0
	4	5	0.003	0.0	0.0	0.003	0.037	0.0	0.024	0.0	-.026	0.0
	6	4	0.0	-.024	-.078	0.0	0.0	-.112	0.0	-.141	0.0	-.084
	6	6	0.0	0.0	0.178	0.0	0.0	0.155	0.0	0.105	0.0	0.122
	6	4*	0.287	0.0	0.0	-.154	-.267	0.0	-.158	0.0	0.250	0.0
	6	5	0.021	0.0	0.0	-.061	-.047	0.0	-.059	0.0	0.038	0.0
	6	8	-.054	0.0	0.0	0.032	0.063	0.0	0.032	0.0	-.050	0.0
	2*	2	-.407	0.0	0.0	0.550	0.450	0.0	0.547	0.0	-.450	0.0
	2*	4	0.074	0.0	0.0	-.141	-.111	0.0	-.160	0.0	0.101	0.0
	2*	2*	0.0	0.0	-.113	0.0	0.0	-.128	0.0	-.151	0.0	-.123
	2*	4*	0.0	-.134	-.231	0.0	0.0	-.236	0.0	-.248	0.0	-.220
	2*	5	0.0	0.099	-.006	0.0	0.0	-.021	0.0	-.043	0.0	-.018
	4*	2	-.458	0.0	0.0	0.319	0.422	0.0	0.318	0.0	-.440	0.0
	4*	4	-.110	0.0	0.0	0.151	0.085	0.0	0.125	0.0	-.085	0.0
	4*	6	-.287	0.0	0.0	0.154	0.267	0.0	0.158	0.0	-.250	0.0
	4*	2*	0.0	0.134	-.231	0.0	0.0	-.236	0.0	-.248	0.0	-.220
	4*	4*	0.0	0.0	0.446	0.0	0.0	0.417	0.0	0.328	0.0	0.394
	4*	5	0.0	0.263	0.002	0.0	0.0	-.028	0.0	-.080	0.0	-.018
	5	2	0.144	0.0	0.0	-.158	-.145	0.0	-.169	0.0	0.140	0.0
	5	4	0.003	0.0	0.0	0.003	0.037	0.0	0.024	0.0	-.026	0.0
	5	6	0.021	0.0	0.0	-.061	-.047	0.0	-.059	0.0	0.038	0.0
	5	2*	0.0	0.099	0.006	0.0	0.0	0.021	0.0	0.043	0.0	0.018
	5	4*	0.0	0.263	-.002	0.0	0.0	0.028	0.0	0.080	0.0	0.018
	5	5	0.0	0.0	0.034	0.0	0.0	0.018	0.0	0.032	0.0	0.009
	5	8	0.0	0.366	-.002	0.0	0.0	-.011	0.0	-.028	0.0	-.008
	8	6	0.054	0.0	0.0	-.032	-.063	0.0	-.032	0.0	0.050	0.0
	8	5	0.0	0.066	0.002	0.0	0.0	0.011	0.0	0.028	0.0	0.008
	8	8	0.0	0.0	0.031	0.0	0.0	0.031	0.0	0.033	0.0	0.021

WAVE FUNCTIONS

48CR - 48CR

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
4+	0	4	0.0	0.526	0.0	0.482	0.0	0.490	0.0	0.531	0.0	0.483
	0	4*	0.502	0.0	0.480	0.0	0.489	0.0	0.497	0.0	0.491	0.0
	2	2	-.514	0.0	-.538	0.0	-.517	0.0	-.516	0.0	-.535	0.0
	2	4	-.223	0.0	-.228	0.0	-.229	0.9	-.225	0.0	-.219	0.0
	2	6	0.190	0.0	0.184	0.0	0.200	0.0	0.198	0.0	0.188	0.0
	2	2*	0.0	0.168	0.0	0.204	0.0	0.189	0.0	0.179	0.9	0.194
	2	4*	0.0	-.367	0.0	-.405	0.0	-.392	0.0	-.349	0.0	-.408
	2	5	0.0	-.188	0.0	-.184	0.0	-.195	0.0	-.195	0.0	-.184
	4	0	0.0	0.526	0.0	0.482	0.0	0.490	0.0	0.531	0.0	0.483
	4	2	-.223	0.0	-.228	0.0	-.229	0.0	-.225	0.0	-.219	0.0
	4	4	0.018	0.0	-.003	0.0	0.006	0.0	-.004	0.0	0.004	0.0
	4	6	0.056	0.0	0.047	0.0	0.037	0.0	0.042	0.0	0.037	0.0
	4	2*	0.0	-.109	0.0	-.101	0.0	-.099	0.0	-.107	0.0	-.091
	4	4*	0.0	-.027	0.0	-.051	0.0	-.052	0.0	-.012	0.0	-.056
	4	5	0.0	0.010	0.0	0.013	0.0	0.025	0.0	0.003	0.0	0.021
	4	8	0.0	-.053	0.0	-.042	0.0	-.045	0.0	-.057	0.0	-.038
	6	2	0.190	0.0	0.184	0.0	0.200	0.0	0.198	0.0	0.188	0.0
	6	4	0.056	0.0	0.047	0.0	0.037	0.0	0.042	0.0	0.037	0.0
	6	6	0.015	0.0	-.029	0.0	-.024	0.0	0.002	0.0	-.019	0.0
	6	2*	0.0	-.042	0.0	-.038	0.0	-.037	0.0	-.039	0.0	-.036
	6	4*	0.0	0.076	0.0	0.110	0.0	0.126	0.0	0.090	0.0	0.117
	6	5	0.0	-.036	0.0	-.002	0.0	-.011	0.0	-.039	0.0	-.009
	6	8	0.0	-.020	0.0	0.009	0.0	0.006	0.0	-.017	0.0	0.005
	2*	2	0.0	0.168	0.0	0.204	0.0	0.189	0.0	0.179	0.0	0.194
	2*	4	0.0	-.109	0.0	-.101	0.0	-.099	0.0	-.107	0.0	-.091
	2*	6	0.0	-.042	0.0	-.038	0.0	-.037	0.0	-.039	0.0	-.036
	2*	2*	-.055	0.0	-.072	0.0	-.068	0.0	-.067	0.0	-.064	0.0
	2*	4*	0.084	0.0	0.101	0.0	0.095	0.0	0.091	0.0	0.096	0.0
	2*	5	-.043	0.0	-.050	0.0	-.050	0.0	-.047	0.0	-.045	0.0
	4*	0	0.502	0.0	0.480	0.0	0.489	0.0	0.497	0.0	0.491	0.0
	4*	2	0.0	-.367	0.0	-.405	0.0	-.392	0.0	-.349	0.0	-.408
	4*	4	0.0	-.027	0.0	-.051	0.0	-.052	0.0	-.012	0.0	-.056
	4*	6	0.0	0.076	0.0	0.110	0.0	0.126	0.0	0.090	0.0	0.117
	4*	2*	0.084	0.0	0.101	0.0	0.095	0.0	0.091	0.0	0.096	0.0
	4*	4*	-.163	0.0	-.197	0.0	-.183	0.0	-.163	0.0	-.179	0.0
	4*	5	0.001	0.0	-.005	0.0	-.016	0.0	-.003	0.0	-.011	0.0
	4*	8	-.042	0.0	-.038	0.0	-.044	0.0	-.044	0.0	-.098	0.0
	5	2	0.0	0.188	0.0	0.184	0.0	0.195	0.0	0.195	0.0	0.184
	5	4	0.0	-.010	0.0	-.013	0.0	-.025	0.0	-.003	0.0	-.021
	5	6	0.0	0.036	0.0	0.902	0.0	0.011	0.0	0.039	0.0	0.009
	5	2*	0.043	0.0	0.050	0.0	0.050	0.0	0.047	0.0	0.045	0.0
	5	4*	-.001	0.9	0.005	0.0	0.016	0.0	0.003	0.0	0.011	0.0
	5	5	0.034	0.0	0.031	0.0	0.024	0.0	0.025	0.0	0.023	0.0
	5	8	0.001	0.0	-.006	0.0	-.006	0.0	-.002	0.0	-.004	0.0
	8	4	0.0	-.053	0.0	-.042	0.0	-.045	0.0	-.057	0.0	-.038
	8	6	0.0	-.020	0.0	0.009	0.0	0.006	0.0	-.017	0.0	0.005
	8	4*	-.042	0.0	-.038	0.0	-.044	0.0	-.044	0.0	-.038	0.0
	8	5	-.001	0.0	0.006	0.0	0.006	0.0	0.002	0.0	0.004	0.0
	8	8	0.007	0.0	-.000	0.0	0.001	0.0	0.006	0.0	0.001	0.0
5+	0	5	0.482	0.0	0.444	-.342	0.457	0.0	0.472	0.384	0.454	0.0
	2	4	0.426	0.0	0.452	-.412	0.422	0.0	0.427	0.423	0.432	0.0
	2	6	0.217	0.0	0.216	-.198	0.257	0.0	0.232	0.164	0.244	0.0
	2	4*	0.0	-.478	0.0	0.0	0.0	0.388	0.0	0.0	0.0	0.430
	2	5	0.0	0.185	0.0	0.0	0.0	-.221	0.0	0.0	0.0	-.203
	4	2	-.426	0.0	-.452	-.412	-.422	0.0	-.427	0.423	-.432	0.0
	4	4	0.0	0.0	0.0	0.170	0.0	0.0	0.0	-.167	0.0	0.0
	4	6	-.070	0.0	-.022	0.088	-.029	0.0	-.053	-.092	-.026	0.0
	4	2*	0.0	0.139	0.0	0.0	0.0	-.167	0.0	0.0	0.0	-.162
	4	4*	0.0	0.441	0.0	0.0	0.0	-.476	0.0	0.0	0.0	-.462
	4	5	0.0	0.046	0.0	0.0	0.0	-.074	0.0	0.0	0.0	-.068
	4	8	0.0	0.002	0.0	0.0	0.0	0.006	0.0	0.0	0.0	0.006
	6	2	-.217	0.0	-.216	-.198	-.257	0.0	-.232	0.164	-.244	0.0
	6	4	0.070	0.0	0.022	0.088	0.029	0.0	0.053	-.092	0.026	0.0
	6	6	0.0	0.0	0.0	-.191	0.0	0.0	0.0	0.191	0.0	0.0
	6	2*	0.0	0.131	0.0	0.0	0.0	-.135	0.0	0.0	0.0	-.129
	6	4*	0.0	0.003	0.0	0.0	0.0	-.108	0.0	0.0	0.0	-.072
	6	5	0.0	0.054	0.0	0.0	0.0	-.101	0.0	0.0	0.0	-.085
	6	8	0.0	0.033	0.0	0.0	0.0	0.029	0.0	0.0	0.0	0.012
	2*	4	0.0	-.139	0.0	0.0	0.0	0.167	0.0	0.0	0.0	0.162
	2*	6	0.0	-.131	0.0	0.0	0.0	0.135	0.0	0.0	0.0	0.129
	2*	4*	0.150	0.0	0.196	-.073	0.178	0.0	0.164	0.049	0.181	0.0
	2*	5	-.056	0.0	-.055	0.016	-.055	0.0	-.053	-.007	-.051	0.0
	4*	2	0.0	0.478	0.0	0.0	0.0	-.388	0.0	0.0	0.0	-.430
	4*	4	0.0	-.441	0.0	0.0	0.0	0.476	0.0	0.0	0.0	0.462
	4*	6	0.0	-.003	0.0	0.0	0.0	0.108	0.0	0.0	0.0	0.072
	4*	2*	-.150	0.0	-.196	-.073	-.178	0.0	-.164	0.049	-.181	0.0
	4*	4*	0.0	0.0	0.0	-.447	0.0	0.0	0.0	0.403	0.0	0.0
	4*	5	0.088	0.0	0.101	-.163	0.105	0.0	0.093	0.150	0.104	0.0
	4*	8	-.000	0.0	-.009	0.033	-.029	0.0	-.010	0.000	-.023	0.0
	5	0	0.482	0.0	0.444	0.342	0.456	0.0	0.472	-.384	0.454	0.0
	5	2	0.0	0.185	0.0	0.0	0.0	-.221	0.0	0.0	0.0	-.203
	5	4	0.0	0.046	0.0	0.0	0.0	-.074	0.0	0.0	0.0	-.068
	5	6	0.0	0.054	0.0	0.0	0.0	-.101	0.0	0.0	0.0	-.085
	5	2*	-.056	0.0	-.055	-.016	-.055	0.0	-.053	0.007	-.051	0.0
	5	4*	0.088	0.0	0.101	0.163	0.105	0.0	0.093	-.150	0.104	0.0
	5	5	0.0	0.0	0.0	-.001	0.0	0.0	0.0	-.014	0.0	0.0
	5	8	-.008	0.0	0.009	-.001	-.000	0.0	-.007	0.011	0.000	0.0
	8	4	0.0	-.002	0.0	0.0	0.0	-.006	0.0	0.0	0.0	-.006
	8	6	0.0	-.033	0.0	0.0	0.0	-.029	0.0	0.0	0.0	-.012
	8	4*	0.000	0.0	0.009	0.033	0.029	0.0	0.010	0.000	0.023	0.0
	8	5	-.008	0.0	0.009	0.001	-.000	0.0	-.007	-.011	0.000	0.0
	8	8	0.0	0.0	0.0	-.014	0.0	0.0	0.0	0.003	0.0	0.0

WAVE FUNCTIONS

48CR - 48CR

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CO-INT A1(JP,JN)	54CO-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
6+	0	6	0.442	0.0	0.370	0.0	0.418	0.0	0.459	0.0	0.390	0.0
	2	4	0.0	0.486	0.0	0.477	0.0	0.462	0.0	0.511	0.0	0.469
	2	6	0.0	-.227	0.0	-.227	0.0	-.234	0.0	-.220	0.0	-.220
	2	4*	0.493	0.0	0.541	0.0	0.506	0.0	0.471	0.0	0.534	0.0
	2	5	-.130	0.0	-.115	0.0	-.131	0.0	-.143	0.0	-.119	0.0
	2	8	0.107	0.0	0.093	0.0	0.113	0.0	0.118	0.0	0.098	0.0
	4	2	0.0	0.486	0.0	0.477	0.0	0.462	0.0	0.511	0.0	0.469
	4	4	0.0	-.083	0.0	-.084	0.0	-.090	0.0	-.102	0.0	-.089
	4	6	0.0	-.090	0.0	-.092	0.0	-.134	0.0	-.069	0.0	-.117
	4	2*	-.067	0.0	-.076	0.0	-.068	0.0	-.066	0.0	-.067	0.0
	4	4*	0.131	0.0	0.162	0.0	0.150	0.0	0.135	0.0	0.149	0.0
	4	5	0.052	0.0	0.022	0.0	0.034	0.0	0.045	0.0	0.026	0.0
	4	8	-.013	0.0	-.003	0.0	-.014	0.0	-.024	0.0	-.008	0.0
	6	0	0.442	0.0	0.370	0.0	0.418	0.0	0.459	0.0	0.390	0.0
	6	2	0.0	-.227	0.0	-.227	0.0	-.234	0.0	-.220	0.0	-.220
	6	4	0.0	-.090	0.0	-.092	0.0	-.134	0.0	-.069	0.0	-.117
	6	6	0.0	0.092	0.0	0.087	0.0	0.097	0.0	0.087	0.0	0.091
	6	2*	0.079	0.0	0.094	0.0	0.092	0.0	0.083	0.0	0.090	0.0
	6	4*	-.044	0.0	-.084	0.0	-.050	0.0	-.024	0.0	-.058	0.0
	6	5	0.012	0.0	-.000	0.0	-.010	0.0	-.003	0.0	-.006	0.0
	6	8	0.022	0.0	-.010	0.0	0.003	0.0	0.024	0.0	0.001	0.0
	2*	4	-.067	0.0	-.076	0.0	-.068	0.0	-.066	0.0	-.067	0.0
	2*	6	0.079	0.0	0.094	0.0	0.092	0.0	0.083	0.0	0.090	0.0
	2*	4*	0.0	-.214	0.0	-.240	0.0	-.224	0.0	-.230	0.0	-.222
	2*	5	0.0	-.121	0.0	-.129	0.0	-.124	0.0	-.137	0.0	-.117
	2*	8	0.0	-.045	0.0	-.039	0.0	-.042	0.0	-.048	0.0	-.036
	4*	2	0.493	0.0	0.541	0.0	0.506	0.0	0.471	0.0	0.534	0.0
	4*	4	0.132	0.0	0.162	0.0	0.150	0.0	0.135	0.0	0.149	0.0
	4*	6	-.044	0.0	-.084	0.0	-.050	0.0	-.024	0.0	-.058	0.0
	4*	2*	0.0	-.214	0.0	-.240	0.0	-.224	0.0	-.230	0.0	-.222
	4*	4*	0.0	0.506	0.0	0.490	0.0	0.507	0.0	0.426	0.0	0.526
	4*	5	0.0	0.054	0.0	0.071	0.0	0.054	0.0	0.082	0.0	0.057
	4*	8	0.0	0.042	0.0	0.062	0.0	0.073	0.0	0.061	0.0	0.060
	5	2	0.130	0.0	0.115	0.0	0.131	0.0	0.143	0.0	0.119	0.0
	5	4	-.052	0.0	-.022	0.0	-.034	0.0	-.045	0.0	-.026	0.0
	5	6	-.012	0.0	0.000	0.0	0.010	0.0	0.003	0.0	0.006	0.0
	5	2*	0.0	0.121	0.0	0.129	0.0	0.124	0.0	0.137	0.0	0.117
	5	4*	0.0	-.054	0.0	-.071	0.0	-.054	0.0	-.082	0.0	-.057
	5	5	0.0	-.017	0.0	-.016	0.0	-.034	0.0	0.001	0.0	-.024
	5	8	0.0	0.024	0.0	0.004	0.0	0.001	0.0	0.026	0.0	0.003
	8	2	0.107	0.0	0.093	0.0	0.113	0.0	0.118	0.0	0.098	0.0
	8	4	-.013	0.0	-.003	0.0	-.014	0.0	-.024	0.0	-.008	0.0
	8	6	0.022	0.0	-.010	0.0	0.003	0.0	0.024	0.0	0.001	0.0
	8	2*	0.0	-.045	0.0	-.039	0.0	-.042	0.0	-.048	0.0	-.036
	8	4*	0.0	0.062	0.0	0.062	0.0	0.073	0.0	0.061	0.0	0.060
	8	5	0.0	-.024	0.0	-.004	0.0	-.001	0.0	-.026	0.0	-.003
	8	8	0.0	-.011	0.0	0.002	0.0	-.007	0.0	-.016	0.0	-.004
7+	2	6	0.0	-.619	0.0	0.394	0.0	0.398	0.392	0.0	0.0	0.407
	2	5	-.391	0.0	0.405	0.0	-.387	0.0	0.0	0.409	-.393	0.0
	2	8	0.025	0.0	-.001	0.0	-.015	0.0	0.0	0.020	-.009	0.0
	4	4	0.0	0.0	0.0	0.206	0.0	0.201	0.200	0.0	0.0	0.191
	4	6	0.0	0.062	0.0	0.310	0.0	0.316	0.338	0.0	0.0	0.290
	4	4*	-.523	0.0	0.509	0.0	-.504	0.0	0.0	0.503	-.511	0.0
	4	5	0.064	0.0	-.058	0.0	0.056	0.0	0.0	-.062	0.057	0.0
	4	8	-.014	0.0	0.021	0.0	-.036	0.0	0.0	0.019	-.028	0.0
	6	2	0.0	0.619	0.0	0.394	0.0	0.398	0.392	0.0	0.0	0.407
	6	4	0.0	-.062	0.0	0.310	0.0	0.316	0.338	0.0	0.0	0.290
	6	6	0.0	0.0	0.0	0.118	0.0	0.110	0.158	0.0	0.0	0.081
	6	2*	0.134	0.0	-.159	0.0	0.156	0.0	0.0	-.172	0.147	0.0
	6	4*	-.199	0.0	0.188	0.0	-.226	0.0	0.0	0.188	-.216	0.0
	6	5	-.105	0.0	0.111	0.0	-.120	0.0	0.0	0.098	-.109	0.0
	6	8	0.020	0.0	-.015	0.0	0.029	0.0	0.0	-.016	0.023	0.0
	2*	6	-.134	0.0	0.159	0.0	-.156	0.0	0.0	0.172	-.147	0.0
	2*	5	0.0	-.060	0.0	0.146	0.0	0.140	0.142	0.0	0.0	0.130
	2*	8	0.0	-.110	0.0	0.095	0.0	0.097	0.103	0.0	0.0	0.085
	4*	4	0.523	0.0	-.509	0.0	0.504	0.0	0.0	-.503	0.511	0.0
	4*	6	0.199	0.0	-.188	0.0	0.226	0.0	0.0	-.188	0.216	0.0
	4*	4*	0.0	0.0	0.0	-.474	0.0	-.469	-.409	0.0	0.0	-.527
	4*	5	0.0	-.294	0.0	0.243	0.0	0.236	0.241	0.0	0.0	0.225
	4*	8	0.0	0.088	0.0	-.100	0.0	-.103	-.102	0.0	0.0	-.091
	5	2	-.391	0.0	0.405	0.0	-.387	0.0	0.0	0.409	-.393	0.0
	5	4	0.064	0.0	-.058	0.0	0.056	0.0	0.0	-.062	0.057	0.0
	5	6	-.105	0.0	0.111	0.0	-.120	0.0	0.0	0.098	-.109	0.0
	5	2*	0.0	-.060	0.0	-.146	0.0	-.140	-.142	0.0	0.0	-.130
	5	4*	0.0	-.294	0.0	-.243	0.0	-.236	-.241	0.0	0.0	-.225
	5	5	0.0	0.0	0.0	0.060	0.0	0.062	0.070	0.0	0.0	0.054
	5	8	0.0	-.056	0.0	0.079	0.0	0.084	0.104	0.0	0.0	0.068
	8	2	-.025	0.0	0.001	0.0	0.015	0.0	0.0	-.020	0.009	0.0
	8	4	0.014	0.0	-.021	0.0	0.036	0.0	0.0	-.019	0.028	0.0
	8	6	-.020	0.0	0.015	0.0	-.029	0.0	0.0	0.016	-.323	0.0
	8	2*	0.0	0.110	0.0	0.095	0.0	0.097	0.103	0.0	0.0	0.085
	8	4*	0.0	-.388	0.0	-.100	0.0	-.103	-.102	0.0	0.0	-.091
	8	5	0.0	-.056	0.0	-.079	0.0	-.084	-.104	0.0	0.0	-.068
	8	8	0.0	0.0	0.0	0.033	0.0	0.044	0.074	0.0	0.0	0.032

WAVE FUNCTIONS

48CR - 48CR

J	JP	JN	42SC-INT A1(JP,JN)	42SC-INT A2(JP,JN)	54CC-INT A1(JP,JN)	54CC-INT A2(JP,JN)	48SC-INT A1(JP,JN)	48SC-INT A2(JP,JN)	42SC*-INT A1(JP,JN)	42SC*-INT A2(JP,JN)	48SC*-INT A1(JP,JN)	48SC*-INT A2(JP,JN)
8+	0	8	0.199	0.0	0.164	0.0	0.196	0.0	0.222	0.0	0.172	0.0
	2	6	0.498	0.0	0.476	0.0	0.490	0.0	0.504	0.0	0.482	0.0
	2	8	0.0	0.132	0.0	0.130	0.0	0.122	0.0	0.111	0.0	0.113
	4	4	-.115	0.0	-.109	0.0	-.101	0.0	-.116	0.0	-.102	0.0
	4	6	0.119	0.0	0.156	0.0	0.147	0.0	0.130	0.0	0.142	0.0
	4	4*	0.0	0.569	0.0	0.576	0.0	0.561	0.0	0.575	0.0	0.573
	4	5	0.0	0.200	0.0	0.232	0.0	0.229	0.0	0.248	0.0	0.219
	4	8	0.0	0.002	0.0	0.014	0.0	0.034	0.0	0.020	0.0	0.026
	6	2	0.498	0.0	0.476	0.0	0.490	0.0	0.504	0.0	0.482	0.0
	6	4	0.119	0.0	0.156	0.0	0.147	0.0	0.130	0.0	0.142	0.0
	6	6	-.058	0.0	-.047	0.0	-.017	0.0	-.017	0.0	-.026	0.0
	6	2*	0.0	0.118	0.0	0.130	0.0	0.126	0.0	0.124	0.0	0.120
	6	4*	0.0	-.311	0.0	-.261	0.0	-.304	0.0	-.251	0.0	-.296
	6	5	0.0	-.276	0.0	-.105	0.0	-.086	0.0	-.123	0.0	-.083
	6	8	0.0	-.044	0.0	-.032	0.0	-.034	0.0	-.034	0.0	-.032
	2*	6	0.0	0.118	0.0	0.130	0.0	0.126	0.0	0.124	0.0	0.120
	2*	8	0.048	0.0	0.053	0.0	0.059	0.0	0.055	0.0	0.052	0.0
	4*	4	0.0	0.569	0.0	0.576	0.0	0.561	0.0	0.575	0.0	0.573
	4*	6	0.0	-.311	0.0	-.261	0.0	-.304	0.0	-.251	0.0	-.296
	4*	4*	-.599	0.0	-.632	0.0	-.597	0.0	-.565	0.0	-.631	0.0
	4*	5	0.081	0.0	0.099	0.0	0.104	0.0	0.095	0.0	0.098	0.0
	4*	8	-.027	0.0	-.044	0.0	-.030	0.0	-.011	0.0	-.031	0.0
	5	4	0.0	-.200	0.0	-.232	0.0	-.229	0.0	-.248	0.0	-.219
	5	6	0.0	0.076	0.0	0.105	0.0	0.086	0.0	0.123	0.0	0.083
	5	4*	-.081	0.0	-.099	0.0	-.104	0.0	-.095	0.0	-.098	0.0
	5	5	-.016	0.0	0.010	0.0	0.003	0.0	-.003	0.0	0.006	0.0
	5	8	0.011	0.0	0.023	0.0	0.029	0.0	0.025	0.0	0.022	0.0
	8	0	0.199	0.0	0.164	0.0	0.196	0.0	0.222	0.0	0.172	0.0
	8	2	0.0	0.132	0.0	0.130	0.0	0.122	0.0	0.111	0.0	0.113
	8	4	0.0	0.002	0.0	0.014	0.0	0.034	0.0	0.020	0.0	0.026
	8	6	0.0	-.044	0.0	-.032	0.0	-.034	0.0	-.034	0.0	-.032
	8	2*	0.048	0.0	0.053	0.0	0.059	0.0	0.055	0.0	0.052	0.0
	8	4*	-.027	0.0	-.044	0.0	-.030	0.0	-.011	0.0	-.031	0.0
	8	5	-.011	0.0	-.023	0.0	-.029	0.0	-.025	0.0	-.022	0.0
	8	8	0.011	0.0	0.001	0.0	0.010	0.0	0.019	0.0	0.007	0.0
9+	2	8	0.0	0.127	0.0	-.221	0.0	0.071	0.0	0.007	0.0	0.077
	4	6	0.538	0.0	0.511	0.0	0.530	0.0	0.545	0.0	0.516	0.0
	4	5	0.0	0.472	0.0	-.111	0.0	0.520	0.0	0.558	0.0	0.513
	4	8	0.0	0.073	0.0	-.185	0.0	0.051	0.0	0.055	0.0	0.053
	6	4	-.538	0.0	-.511	0.0	-.531	0.0	-.545	0.0	-.516	0.0
	6	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	6	4*	0.0	0.444	0.0	0.588	0.0	0.393	0.0	0.357	0.0	0.409
	6	5	0.0	0.239	0.0	-.242	0.0	0.251	0.0	0.232	0.0	0.239
	6	8	0.0	-.029	0.0	-.024	0.0	-.070	0.0	-.061	0.0	-.058
	2*	8	-.004	0.0	0.012	0.0	0.010	0.0	0.005	0.0	0.012	0.0
	4*	6	0.0	-.444	0.0	0.588	0.0	-.393	0.0	-.357	0.0	-.409
	4*	5	-.455	0.0	-.484	0.0	-.457	0.0	-.443	0.0	-.476	0.0
	4*	8	-.060	0.0	-.058	0.0	-.095	0.0	-.086	0.0	-.081	0.0
	5	4	0.0	0.472	0.0	0.111	0.0	0.520	0.0	0.558	0.0	0.513
	5	6	0.0	0.239	0.0	0.242	0.0	0.251	0.0	0.232	0.0	0.239
	5	4*	-.455	0.0	-.484	0.0	-.457	0.0	-.443	0.0	-.476	0.0
	5	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	5	8	0.011	0.0	0.039	0.0	0.029	0.0	0.008	0.0	0.029	0.0
	8	2	0.0	-.127	0.0	-.221	0.0	-.071	0.0	-.007	0.0	-.077
	8	4	0.0	-.073	0.0	-.185	0.0	-.051	0.0	-.055	0.0	-.053
	8	6	0.0	0.029	0.0	-.024	0.0	0.070	0.0	0.061	0.0	0.058
	8	2*	0.004	0.0	-.012	0.0	-.010	0.0	-.005	0.0	-.012	0.0
	8	4*	0.060	0.0	0.058	0.0	0.095	0.0	0.086	0.0	0.081	0.0
	8	5	0.011	0.0	0.039	0.0	0.029	0.0	0.008	0.0	0.029	0.0
	8	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10+	2	8	-.225	0.0	-.226	0.0	-.235	0.0	-.231	0.0	-.228	0.0
	4	6	0.0	0.605	0.0	0.577	0.0	0.581	0.0	0.597	0.0	0.589
	4	8	-.121	0.0	-.135	0.0	-.138	0.0	-.128	0.0	-.123	0.0
	6	4	0.0	0.605	0.0	0.577	0.0	0.581	0.0	0.597	0.0	0.589
	6	6	0.0	0.158	0.0	0.206	0.0	0.222	0.0	0.180	0.0	0.196
	6	4*	0.640	0.0	0.630	0.0	0.626	0.0	0.629	0.0	0.636	0.0
	6	5	-.153	0.0	-.183	0.0	-.184	0.0	-.186	0.0	-.170	0.0
	6	8	0.041	0.0	0.015	0.0	0.004	0.0	0.014	0.0	0.010	0.0
	2*	8	0.0	0.156	0.0	0.150	0.0	0.153	0.0	0.149	0.0	0.143
	4*	6	0.640	0.0	0.630	0.0	0.626	0.0	0.629	0.0	0.636	0.0
	4*	8	0.0	-.142	0.0	-.143	0.0	-.129	0.0	-.139	0.0	-.135
	5	6	0.153	0.0	0.183	0.0	0.184	0.0	0.186	0.0	0.170	0.0
	5	5	0.0	-.347	0.0	-.426	0.0	-.405	0.0	-.374	0.0	-.405
	5	8	0.0	0.126	0.0	0.112	0.0	0.123	0.0	0.125	0.0	0.112
	8	2	-.225	0.0	-.226	0.0	-.235	0.0	-.231	0.0	-.228	0.0
	8	4	-.121	0.0	-.135	0.0	-.138	0.0	-.128	0.0	-.123	0.0
	8	6	0.041	0.0	0.015	0.0	0.004	0.0	0.014	0.0	0.010	0.0
	8	2*	0.0	0.156	0.0	0.150	0.0	0.153	0.0	0.149	0.0	0.143
	8	4*	0.0	-.142	0.0	-.143	0.0	-.129	0.0	-.139	0.0	-.135
	8	5	0.0	-.126	0.0	-.112	0.0	-.123	0.0	-.125	0.0	-.112
	8	8	0.0	-.025	0.0	0.020	0.0	0.011	0.0	-.016	0.0	0.007
11+	4	8	-.218	0.0	-.237	0.0	-.253	0.0	-.258	0.0	-.238	0.0
	6	6	0.0	0.861	0.0	0.822	0.0	0.844	0.0	0.847	0.0	0.848
	6	5	0.658	0.0	0.655	0.0	0.651	0.0	0.650	0.0	0.657	0.0
	6	8	-.139	0.0	-.123	0.0	-.109	0.0	-.105	0.0	-.105	0.0
	4*	8	0.0	0.323	0.0	0.365	0.0	0.340	0.0	0.315	0.0	0.343
	5	6	0.658	0.0	0.655	0.0	0.651	0.0	0.650	0.0	0.657	0.0
	5	8	0.0	0.156	0.0	0.167	0.0	0.162	0.0	0.156	0.0	0.147
	8	4	0.218	0.0	0.237	0.0	0.253	0.0	0.258	0.0	0.238	0.0
	8	6	0.139	0.0	0.123	0.0	0.109	0.0	0.105	0.0	0.105	0.0
	8	4*	0.0	0.323	0.0	0.365	0.0	0.340	0.0	0.315	0.0	0.343
	8	5	0.0	-.156	0.0	-.167	0.0	-.162	0.0	-.156	0.0	-.147
	8	8	0.0	0.032	0.0	0.047	0.0	0.053	0.0	0.044	0.0	0.045
12+	4	8	0.0	0.690	0.0	0.693	0.0	0.676	0.0	0.702	0.0	0.688
	6	6	0.845	0.0	0.819	0.0	0.825	0.0	0.844	0.0	0.826	0.0
	6	8	0.0	0.153	0.0	0.149	0.0	0.208	0.0	0.084	0.0	0.162
	4*	8	0.325	0.0	0.356	0.0	0.350	0.0	0.321	0.0	0.356	0.0
	5	8	0.180	0.0	0.190	0.0	0.189	0.0	0.192	0.0	0.176	0.0
	8	4	0.0	0.690	0.0	0.693	0.0	0.676	0.0	0.702	0.0	0.688
	8	6	0.0	0.153	0.0	0.140	0.0	0.208	0.0	0.084	0.0	0.162
	8	4*	0.325	0.0	0.356	0.0	0.350	0.0	0.321	0.0	0.356	0.0
	8	5	-.180	0.0	-.190	0.0	-.189	0.0	-.192	0.0	-.176	0.0
	8	8	0.097	0.0	0.051	0.0	0.060	0.0	0.088	0.0	0.054	0.0

WAVE FUNCTIONS

48CR - 48CR

			42SC-INT		54CR-INT		48SC-INT		42SC*-INT		48SC*-INT	
J	JP	JN	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)	A1(JP,JN)	A2(JP,JN)
13+	6	8	0.707	0.0	0.707	0.0	0.707	0.0	0.707	0.0	0.707	0.0
	5	8	0.0	0.707	0.0	0.707	0.0	0.707	0.0	0.707	0.0	0.707
	8	6	-.707	0.0	0.707	0.0	0.707	0.0	0.707	0.0	0.707	0.0
	8	5	0.0	0.707	0.0	0.707	0.0	0.707	0.0	0.707	0.0	0.707
	8	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14+	6	8	0.707	-.707	0.707	-.707	0.707	0.0	0.707	-.707	0.707	-.707
	8	6	0.707	0.707	0.707	0.707	0.707	0.0	0.707	0.707	0.707	0.707
	8	8	0.0	0.0	0.0	0.0	0.0	1.000	0.0	0.0	0.0	0.0
15+	8	8	1.000		1.000		1.000		1.000		1.000	
16+	8	8	1.000		1.000		1.000		1.000		1.000	

Appendix

Empirical determination of the two-body interaction matrix elements.

The experimental two-body matrix elements $V(1f_{7/2}^2 J)$ can be calculated from the level spectra of ^{42}Sc, ^{48}Sc and ^{54}Co with the help of binding energies (BE). The binding energies (positively defined) from the compilation of Wapstra and Gove [26] have been used except for ^{55}Ni which was taken from ref. [27].

The particle-particle interaction matrix elements $V(1f_{7/2}^2 J)$ are derived from the ^{42}Sc spectrum by using the following equation:

$$V(1f_{7/2}^2 J) = E_x[^{42}\mathrm{Sc}(J)] - (\mathrm{BE}[^{42}\mathrm{Sc}] - \mathrm{BE}[^{40}\mathrm{Ca}]) - \varepsilon_p(1f_{7/2}) - \varepsilon_n(1f_{7/2}) ,$$

where

$E_x[^{42}\mathrm{Sc}(J)]$ is the excitation energy of the state of spin J in ^{42}Sc

and

$$\varepsilon_p(1f_{7/2}) = -(\mathrm{BE}[^{41}\mathrm{Sc}] - \mathrm{BE}[^{40}\mathrm{Ca}]) ,$$
$$\varepsilon_n(1f_{7/2}) = -(\mathrm{BE}[^{41}\mathrm{Ca}] - \mathrm{BE}[^{40}\mathrm{Ca}]) .$$

In a similar way the hole-hole matrix elements $V(1f_{7/2}^{-2} J)$ are derived from the ^{54}Co spectrum by the equation

$$V(1f_{7/2}^{-2} J) = E_x[^{54}\mathrm{Co}(J)] - (\mathrm{BE}[^{54}\mathrm{Co}] - \mathrm{BE}[^{56}\mathrm{Ni}]) - \varepsilon_p(1f_{7/2}^{-1}) - \varepsilon_n(1f_{7/2}^{-1}) ,$$

where

$$\varepsilon_p(1f_{7/2}^{-1}) = -(\mathrm{BE}[^{55}\mathrm{Co}] - \mathrm{BE}[^{56}\mathrm{Ni}]) ,$$
$$\varepsilon_n(1f_{7/2}^{-1}) = -(\mathrm{BE}[^{55}\mathrm{Ni}] - \mathrm{BE}[^{56}\mathrm{Ni}]) .$$

The particle-hole matrix elements $V(1f_{7/2} 1f_{7/2}^{-1} J)$ are derived from the ^{48}Sc spectrum by the equation

$$V(1f_{7/2} 1f_{7/2}^{-1} J) = E_x[^{48}\mathrm{Sc}(J)] - (\mathrm{BE}[^{48}\mathrm{Sc}] - \mathrm{BE}[^{48}\mathrm{Ca}]) - \varepsilon_p(1f_{7/2}) - \varepsilon_n(1f_{7/2}^{-1}) ,$$

where

$$\varepsilon_p(1f_{7/2}) = -(\mathrm{BE}[^{49}\mathrm{Sc}] - \mathrm{BE}[^{48}\mathrm{Ca}]) ,$$
$$\varepsilon_n(1f_{7/2}^{-1}) = -(\mathrm{BE}[^{47}\mathrm{Ca}] - \mathrm{BE}[^{48}\mathrm{Ca}]) .$$

With the following equations one can transform the hole-hole and the particle-hole matrix elements into the particle-particle matrix elements

$$V(j^2 J) = V(j^{-2} J) \quad \text{and} \quad V(j^2 J) = -\sum_{J'} (2J'+1)\, W(jjjj;\, JJ')\, V(jj^{-1} J') .$$

The last equation is known as Pandya transformation [23].

Coefficients of fractional parentage (c.f.p.) $[j^{n-1}(v_1J_1), j|\}j^n vJ]$ $j = 7/2$.

$n = 1$

v	J	$v_1J_1 = 0\ \ 0$
1	7/2	1.000 000

$n = 2$

v	J	$v_1J_1 = 1\ \ 7/2$
0	0	1.000 000
2	2	1.000 000
	4	1.000 000
	6	1.000 000

$n = 3$

v	J	$v_1J_1 = 0\ \ 0$	2 2	2 4	2 6
1	7/2	0.500 000	−0.372 678	−0.500 000	−0.600 925
3	3/2		−0.462 910	0.886 405	
	5/2		−0.781 736	−0.246 183	0.572 960
	9/2		0.321 208	−0.805 823	0.497 468
	11/2		−0.527 046	0.443 813	0.724 743
	15/2			−0.476 731	0.879 049

$n = 4$

v	J	$v_1J_1 = 1\ \ 7/2$	3 3/2	3 5/2	3 9/2	3 11/2	3 15/2
0	0	1.000 000					
2	2	0.577 350	−0.253 546	0.524 404	−0.278 174	−0.500 000	
	4	0.577 350	0.361 873	0,123 092	0.520 157	0.313 823	−0.389 249
	6	0.577 350		−0.238 366	−0.267 183	0.426 401	0.597 196

4	2		−0.560 612	−0.158 114	0.754 854	−0.301 511			
	4		−0.175 933	−0.658 281	0.128 388	0.645 497	0.320 256		
	5		0.387 298	−0.333 712	0.553 912	−0.459 390	0.469 871		
	8				−0.373 979	−0.483 494	0.791 438		

$n = 5$

v	J	$v_1J_1 = 0 \quad 0$	2 2	2 4	2 6	4 2	4 4	4 5	4 8
1	7/2	−0.316 228	0.408 248	0.547 723	0.658 281				
3	3/2		−0.253 546	0.485 504		0.560 612	0.236 039	0.574 456	
	5/2		−0.428 174	−0.134 840	0.313 823	−0.129 100	−0.721 111	0.404 145	
	9/2		0.174 933	−0.441 367	0.272 474	0.477 412	0.108 941	−0.519 616	−0.436 131
	11/2		−0.288 675	0.243 086	0.396 958	0.174 077	−0.500 000	−0.393 398	0.514 719
	15/2			−0.261 116	0.481 475		−0.214 834	0.348 466	−0.729 670

$n = 6$

v	J	$v_1J_1 = 1 \quad 7/2$	3 3/2	3 5/2	3 9/2	3 11/2	3 15/2
0	0	1.000 000					
2	2	−0.333 333	−0.292 770	0.605 530	−0.321 208	−0.577 350	
	4	−0.333 333	0.417 855	0.142 134	0.600 625	0.362 372	−0.449 466
	6	−0.333 333		−0.275 241	−0.308 517	0.492 366	0.689 583

$n = 7$

v	J	$v_1J_1 = 0 \quad 0$	2 2	2 4	2 6
1	7/2	−0.188 982	−0.422 577	−0.566 947	−0.681 385

$n = 8$

v	J	$v_1J_1 = 1 \quad 7/2$
0	0	1.000 000

States of identical particles in the $j = 7/2$ shell classified by the total spin J and the seniority v.

n_p or n_n	v	J
0 and 8	0	0
1 and 7	1	7/2
2 and 6	0	0
	2	2, 4, 6
3 and 5	1	7/2
	3	3/2, 5/2, 9/2, 11/2, 15/2
4	0	0
	2	2, 4, 6
	4	2, 4, 5, 8

Coefficients to calculate the identical-particle systems.

The matrix of the identical-particle system can be calculated by the equation

$$\langle j^n vJ|V|j^n vJ\rangle = \sum_{J'=0,2,4,6} C_{J'}^{(nvJ)} V(j^2 J'),$$

where $V(j^2 J')$ is the proton-proton or neutron-neutron interaction.
The coefficients $C_{J'}^{(nvJ)}$ are given in the following table for $3 \leqslant n \leqslant 8$.

$C_{J'}^{(nvJ)}$ *coefficients of* $\langle j^n vJ|V|j^n vJ\rangle$ $j = 7/2$.

	$J' = 0$	2	4	6
$n = 3$				
$v = 1,\ J = 7/2$	0.75	0.416 667	0.75	1.083 333
$v = 3,\ J = 3/2$	0	0.642 857	2.357 143	0
5/2	0	1.833 333	0.181 818	0.984 848
9/2	0	0.309 524	1.948 051	0.742 424
11/2	0	0.833 333	0.590 909	1.575 758
15/2	0	0	0.681 818	2.318 182
$n = 4$				
$v = 0,\ J = 0$	1.5	0.833 333	1.5	2.166 667
$v = 2,\ J = 2$	0.5	1.833 333	1.5	2.166 667
4	0.5	0.833 333	2.5	2.166 667
6	0.5	0.833 333	1.5	3.166 667
$v = 4,\ J = 2$	0	1.0	3.818 182	1.181 818
4	0	2.333 333	1.0	2.666 667
5	0	1.142 857	2.493 506	2.363 636
8	0	0.476 190	1.675 324	3.848 484
$n = 5$				
$v = 1,\ J = 7/2$	1.0	1.666 667	3.0	4.333 333
$v = 3,\ J = 3/2$	0.25	1.892 857	4.607 143	3.250 000
5/3	0.25	3.083 333	2.431 818	4.234 748
9/2	0.25	1.559 524	4.198 051	3.992 424
11/2	0.25	2.083 333	2.840 909	4.825 758
15/2	0.25	1.25	2.931 818	5.568 182
$n = 6$				
$v = 0,\ J = 0$	1.5	2.5	4.5	6.5
$v = 2,\ J = 2$	0.5	3.5	4.5	6.5
4	0.5	2.5	5.5	6.5
6	0.5	2.5	4.5	7.5
$n = 7$				
$v = 1,\ J = 7/2$	0.75	3.75	6.75	9.75
$n = 8$				
$v = 0,\ J = 0$	1.0	5.0	9.0	13.0

* * *

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