# Evaluation of RIPL Data

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RIPL – Reference Input Parameter Library for Calculation of Nuclear Reactions and Nuclear Data Evaluations

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# Reference Input Parameter Library

```
145Eu
  number of levels:                                   276
  number of gamma-rays:                               541
  number of levels in a complete level scheme:        22      ← E_crit region of interest
  number of levels with assigned spin and parity: 6
  neutron separation energy:                          10.448001 [MeV]
  proton separation energy:                           3.315400 [MeV]
```

Spin selection criterion ↓

Number decay modes

Decay mode uncertainty

```
--------------------------------------------------------------------------------------
 NL   EL[MeV]   S/P  F   T1/2[s] Ng s unc            s-info  nd m      p       mode
                                 Nf    Eg[MeV]    Pg         Pe        Icc
--------------------------------------------------------------------------------------
  1   0.000000  2.5  1   5.12E+05  0 u              5/2+   1 =    100.0000 %EC+%B+
  2   0.329920  3.5  1             1 u              7/2+   0
                                 1   0.330  9.360E-01  1.000E+00  6.840E-02
  3   0.716000  5.5 -1   4.90E-07  2 u             11/2-   0
                                 2   0.387  6.903E-01  8.042E-01  1.650E-01
                                 1   0.716  1.933E-01  1.958E-01  1.320E-02
  4   0.808330  0.5  1             1 u              1/2+   0
                                 1   0.808  9.960E-01  1.000E+00  4.013E-03
  5   1.041710  1.5  1             1 u              3/2+   0
                                 1   1.042  9.962E-01  1.000E+00  3.801E-03
  6   1.368000  4.5 -1             2 u              9/2-   0
                                 3   0.652  0.000E+00  0.000E+00  1.200E-02
                                 2   1.038  0.000E+00  0.000E+00  9.773E-04
  7   1.459700  1.5  1             2 g                     0
                                 2   1.130  2.304E-01  2.308E-01  1.967E-03
                                 1   1.460  7.679E-01  7.692E-01  1.728E-03
  8   1.500000  3.5 -1   ???       1 u              7/2-   0
                                 1   1.500  0.000E+00  0.000E+00  5.093E-04
  9   1.567120  1.5 -1             1 c         3/2(-),5/2(-)  0
                                 1   1.567  1.000E+00  1.000E+00  0.000E+00
 10   1.599000  3.5  1             0 u             (7/2)+   0
 11   1.600260  1.5 -1             1 u              3/2-   0
                                 1   1.600  1.000E+00  1.000E+00  0.000E+00
```

Missing Pγ

Jπ selection

No gammas

# Should ENSDF Generate RIPL?

- ENSDF is already the main component of RIPL
- ENSDF evaluators are in the best position to generate RIPL
  - Suggesting most likely spin assignments
  - Proposing missing gamma transitions
  - Including theoretical predictions
- ENSDF can be improved by providing more complete recommended data
  - Using *spin continuous normalized distribution* to order multiple $J^\pi$ possibilities.
  - More complete information
- EGAF effort already plans to do this for $(n,\gamma)$ nuclei
- This possibility should be discussed with R. Capote at the NSDD Meeting in Kuwait.