^{140}Gd $Z = 64$ $N = 76$ adopted link ENSDF link

```
Based on ENSDF from Apr 2024, and mass evaluation from 2020

BE     =   1141.697 ( 0.028) MeV
Qbeta+ =      5.204 ( 0.059) MeV

           Energy T    J+                J-               J-other                T1/2

-------------------------------------------------------------------------------------------
S-alpha=  -2.604 ( 0.031)-----------------------------------------------------------------
140GD   1 |  0.000     0+   |                 |                                1  15.8 S    4
140GD   2 |  0.329     2+   |                 |                                2
140GD   3 |  0.713     (2+) |                 |                                3
140GD   4 |  0.836     4+   |                 |                                4
140GD   5 |  1.068     (3+) |                 |                                5
140GD   6 |  1.281     (4+) |                 |                                6
140GD   7 |  1.464     6+   |                 |                                7
140GD   8 |  1.693     (5+) |                 |                                8
140GD   9 |  1.881     (6+) |                 |                                9
140GD  10 |  2.140     8+   |                 |                               10
-----------                                                                   -----------------
140GD  11 |                 |   2.211     8-  |                               11  1.5 NS     4
140GD  12 |  2.411     (7+) |                 |                               12
140GD  13 |                 |   2.457     9-  |                               13
140GD  14 |  2.632     (8+) |                 |                               14
140GD  15 |                 |   2.744     10- |                               15
140GD  16 |  2.797     10+  |                 |                               16
140GD  17 |  2.927     10+  |                 |                               17
140GD  18 |                 |   3.034     9(-)|                               18
140GD  19 |                 |   3.061     11- |                               19
140GD  20 |  3.268     12+  |                 |                               20
-----------                                                                   -----------------
140GD  21 |                 |   3.403     12- |                               21
140GD  22 |  3.617     (12+)|                 |                               22
140GD  23 |                 |   3.625     11(-)                               23
S-p    =   3.673 ( 0.031)-----------------------------------------------------------------
140GD  24 |                 |   3.767     13- |                               24
140GD  25 |  3.849     14+  |                 |                               25
140GD  26 |                 |                 |   4.026     (12,13)           26
140GD  27 |                 |   4.150     (14-)                               27
140GD  28 |                 |   4.320     (13-)                               28
140GD  29 |                 |   4.553     (15-)                               29
140GD  30 |  4.593     16+  |                 |                               30
-----------                                                                   -----------------
S-2p   =   4.863 ( 0.030)-----------------------------------------------------------------
140GD  31 |                 |   4.976     (16-)                               31
140GD  32 |  5.461     (18+)|                 |                               32
140GD  33 |  6.423     (20+)|                 |                               33
```

```
S-p    =   3.673 ( 0.031)----------------------------------------------------------------------
S-n    =  12.183 ( 0.142)----------------------------------------------------------------------
S-2p   =   4.863 ( 0.030)----------------------------------------------------------------------
S-2n   =  22.241 ( 0.141)----------------------------------------------------------------------
S-alpha=  -2.604 ( 0.031)----------------------------------------------------------------------

S+p       =  -0.047 ( 0.109)
S+n       =  -9.513 ( 0.034)
S+2p      =  -2.965 ( 0.711)
S+2n      = -21.320 ( 0.040)
S+alpha   =   2.787 ( 0.029)

gap p     =   3.626 ( 0.113)
gap n     =   2.669 ( 0.146)
gap 2p    =   1.897 ( 0.711)
gap 2n    =   0.921 ( 0.146)
gap alpha =   0.184 ( 0.042)
```