

^{42}Ca $Z = 20$ $N = 22$ [link to full NNDC output](#)

Based on ENSDF from Dec 2018, and mass evaluation from 2016

BE = 361.896 (0.000) MeV

	Energy T	J+	J-	J-other	T1/2
42CA 1	0.000	0+			1 STABLE
42CA 2	1.525	2+			2 0.83 PS 3
42CA 3	1.837	0+			3 387 PS 6
42CA 4	2.424	2+			4 140 FS 40
42CA 5	2.752	4+			5 2.8 PS 4
42CA 6	3.189	6+			6 5.28 NS 15
42CA 7	3.254	4+			7 123 FS 21
42CA 8	3.300	0+			8 0.9 PS GT
42CA 9	3.392	2+			9 135 FS 40
42CA 10			3.447 3-		10 0.27 PS 9
42CA 11	3.654	2+			11 49 FS 35
42CA 12				3.780 (2+,3-)	12
42CA 13			3.885 1-		13
42CA 14			3.954 4-		14 3.36 PS 21
42CA 15	4.000	4+			15
42CA 16			4.047 3-		16 0.17 PS 5
42CA 17			4.100 5-		17 0.45 PS 10
42CA 18			4.117 3-		18
42CA 19				4.180 0	19
42CA 20				4.232 1	20
42CA 21				4.342 (0+:4+)	21
42CA 22			4.354 4-		22 0.47 PS 7
42CA 23			4.418 3-		23
42CA 24	4.443	4+			24
42CA 25	4.449	2+			25
42CA 26				4.505 (2,3,4)+	26
42CA 27				4.567 (1,2+)	27
42CA 28				4.666 (3,4)-	28
42CA 29			4.690 3-		29
42CA 30	4.718	6+			30 83 FS 32
42CA 31			4.718 3-		31
42CA 32	4.760	2+			32
42CA 33	4.866	2+			33
42CA 34			4.897 5-		34 47 FS 21
42CA 35			4.904 3-		35
42CA 36				4.947 (1,2,3)-	36
42CA 37			4.971 3-		37
42CA 38	5.017	4+			38

42CA 39						5.075	(1,2,3)-	39
42CA 40				5.158	3-			40

42CA 41						5.188	(2,3,4)+	41
42CA 42						5.210	(2+)	42
42CA 43						5.213	6	43
42CA 44						5.214	(2+)	44
42CA 45						5.320	(3,4)-	45
42CA 46		5.345	0+					46
42CA 47		5.358	2+					47
42CA 48				5.380	5-			48
42CA 49						5.393	(3)-	49
42CA 50				5.407	3-			50

42CA 51						5.439	(3,4)-	51
42CA 52						5.466	(1 TO 5)-	52
42CA 53						5.472	(2,3,4)+	53
42CA 54				5.491	6-			54 59 FS 14
42CA 55				5.491	3-			55
42CA 56				5.510	3-			56
42CA 57		5.530	2+					57
42CA 58						5.578	(0+:4+)	58
42CA 59				5.593	3-			59
42CA 60						5.601	(3-,4-)	60

42CA 61				5.624	3-			61
42CA 62						5.665	(3-)	62
42CA 63						5.670	(3-)	63
42CA 64		5.692	6+					64
42CA 65		5.716	2+					65
42CA 66						5.725	(2+:6+)	66
42CA 67						5.738	(2+)	67
42CA 68				5.744	7-			68 0.42 PS 10
42CA 69				5.769	3-			69
42CA 70						5.775	(4,5)+	70

42CA 71						5.797	(1,2)+	71
42CA 72				5.802	3-			72
42CA 73						5.822	(1,2,3)-	73
42CA 74		5.860	0+					74
42CA 75						5.866	(1,2,3-)	75
42CA 76		5.875	2+					76
42CA 77						5.924	(3,4)-	77
42CA 78						5.925	(5)	78
42CA 79						5.956	(3,4)-	79
42CA 80				5.980	3-			80

42CA 81				5.994	3-			81
42CA 82						6.003	3-,4-	82
42CA 83		6.016	0+					83

42CA 84						6.020	(4+,5,6-)	84
42CA 85						6.028	(3)-	85
42CA 86						6.038	(1,2,3)-	86
42CA 87		6.080	0+					87
42CA 88						6.094	(3-:7-)	88
42CA 89						6.104	(0+:4+)	89
42CA 90		6.113	4+					90

42CA 91				6.141	6-			91 49 FS +21-14
42CA 92				6.145	7-			92 70 FS LT
42CA 93				6.158	3-			93
42CA 94						6.182	(1,2,3-)	94
42CA 95				6.212	3-			95
42CA 96				6.240	3-			96
42CA 97						6.248	(4+,5,6-)	97
S-alpha=	6.257	(0.000)	-----					
42CA 98		6.274	2+					98
42CA 99						6.313	(2:5)+	99
42CA 100						6.390	(3,4)-	100

42CA 101				6.409	8-			101 31.0 PS 25
42CA 102						6.426	(2:5)+	102
42CA 103						6.462	(3,4)-	103
42CA 104						6.516		104
42CA 105		6.542	5+					105
42CA 106				6.554	9-			106 42 PS 3
42CA 107						6.572	(2:5)+	107
42CA 108						6.585	(5-:8-)	108
42CA 109						6.614	(3,4)+	109
42CA 110		6.636	8+					110 36 FS 15

42CA 111						6.675	(4+:8+)	111
42CA 112						6.716	(4+)	112
42CA 113						6.718	7	113
42CA 114		6.720	0+					114
42CA 115		6.747	4+					115
42CA 116						6.781		116
42CA 117						6.817	(4,5)+	117
42CA 118		6.896	4+					118
42CA 119						6.920	(3,4)+	119
42CA 120						6.931	(2,3)+	120

42CA 121						6.940	(5-,6,7-)	121
42CA 122						6.961	(3,4)+	122
42CA 123						6.976	(5+)	123
42CA 124		7.020	4+					124
42CA 125						7.041	(3-,4-)	125
42CA 126						7.103	(1:4)-	126
42CA 127		7.130	4+					127
42CA 128						7.153	(3,4)+	128

42CA 129	7.180	2+					129
42CA 130					7.198		130

42CA 131					7.228	(3-,4-)	131
42CA 132					7.273	(3,4)+	132
42CA 133			7.282	9-			133
42CA 134					7.345	(6-:10-)	134
42CA 135					7.348	(3,4)+	135
42CA 136					7.361	(5-:9-)	136
42CA 137			7.368	10-			137 1.9 PS 8
42CA 138	7.389	4+					138
42CA 139	7.416	8+					139
42CA 140					7.421	(4+:8+)	140

42CA 141					7.468	(2:5)(+)	141
42CA 142					7.520	(3,4)+	142
42CA 143					7.543	(4+:7-)	143
42CA 144					7.563	(4+,5+)	144
42CA 145					7.600	(2+:5+)	145
42CA 146					7.634	(6,8+)	146
42CA 147					7.643	3+,4+	147
42CA 148	7.697	4+					148
42CA 149					7.727	(4+:8+)	149
42CA 150					7.751	(11)-	150 2.1 PS LT

42CA 151					7.758	(6-,7-)	151
42CA 152					7.760	(3,4)+	152
42CA 153					7.793	(3,4)+	153
42CA 154					7.801	(5-:9-)	154
42CA 155					7.839	(2+:6+)	155
42CA 156					7.921	(4+:8+)	156
42CA 157					7.940	(4+:8+)	157
42CA 158					8.053	(4+:8+)	158
42CA 159					8.060	(6-:9-)	159
42CA 160					8.083	(7-:11-)	160

42CA 161					8.103	(4+:8+)	161
42CA 162					8.170		162
42CA 163			8.297	11-			163 1.7 PS LT
42CA 164					8.365	(6-,7,8+)	164
42CA 165					8.450	(7,8)-	165
42CA 166	8.450	0+					166
42CA 167					8.512	(6-:9-)	167
42CA 168					8.517	(3:9)	168
42CA 169					8.522	(10)	169
42CA 170					8.581	(2+:6+)	170

42CA 171					8.612	(2+:6+)	171
42CA 172					8.615	9	172
42CA 173					8.722	9	173

42CA 174				8.745	(8-:12-)	174
42CA 175				8.774	(5,6,7)	175
42CA 176				8.848	(10+)	176
42CA 177				8.951	(6+:10+)	177
42CA 178		9.015	10+			178
42CA 179				9.037	(8-:12-)	179
42CA 180				9.115		180

42CA 181				9.191		181
42CA 182				9.206	(7-:9-)	182
42CA 183				9.242		183
42CA 184				9.270		184
42CA 185		9.280	1-			185
42CA 186				9.311	(8,10+)	186
42CA 187				9.330		187
42CA 188				9.367		188
42CA 189				9.378	(5-:9-)	189
42CA 190				9.426		190

42CA 191				9.470		191
42CA 192				9.561		192
42CA 193				9.600	(5-,6+)	193
42CA 194				9.635		194
42CA 195				9.672		195
42CA 196				9.699		196
42CA 197				9.723		197
42CA 198				9.750	2 (2-)	198
42CA 199				9.757		199
42CA 200				9.760	(7-:11-)	200

42CA 201				9.770	(2+)	201
42CA 202				9.784		202
42CA 203				9.786	(9-,11)	203
42CA 204				9.842	(5,6)-	204
42CA 205				9.850	2 (3-)	205
42CA 206				9.947		206
42CA 207				10.000	2 (4)-	207
42CA 208				10.036	(5-:9-)	208
42CA 209				10.038		209
42CA 210				10.160		210

42CA 211				10.169	(10,12+)	211
42CA 212				10.205		212
42CA 213				10.231		213

S-p	=	10.277	(0.000)	-----		
42CA 214		10.282	1-			214
42CA 215				10.314		215
42CA 216		10.358	1-			216
42CA 217				10.389		217
42CA 218				10.450	2 (5)-	218

42CA 219				10.453		219
42CA 220		10.500 2	1-			220

42CA 221				10.510 2		221
42CA 222				10.527		222
42CA 223				10.561		223
42CA 224				10.588 2		224
42CA 225				10.610 2		225
42CA 226				10.612		226
42CA 227				10.633		227
42CA 228				10.652		228
42CA 229		10.673	1-			229
42CA 230				10.700		230

42CA 231		10.726	1-			231
42CA 232		10.783	1-			232
42CA 233		10.805	1-			233
42CA 234		10.842	1-			234
42CA 235		10.884	1-			235
42CA 236		10.905	1-			236
42CA 237		10.916	1-			237
42CA 238				10.968 2		238
42CA 239		10.970 2	3-			239
42CA 240				10.985		240

42CA 241		11.013	1-			241
42CA 242				11.048		242
42CA 243		11.076	1-			243
42CA 244		11.108	1-			244
42CA 245		11.149	1-			245
42CA 246				11.166	(10,12)	246
42CA 247		11.185	1-			247
42CA 248		11.223 2	1-			248
42CA 249				11.235 2	(1+)	249
42CA 250				11.279		250

42CA 251				11.304		251
42CA 252				11.309		252
42CA 253				11.319		253
42CA 254				11.326		254
42CA 255				11.331		255
42CA 256		11.336	1-			256
42CA 257				11.344		257
42CA 258				11.361	(1,2+)	258
42CA 259				11.363		259
42CA 260		11.381	1-			260

42CA 261				11.398		261
42CA 262				11.401		262
42CA 263				11.405	(12+)	263

42CA 264				11.409		264
42CA 265				11.412		265
42CA 266				11.417		266
42CA 267				11.426		267
42CA 268				11.430	(0+, 1-, 2+)	268
42CA 269				11.432		269
42CA 270				11.436	(1-, 2+)	270

42CA 271		11.440 2	1-			271
42CA 272				11.440 2	3-, 4-	272
42CA 273				11.446		273
42CA 274				11.448	(0+, 1-, 2+)	274
42CA 275				11.449		275
42CA 276				11.450		276
42CA 277				11.453		277
42CA 278				11.465		278
42CA 279				11.468		279
42CA 280				11.469	(1-, 2+)	280

42CA 281				11.474	(1-, 2+)	281
42CA 282				11.476		282
42CA 283				11.478		283
42CA 284				11.481	3-, 4-	284

S-n	=	11.481	(0.000)	-----		
42CA 285				11.482		285
42CA 286				11.485	(2+)	286
42CA 287				11.487		287
42CA 288		11.489	1-			288
42CA 289				11.490		289
42CA 290				11.494		290

42CA 291				11.495		291
42CA 292				11.499		292
42CA 293				11.500		293
42CA 294				11.504		294
42CA 295				11.507	(0+, 1-, 2+)	295
42CA 296				11.509		296
42CA 297				11.510	(1-)	297
42CA 298				11.512		298
42CA 299				11.514		299
42CA 300				11.517	(1-)	300

42CA 301				11.519		301
42CA 302				11.523	(1-, 2+)	302
42CA 303				11.525		303
42CA 304				11.527	(1-, 2+)	304
42CA 305				11.529	(0+, 1-, 2+)	305
42CA 306				11.531		306
42CA 307				11.533		307
42CA 308				11.537		308

42CA 309				11.540	(1-)	309
42CA 310				11.542	(0+,1-,2+)	310

42CA 311				11.544		311
42CA 312		11.544	1-			312
42CA 313				11.550	(0+,1-,2+)	313
42CA 314				11.552		314
42CA 315				11.555	(1-)	315
42CA 316				11.556		316
42CA 317				11.558		317
42CA 318				11.563		318
42CA 319		11.569	1-			319
42CA 320				11.572	(0+,1-,2+)	320

42CA 321				11.573	(1-,3-,4+)	321
42CA 322				11.575	(3-,4+)	322
42CA 323				11.576		323
42CA 324				11.590	(1-)	324
42CA 325				11.591		325
42CA 326				11.593		326
42CA 327				11.595		327
42CA 328		11.597	1-			328
42CA 329				11.599	(1-,2+)	329
42CA 330		11.602	1-			330

42CA 331				11.604		331
42CA 332		11.613	1-			332
42CA 333				11.614		333
42CA 334		11.616	1-			334
42CA 335				11.621	(1-,2+)	335
42CA 336				11.633		336
42CA 337				11.634	(1-,2+)	337
42CA 338				11.636	(1-,2+)	338
42CA 339				11.637	(1-,2+)	339
42CA 340		11.639	1-			340

42CA 341				11.641		341
42CA 342				11.644		342
42CA 343				11.644	(1-,2+)	343
42CA 344				11.646	(4+)	344
42CA 345				11.651	(1-,2+)	345
42CA 346				11.653		346
42CA 347				11.654	(1-)	347
42CA 348				11.657	(1-)	348
42CA 349				11.658		349
42CA 350				11.662	(1-,2+)	350

42CA 351				11.665		351
42CA 352		11.671	2+			352
42CA 353				11.674	(1-,2+)	353

42CA 354				11.680		354
42CA 355				11.685		355
42CA 356				11.689	(1-,2+)	356
42CA 357				11.693	(1-,2+)	357
42CA 358				11.695	(3-)	358
42CA 359				11.697		359
42CA 360				11.700		360

42CA 361	11.708	2+				361
42CA 362				11.709	(1-,2+)	362
42CA 363				11.710		363
42CA 364				11.718		364
42CA 365				11.726	(8-:11)	365
42CA 366	11.727	2+				366
42CA 367				11.728		367
42CA 368				11.729		368
42CA 369				11.733		369
42CA 370				11.737	(0+,1-,2+)	370

42CA 371			11.738	1-		371
42CA 372				11.743	(1-,2+)	372
42CA 373				11.748		373
42CA 374				11.752		374
42CA 375				11.757	(1-)	375
42CA 376				11.758		376
42CA 377				11.760		377
42CA 378				11.763		378
42CA 379				11.768		379
42CA 380				11.773	(1-,2+)	380

42CA 381				11.775	(1-,2+)	381
42CA 382				11.777		382
42CA 383				11.778	(0+,1-,2+)	383
42CA 384				11.783	(1-,2+)	384
42CA 385				11.785	(1-),2+	385
42CA 386				11.786		386
42CA 387				11.788		387
42CA 388				11.790		388
42CA 389				11.792		389
42CA 390				11.795	(1-,2+)	390

42CA 391				11.798	(1-,2+)	391
42CA 392				11.805	(1-,2+)	392
42CA 393				11.810	(1-,2+)	393
42CA 394				11.811	(1-,2+)	394
42CA 395				11.814		395
42CA 396				11.818		396
42CA 397				11.821		397
42CA 398				11.822	(1-)	398
42CA 399				11.824	(1-,2+)	399

42CA 400				11.829	(1-,2+)	400
42CA 401				11.830	(2+)	401
42CA 402				11.832		402
42CA 403				11.836	(4+)	403
42CA 404				11.843	(1-,2+)	404
42CA 405				11.845	(1-,2+)	405
42CA 406				11.847		406
42CA 407				11.850		407
42CA 408		11.853	1-			408
42CA 409				11.856		409
42CA 410				11.866	(0+,1-,2+)	410
42CA 411				11.868	(1-,2+)	411
42CA 412				11.872	(1-,2+)	412
42CA 413				11.873		413
42CA 414				11.874	(1-,2+)	414
42CA 415				11.881		415
42CA 416				11.885	(1-,2+,3-)	416
42CA 417				11.887		417
42CA 418				11.895	(1-,2+)	418
42CA 419				11.902	(1-,2+)	419
42CA 420				11.906	(1-,3-)	420
42CA 421				11.911	(1-,2+)	421
42CA 422				11.916		422
42CA 423				11.921		423
42CA 424				11.923	(1-,2+)	424
42CA 425				11.926	(1-,2+)	425
42CA 426				11.929		426
42CA 427				11.933	(1-,2+)	427
42CA 428				11.937		428
42CA 429	11.942	2+				429
42CA 430			11.944	1-		430
42CA 431				11.950		431
42CA 432				11.953		432
42CA 433				11.959	(1-)	433
42CA 434				11.963	(1-,2+)	434
42CA 435				11.967		435
42CA 436			11.970	1-		436
42CA 437				11.977	(2+)	437
42CA 438			11.980	1-		438
42CA 439				11.989	(2+,3-)	439
42CA 440				11.992	(1-,2+)	440
42CA 441	12.000	2+				441
42CA 442				12.005	(1-,2+)	442
42CA 443				12.006		443
42CA 444				12.012	(2+)	444

42CA 445				12.014		445
42CA 446				12.020	(1-,2+)	446
42CA 447				12.030	(0+,1-,2+)	447
42CA 448				12.033	(3-)	448
42CA 449		12.040	1-			449
42CA 450				12.042		450

42CA 451				12.043		451
42CA 452				12.051	(1-,2+)	452
42CA 453				12.052		453
42CA 454				12.062		454
42CA 455				12.066	(1-,2+)	455
42CA 456				12.070	(2+)	456
42CA 457				12.071		457
42CA 458				12.083		458
42CA 459				12.085		459
42CA 460				12.092		460

42CA 461				12.099		461
42CA 462		12.101	1-			462
42CA 463				12.105		463
42CA 464				12.109		464
42CA 465		12.112	1-			465
42CA 466				12.116	(2+)	466
42CA 467				12.124	(1-,2+)	467
42CA 468				12.128		468
42CA 469				12.130		469
42CA 470				12.135		470

42CA 471				12.138		471
42CA 472				12.142		472
42CA 473				12.145		473
42CA 474				12.147		474
42CA 475				12.149		475
42CA 476	12.154	2+				476
42CA 477				12.156		477
42CA 478		12.159	1-			478
42CA 479				12.160		479
42CA 480		12.163	1-			480

42CA 481				12.168	(1-)	481
42CA 482				12.172	(1,2+)	482
42CA 483		12.176	1-			483
42CA 484				12.180		484
42CA 485		12.183	1-			485
42CA 486				12.185		486
42CA 487				12.188		487
42CA 488				12.198		488
42CA 489				12.198		489
42CA 490				12.203	(1-,3-)	490

42CA 491				12.204		491
42CA 492				12.208	(0+,1-,2+)	492
42CA 493				12.210		493
42CA 494				12.212		494
42CA 495				12.216		495
42CA 496				12.221		496
42CA 497				12.223		497
42CA 498				12.226		498
42CA 499				12.231	(1-,2+,3-)	499
42CA 500				12.236		500
42CA 501				12.238	(1-,3-)	501
42CA 502				12.239		502
42CA 503				12.246	(1-,2+)	503
42CA 504				12.248		504
42CA 505				12.252	(1-)	505
42CA 506				12.255		506
42CA 507				12.260	(2+,3-)	507
42CA 508				12.263		508
42CA 509		12.265	1-			509
42CA 510		12.268	3-			510
42CA 511				12.270		511
42CA 512				12.272	(1-,2+)	512
42CA 513				12.277	(0+,1-,2+,3-,4+)	513
42CA 514				12.279		514
42CA 515	12.280	0+				515
42CA 516				12.286	(1-,2+)	516
42CA 517				12.288		517
42CA 518				12.291		518
42CA 519				12.295		519
42CA 520				12.299	(1-,2+,3-)	520
42CA 521				12.301		521
42CA 522				12.305		522
42CA 523				12.308		523
42CA 524				12.311		524
42CA 525				12.314		525
42CA 526				12.316		526
42CA 527				12.321	(0+,1-,2+)	527
42CA 528				12.323	(1-,2+)	528
42CA 529				12.327		529
42CA 530				12.330		530
42CA 531				12.336		531
42CA 532				12.340		532
42CA 533				12.344		533
42CA 534				12.348		534
42CA 535				12.351		535

42CA 536				12.358	536	
42CA 537				12.362	537	
42CA 538				12.369	538	
42CA 539				12.374	539	
42CA 540				12.377	540	

42CA 541				12.381	541	
42CA 542				12.383	542	
42CA 543				12.386	543	
42CA 544				12.390	544	
42CA 545				12.397	545	
42CA 546				12.701	546	
42CA 547				12.815	547	
42CA 548				13.713	548	
42CA 549				13.763	549	
42CA 550		14.700	0+		550	

42CA 551				15.252	551	
42CA 552				17.400	1-	552

S-p = 10.277 (0.000)-----
S-n = 11.481 (0.000)-----
S-2p = 18.085 (0.000)-----
S-2n = 19.844 (0.000)-----
S-alpha= 6.257 (0.000)-----

S+p = -4.930 (0.002)
S+n = -7.933 (0.000)
S+2p = -13.579 (0.001)
S+2n = -19.064 (0.000)
S+alpha = -8.005 (0.000)

gap p = 5.347 (0.002)
gap n = 3.548 (0.000)
gap 2p = 4.506 (0.001)
gap 2n = 0.780 (0.000)
gap alpha = -1.748 (0.000)