## $^{163}$Dy(d,t) 1995Be02

| Type | Author | History Citation | Literature Cutoff Date |
|---|---|---|---|
| Full Evaluation | N. Nica | NDS 195,1 (2024) | 19-Sep-2023 |

Additional information 1.
Configuration for the $^{163}$Dy g.s. is $\nu$ 5/2[523].
Data are from 1995Be02; other: 1967Ba34.
1967Ba34: $^{161}$Dy(d,t) on enriched target with E(d)=12 MeV at one angle. Outgoing particles measured in magnetic spectrograph.
1995Be02: $^{161}$Dy(d,t) on mass separated target with E(d)=22 MeV. Tritons measured at 30 deg with both multiwire proportional counter and and focal-plane detector in Q3D magnetic spectrograph with FWHM of 4.3 keV (multiwire counter) and 5.8 keV (focal-plane detector).

### $^{162}$Dy Levels

| E(level)[†] | Jπ[‡] | Relative $I_t$[#] | Comments |
|---|---|---|---|
| −0.3[@] *6* | $0^+$ | 9 *3* | |
| 80.67[@] *16* | $2^+$ | 33 *7* | |
| 265.65[@] *10* | $4^+$ | 25.3 *22* | |
| 548.55[@] *18* | $6^+$ | 6.2 *8* | |
| 888.15[&] *16* | $2^+$ | 0.41 *11* | |
| 921.30[@] *23* | $8^+$ | 0.33 *11* | |
| 1148.16[a] *15* | $2^-$ | 1.75 *21* | |
| 1210.22[a] *14* | $3^-$ | 1.3 *3* | |
| 1275.80[b] *20* | $1^-$ | 0.88 *17* | |
| 1296.9[a] *3* | $4^-$ | 1.11 *20* | |
| 1357.87[b] *11* | $3^-$ | 8.1 *5* | |
| 1390.11[a] *23* | $5^-$ | 1.88 *22* | |
| 1400.18[c] *25* | $0^+$ | 2.4 *3* | |
| 1453.47[c] *12* | $2^+$ | 13.1 *6* | |
| 1485.96[d] *24* | $5^-$ | 8.09 *12* | |
| 1518.31[b] *8* | $5^-$ | 14.6 *6* | |
| 1535.61[e] *8* | $4^+$ | 100.0 *9* | |
| 1574.78[f] *9* | $3^-$ | 34.4 *9* | |
| 1634.97[e] *8* | $5^+$ | 81.6 *20* | |
| 1669.20[f] *11* | $4^-$ | 13.1 *6* | |
| 1683.52[d] *8* | $7^-$ | 25.4 *10* | |
| 1745.48[g] *13* | $1^+$ | 24.7 *11* | |
| 1752.10[e] *10* | $6^+$ | 44.4 *16* | |
| 1766.81[h] *9* | $3^-$ | 25.0 *11* | |
| 1782.55[g] *8* | $2^+$ | 34.5 *9* | |
| 1833.25[f] *19* | $(5^-)$ | 19.9 *9* | |
| 1840.55[g] *9* | $3^+$ | 42.6 *14* | |
| 1888.32[e] *11* | $7^+$ | 9.2 *3* | |
| 1904.13 *11* | | 2.4 *4* | Assigned by 1995Be02 as the $4^+$ member of the $K^\pi=1^+$ band at 1745 keV. However, population of this level in (d,p) is not consistent with such an assignment. |
| 1913.83[h] *9* | $5^-$ | 34.9 *8* | |
| 1939.9[d] *18* | $9^-$ | 6.6 *4* | |
| 1959.19 *22* | | 3.6 *4* | |
| 1983.25 *16* | $2^+$ | 6.9 *4* | |
| 1999.16 *13* | $2^+$ | 6.9 *7* | |
| 2001.7 *2* | | 8.4 *7* | |

Continued on next page (footnotes at end of table)

## $^{163}$Dy(d,t) 1995Be02 (continued)

### $^{162}$Dy Levels (continued)

| E(level)† | Relative $I_t$# | E(level)† | Relative $I_t$# | E(level)† | Relative $I_t$# | E(level)† | Relative $I_t$# |
|---|---|---|---|---|---|---|---|
| 2009.97 *13* | 19.8 *9* | 2299.09 *23* | 93 *8* | 2617.3 *5* | 43 *4* | 2928.9 *7* | 11.1 *14* |
| 2041.45 *20* | 5.9 *4* | 2311.3 *3* | 25 *3* | 2630.6 *3* | 12.5 *24* | 2940.4 *7* | 7.2 *10* |
| 2065.79 *21* | 6.3 *7* | 2324.85 *21* | 25 *3* | 2641.3 *11* | 6.9 *17* | 2959.8 *7* | 6.2 *9* |
| 2071.0 *3* | 5.8 *8* | 2348.8 *3* | 25 *3* | 2663.6 *10* | 9.3 *13* | 2971.8 *6* | 8.2 *11* |
| 2080.6 *3* | 13.4 *9* | 2362.94 *20* | 128 *11* | 2680.6 *9* | 22 *3* | 2989.2 *7* | 2.4 *4* |
| 2087.27 *17* | 13.7 *9* | 2375.6 *3* | 70.7 *10* | 2688.5 *11* | 6.4 *15* | 3012.3 *6* | 10.2 *12* |
| 2102.8 *4* | 15 *3* | 2381.4 *5* | 36 *8* | 2708.9 *12* | 3.0 *8* | 3029.3 *6* | 5.6 *8* |
| 2108.5 *6* | 5.4 *14* | 2403.4 *3* | 41 *5* | 2718.2 *10* | 3.5 *9* | 3040.3 *6* | 9.3 *12* |
| 2112.6 *3* | 8.8 *16* | 2413.1 *4* | 20 *3* | 2730.6 *9* | 24 *3* | 3059.9 *6* | 8.8 *11* |
| 2119.57 *11* | 10.5 *10* | 2437.1 *4* | 10.7 *23* | 2742.2 *11* | 4.2 *10* | 3070.8 *6* | 8.6 *11* |
| 2128.64 *10* | 11.9 *23* | 2459.0 *3* | 43 *5* | 2750.8 *9* | 9.2 *15* | 3085.8 *6* | 6.4 *8* |
| 2138.5 *3* | 86 *8* | 2469.7 *7* | 27 *6* | 2768.7 *8* | 22 *3* | 3105.9 *9* | 4.1 *13* |
| 2163.83 *12* | 2.6 *9* | 2483.7 *8* | 17 *3* | 2779.8 *9* | 7.4 *13* | 3115.7 *7* | 7.8 *17* |
| 2174.61 *24* | 76 *8* | 2494.4 *9* | 32 *4* | 2788.8 *9* | 7.6 *13* | 3127 *7* | 9.1 *17* |
| 2199.2 *3* | 59 *4* | 2513.6 *6* | 54 *5* | 2801.7 *8* | 6.2 *10* | 3139.5 *7* | 6.4 *14* |
| 2207.5 *3* | 32 *4* | 2524.1 *4* | 33 *4* | 2818.2 *8* | 4.8 *8* | 3151.9 *5* | 13.2 *21* |
| 2230.75 *21* | 36 *4* | 2535.6 *5* | 149 *12* | 2848.4 *8* | 6.0 *9* | 3171.4 *6* | 6.7 *13* |
| 2245.6 *3* | 25 *3* | 2551.3 *11* | 16 *2* | 2861.5 *7* | 11.7 *15* | 3187.8 *5* | 40 *5* |
| 2261.8 *5* | 11 *2* | 2565.2 *11* | 5.6 *10* | 2880.0 *7* | 6.5 *9* | | |
| 2269.5 *3* | 17 *2* | 2579.6 *11* | 9.7 *13* | 2898.1 *7* | 9.7 *13* | | |
| 2291.4 *3* | 31 *4* | 2593.2 *11* | 51 *4* | 2911.0 *7* | 9.7 *13* | | |

† The authors give one set of level energies for the (d,p) and (d,t) reactions. Energy scale was calibrated with level energies known from other excitation modes.

‡ The $J^\pi$ and band assignments shown here are the adopted values. The association of these quantities with specific levels, up to ≈2 MeV, is that of the evaluator. 1995Be02 do not list these assignments in their (d,t) data table. Their assignments are based on data from (n,γ), (n,n′γ), (d,t), and (d,p) reactions.

# Values are for E(d)=22 MeV and at $\theta$=30°.

@ Band(A): $K^\pi=0^+$ ground-state band.

& Band(B): $K^\pi=2^+$ γ-vibrational band.

a Band(C): $K^\pi=2^-$ octupole-vibrational band. Dominant configuration=(π 7/2[523])-(π 3/2[411]).

b Band(D): $K^\pi=0^-$ octupole-vibrational band. Includes configuration=(ν 5/2[642])-(ν 5/2[523]).

c Band(E): $K^\pi=0^+$ band.

d Band(F): $K^\pi=5^-$ band. Configuration=(ν 5/2[642])+(ν 5/2[523]).

e Band(G): $K^\pi=4^+$ band. Configuration=(ν 3/2[521])+(ν 5/2[523]).

f Band(H): $K^\pi=3^-$ octupole-vibrational band.

g Band(I): $K^\pi=1^+$ band. Configuration=(ν 5/2[523])-(ν 3/2[521]).

h Band(J): $K^\pi=3^-$ band. Configuration=(ν 5/2[642])+(ν 1/2[521]).

## $^{163}$Dy(d,t) 1995Be02

**Band(A): $K^\pi=0^+$ ground-state band**

| | |
|---|---|
| $8^+$ | 921.30 |
| $6^+$ | 548.55 |
| $4^+$ | 265.65 |
| $2^+$ | 80.67 |
| $0^+$ | -0.3 |

**Band(B): $K^\pi=2^+$ $\gamma$-vibrational band**

| | |
|---|---|
| $2^+$ | 888.15 |

**Band(C): $K^\pi=2^-$ octupole-vibrational band**

| | |
|---|---|
| $5^-$ | 1390.11 |
| $4^-$ | 1296.9 |
| $3^-$ | 1210.22 |
| $2^-$ | 1148.16 |

**Band(D): $K^\pi=0^-$ octupole-vibrational band**

| | |
|---|---|
| $5^-$ | 1518.31 |
| $3^-$ | 1357.87 |
| $1^-$ | 1275.80 |

**Band(E): $K^\pi=0^+$ band**

| | |
|---|---|
| $2^+$ | 1453.47 |
| $0^+$ | 1400.18 |

**Band(F): $K^\pi=5^-$ band**

| | |
|---|---|
| $9^-$ | 1939.9 |
| $7^-$ | 1683.52 |
| $5^-$ | 1485.96 |

$^{162}_{66}Dy_{96}$

## $^{163}$Dy(d,t) 1995Be02 (continued)

**Band(J): $K^{\pi}=3^{-}$ band**

**$5^{-}$ 1913.83**

**Band(G): $K^{\pi}=4^{+}$ band**

**$7^{+}$ 1888.32**

**Band(H): $K^{\pi}=3^{-}$ octupole-vibrational band**

**($5^{-}$) 1833.25**

**Band(I): $K^{\pi}=1^{+}$ band**

**$3^{+}$ 1840.55**

**$2^{+}$ 1782.55**

**$3^{-}$ 1766.81**

**$6^{+}$ 1752.10**

**$1^{+}$ 1745.48**

**$4^{-}$ 1669.20**

**$5^{+}$ 1634.97**

**$3^{-}$ 1574.78**

**$4^{+}$ 1535.61**

$^{162}_{66}Dy_{96}$