

¹⁶⁴Dy(n,γ) E=2, 24 keV 1990Ka21

| Type | Author | History | Citation | Literature Cutoff Date |
|-----------------|---------------------------|---------|--------------------|------------------------|
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1990Ka21: E=2 and 24 keV neutron beams were produced from the filtered neutron beam facility at BNL. γ rays were detected with Ge detectors. Measured Eγ, Iγ, average-resonance capture (ARC) data.

2004Ki23: E(n)=550 keV. Measured Eγ, Iγ, σ.

Additional information 1.

¹⁶⁵Dy Levels

| E(level) [†] | J ^π [‡] | Comments |
|-----------------------|--|--|
| 0.0 | 7/2 ⁺ | |
| 108.38 9 | 1/2,3/2 | J ^π : 1/2 ⁻ in the Adopted Levels. [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=0.95 5. |
| 159.04 10 | 1/2 ⁻ ,3/2 ⁻ | J ^π : (3/2) ⁻ in the Adopted Levels. [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=1.5 1. |
| 181.5 4 | 5/2 ⁻ | [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=0.13 4. |
| 530.6 6 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=0.50 15. |
| 538.59 17 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | J ^π : 3/2 ⁺ in the Adopted Levels. [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=0.81 7. |
| 570.08 10 | 1/2 ⁻ ,3/2 ⁻ | J ^π : (1/2) ⁻ in the Adopted Levels. [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=1.6 2. |
| 574.0 7 | 1/2 ⁻ ,3/2 ⁻ | J ^π : (3/2) ⁻ in the Adopted Levels. [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=2.4 11. |
| 584.0 3 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | J ^π : 5/2 ⁺ in the Adopted Levels. [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=0.65 9. |
| 605.35 9 | 1/2 ⁻ ,3/2 ⁻ | J ^π : (3/2) ⁻ in the Adopted Levels. [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=1.6 1. |
| 629.6 6 | 5/2 ⁻ | [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=0.22 7. |
| 910.8 4 | 1/2,3/2,5/2 ⁺ | J ^π : 5/2 ⁺ in the Adopted Levels. [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=0.9 2. |
| 1079.99 10 | 1/2 ⁻ ,3/2 ⁻ | [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=2.5 3. |
| 1087.97 10 | 1/2 ⁻ ,3/2 ⁻ | J ^π : (3/2) ⁻ in the Adopted Levels. [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=2.1 2. |
| 1103.07 19 | 1/2 ⁻ ,3/2 ⁻ | J ^π : (3/2) ⁻ in the Adopted Levels. [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=1.6 3. |
| 1107.7 5 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | J ^π : (3/2) ⁺ in the Adopted Levels. [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=0.7 2. |
| 1140.71 17 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | J ^π : (3/2) ⁺ in the Adopted Levels. [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=0.75 9. |
| 1158.1 3 | 1/2,3/2 | J ^π : (5/2) ⁺ in the Adopted Levels. [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=1.4 3. |
| 1167.40 19 | 1/2,3/2 | J ^π : (3/2) ⁻ in the Adopted Levels. [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=1.4 2. |
| 1218.0 4 | 5/2 | J ^π : (5/2) ⁺ in the Adopted Levels. [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=0.46 11. |
| 1256.8 4 | 1/2,3/2 | [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=1.3 3. |
| 1320.9 7 | | |
| 1337.02 18 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | J ^π : (1/2 ⁺ ,3/2 ⁺) in the Adopted Levels. [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=0.7 1. |
| 1352.3 4 | | |
| 1375.4 4 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | J ^π : (3/2) ⁺ in the Adopted Levels. [Iγ/Eγ ⁵ (2 keV)]/[Iγ/Eγ ⁵ (24 keV)]=0.72 15. |
| 1381.2 4 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | J ^π : (5/2) ⁺ in the Adopted Levels. |

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¹⁶⁴Dy(n,γ) E=2, 24 keV **1990Ka21** (continued)

¹⁶⁵Dy Levels (continued)

| E(level) [†] | J ^{π‡} | Comments |
|-----------------------|--|--|
| 1400.01 24 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | [I _γ /E _γ ⁵ (2 keV)]/[I _γ /E _γ ⁵ (24 keV)]=0.56 10. J ^π : (3/2 ⁺) in the Adopted Levels. |
| 1416.72 24 | 1/2,3/2,5/2 ⁺ | [I _γ /E _γ ⁵ (2 keV)]/[I _γ /E _γ ⁵ (24 keV)]=0.68 11. J ^π : (3/2) in the Adopted Levels. |
| 1440.9 6 | 1/2,3/2,5/2 ⁺ | [I _γ /E _γ ⁵ (2 keV)]/[I _γ /E _γ ⁵ (24 keV)]=0.82 13. J ^π : (5/2 ⁺) in the Adopted Levels. |
| 1445.3 6 | 1/2,3/2,5/2 ⁺ | [I _γ /E _γ ⁵ (2 keV)]/[I _γ /E _γ ⁵ (24 keV)]=0.7 3. J ^π : (3/2 ⁻ ,5/2 ⁺) in the Adopted Levels. |
| 1453.7 6 | | [I _γ /E _γ ⁵ (2 keV)]/[I _γ /E _γ ⁵ (24 keV)]=0.7 3. |
| 1457.4 3 | 1/2,3/2,5/2 ⁺ | J ^π : (3/2) in the Adopted Levels. |
| 1464.9 3 | 1/2,3/2 | [I _γ /E _γ ⁵ (2 keV)]/[I _γ /E _γ ⁵ (24 keV)]=1.0 2. J ^π : (3/2) ⁻ in the Adopted Levels. |
| (5717.96 5) | 1/2,3/2 ⁻ | [I _γ /E _γ ⁵ (2 keV)]/[I _γ /E _γ ⁵ (24 keV)]=1.3 3. Additional information 2. |
| (5739.96 5) | 1/2,3/2 ⁻ | E(level): S(n)=5715.96 5 (2021Wa16), E(n)=2 keV. Additional information 3. |
| | | E(level): S(n)=5715.96 5 (2021Wa16), E(n)=24 keV. |

[†] Relative population in E(n)=2 keV and 24 keV data are indicated by [I_γ/E_γ⁵(2 keV)]/[I_γ/E_γ⁵(24 keV)] ratios given under comments, where E_γ is the primary γ from each resonance to the same final level.

[‡] From ARC data of 1990Ka21. When considered in Adopted Levels, assignments will be put in parentheses by evaluators if there are no other strong supporting arguments for firm assignments. The assignments from Adopted Levels are given under comments when different.

γ(¹⁶⁵Dy)

| E _γ | I _γ [†] | E _i (level) | J _i ^π | E _f | J _f ^π | I _γ /E _γ ^{5‡} |
|----------------|-----------------------------|------------------------|-----------------------------|----------------|--|--|
| 4252.8 3 | 131 15 | (5717.96) | 1/2,3/2 ⁻ | 1464.9 | 1/2,3/2 | 94 [#] 11 |
| 4260.1 4 | 220 30 | (5717.96) | 1/2,3/2 ⁻ | 1457.4 | 1/2,3/2,5/2 ⁺ | 157 [#] 21 |
| 4264.2 6 | 131 30 | (5717.96) | 1/2,3/2 ⁻ | 1453.7 | | 93 [#] 21 |
| 4272.6 6 | 120 23 | (5717.96) | 1/2,3/2 ⁻ | 1445.3 | 1/2,3/2,5/2 ⁺ | 84 [#] 16 |
| 4276.4 8 | 104 23 | (5739.96) | 1/2,3/2 ⁻ | 1464.9 | 1/2,3/2 | 73 [@] 16 |
| 4277.0 6 | 113 22 | (5717.96) | 1/2,3/2 ⁻ | 1440.9 | 1/2,3/2,5/2 ⁺ | 79 [#] 15 |
| 4283.0 4 | 225 23 | (5739.96) | 1/2,3/2 ⁻ | 1457.4 | 1/2,3/2,5/2 ⁺ | 156 [@] 16 |
| 4294.8 11 | 167 69 | (5739.96) | 1/2,3/2 ⁻ | 1445.3 | 1/2,3/2,5/2 ⁺ | 114 [@] 47 |
| 4298.9 11 | 164 68 | (5739.96) | 1/2,3/2 ⁻ | 1440.9 | 1/2,3/2,5/2 ⁺ | 112 [@] 46 |
| 4301.0 3 | 137 15 | (5717.96) | 1/2,3/2 ⁻ | 1416.72 | 1/2,3/2,5/2 ⁺ | 93 [#] 10 |
| 4317.6 3 | 111 14 | (5717.96) | 1/2,3/2 ⁻ | 1400.01 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | 74 [#] 9 |
| 4323.5 4 | 169 20 | (5739.96) | 1/2,3/2 ⁻ | 1416.72 | 1/2,3/2,5/2 ⁺ | 112 [@] 13 |
| 4337.0 5 | 121 19 | (5717.96) | 1/2,3/2 ⁻ | 1381.2 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | 79 [#] 12 |
| 4340.4 4 | 166 19 | (5739.96) | 1/2,3/2 ⁻ | 1400.01 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | 108 [@] 12 |
| 4341.8 5 | 111 19 | (5717.96) | 1/2,3/2 ⁻ | 1375.4 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | 72 [#] 12 |
| 4358.5 4 | 220 22 | (5739.96) | 1/2,3/2 ⁻ | 1381.2 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | 140 [@] 14 |
| 4365.2 5 | 160 22 | (5739.96) | 1/2,3/2 ⁻ | 1375.4 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | 101 [@] 14 |
| 4365.6 4 | 90 13 | (5717.96) | 1/2,3/2 ⁻ | 1352.3 | | 57 [#] 8 |
| 4380.8 2 | 145 15 | (5717.96) | 1/2,3/2 ⁻ | 1337.02 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | 90 [#] 9 |

Continued on next page (footnotes at end of table)

$^{164}\text{Dy}(n,\gamma) E=2, 24 \text{ keV}$ **1990Ka21** (continued) $\gamma(^{165}\text{Dy})$ (continued)

| E_γ | I_γ^\dagger | $E_i(\text{level})$ | J_i^π | E_f | J_f^π | $I_\gamma/E_\gamma^{5\ddagger}$ |
|------------|--------------------|---------------------|----------------------|---------|--|---------------------------------|
| 4403.2 | 4 217 | 22 (5739.96) | 1/2,3/2 ⁻ | 1337.02 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | 131@ 13 |
| 4419.0 | 7 83 | 17 (5739.96) | 1/2,3/2 ⁻ | 1320.9 | | 49@ 10 |
| 4461.0 | 4 88 | 13 (5717.96) | 1/2,3/2 ⁻ | 1256.8 | 1/2,3/2 | 50# 7 |
| 4483.3 | 8 71 | 15 (5739.96) | 1/2,3/2 ⁻ | 1256.8 | 1/2,3/2 | 39@ 8 |
| 4499.2 | 6 55 | 11 (5717.96) | 1/2,3/2 ⁻ | 1218.0 | 5/2 | 30# 6 |
| 4522.4 | 5 123 | 17 (5739.96) | 1/2,3/2 ⁻ | 1218.0 | 5/2 | 65@ 9 |
| 4550.6 | 2 172 | 16 (5717.96) | 1/2,3/2 ⁻ | 1167.40 | 1/2,3/2 | 88# 8 |
| 4559.8 | 3 128 | 14 (5717.96) | 1/2,3/2 ⁻ | 1158.1 | 1/2,3/2 | 65# 7 |
| 4571.8 | 5 128 | 16 (5739.96) | 1/2,3/2 ⁻ | 1167.40 | 1/2,3/2 | 64@ 8 |
| 4576.9 | 2 155 | 14 (5717.96) | 1/2,3/2 ⁻ | 1140.71 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | 77# 7 |
| 4581.7 | 7 93 | 16 (5739.96) | 1/2,3/2 ⁻ | 1158.1 | 1/2,3/2 | 46@ 8 |
| 4599.8 | 3 210 | 19 (5739.96) | 1/2,3/2 ⁻ | 1140.71 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | 102@ 9 |
| 4610.4 | 6 108 | 25 (5717.96) | 1/2,3/2 ⁻ | 1107.7 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | 52# 12 |
| 4614.8 | 2 341 | 27 (5717.96) | 1/2,3/2 ⁻ | 1103.07 | 1/2 ⁻ ,3/2 ⁻ | 163# 13 |
| 4630.0 | 1 351 | 17 (5717.96) | 1/2,3/2 ⁻ | 1087.97 | 1/2 ⁻ ,3/2 ⁻ | 165# 8 |
| 4631.8 | 8 158 | 39 (5739.96) | 1/2,3/2 ⁻ | 1107.7 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | 74@ 18 |
| 4637.0 | 6 221 | 39 (5739.96) | 1/2,3/2 ⁻ | 1103.07 | 1/2 ⁻ ,3/2 ⁻ | 103@ 18 |
| 4637.9 | 1 331 | 17 (5717.96) | 1/2,3/2 ⁻ | 1079.99 | 1/2 ⁻ ,3/2 ⁻ | 154# 8 |
| 4650.7 | 4 170 | 18 (5739.96) | 1/2,3/2 ⁻ | 1087.97 | 1/2 ⁻ ,3/2 ⁻ | 78@ 8 |
| 4659.8 | 5 136 | 18 (5739.96) | 1/2,3/2 ⁻ | 1079.99 | 1/2 ⁻ ,3/2 ⁻ | 62@ 8 |
| 4807.5 | 4 62 | 10 (5717.96) | 1/2,3/2 ⁻ | 910.8 | 1/2,3/2,5/2 ⁺ | 24# 4 |
| 4828.0 | 7 71 | 16 (5739.96) | 1/2,3/2 ⁻ | 910.8 | 1/2,3/2,5/2 ⁺ | 27@ 6 |
| 5087.7 | 9 41 | 10 (5717.96) | 1/2,3/2 ⁻ | 629.6 | 5/2 ⁻ | 12# 3 |
| 5110.7 | 7 185 | 32 (5739.96) | 1/2,3/2 ⁻ | 629.6 | 5/2 ⁻ | 53@ 9 |
| 5112.4 | 1 503 | 18 (5717.96) | 1/2,3/2 ⁻ | 605.35 | 1/2 ⁻ ,3/2 ⁻ | 144# 5 |
| 5133.7 | 3 128 | 14 (5717.96) | 1/2,3/2 ⁻ | 584.0 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | 36# 4 |
| 5135.0 | 2 314 | 18 (5739.96) | 1/2,3/2 ⁻ | 605.35 | 1/2 ⁻ ,3/2 ⁻ | 88@ 5 |
| 5144.0 | 7 195 | 29 (5717.96) | 1/2,3/2 ⁻ | 574.0 | 1/2 ⁻ ,3/2 ⁻ | 54# 8 |
| 5147.8 | 1 607 | 33 (5717.96) | 1/2,3/2 ⁻ | 570.08 | 1/2 ⁻ ,3/2 ⁻ | 168# 9 |
| 5156.2 | 5 201 | 22 (5739.96) | 1/2,3/2 ⁻ | 584.0 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | 55@ 6 |
| 5164.1 | 22 85 | 37 (5739.96) | 1/2,3/2 ⁻ | 574.0 | 1/2 ⁻ ,3/2 ⁻ | 23@ 10 |
| 5169.6 | 4 388 | 44 (5739.96) | 1/2,3/2 ⁻ | 570.08 | 1/2 ⁻ ,3/2 ⁻ | 105@ 12 |
| 5179.5 | 2 291 | 15 (5717.96) | 1/2,3/2 ⁻ | 538.59 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | 78# 4 |
| 5188.1 | 7 49 | 11 (5717.96) | 1/2,3/2 ⁻ | 530.6 | 1/2 ⁺ ,3/2 ⁺ ,5/2 | 13# 3 |
| 5200.8 | 3 365 | 23 (5739.96) | 1/2,3/2 ⁻ | 538.59 | 1/2 ⁺ ,3/2 ⁺ ,5/2 ⁺ | 96@ 6 |
| 5208.0 | 9 100 | 19 (5739.96) | 1/2,3/2 ⁻ | 530.6 | 1/2 ⁺ ,3/2 ⁺ ,5/2 | 26@ 5 |
| 5535.7 | 5 36 | 11 (5717.96) | 1/2,3/2 ⁻ | 181.5 | 5/2 ⁻ | 7# 2 |
| 5558.8 | 1 711 | 21 (5717.96) | 1/2,3/2 ⁻ | 159.04 | 1/2 ⁻ ,3/2 ⁻ | 134# 4 |
| 5558.8 | 4 276 | 27 (5739.96) | 1/2,3/2 ⁻ | 181.5 | 5/2 ⁻ | 52@ 5 |
| 5581.0 | 3 493 | 38 (5739.96) | 1/2,3/2 ⁻ | 159.04 | 1/2 ⁻ ,3/2 ⁻ | 91@ 7 |
| 5609.4 | 1 528 | 17 (5717.96) | 1/2,3/2 ⁻ | 108.38 | 1/2,3/2 | 95# 3 |
| 5631.8 | 2 567 | 23 (5739.96) | 1/2,3/2 ⁻ | 108.38 | 1/2,3/2 | 100@ 4 |

Continued on next page (footnotes at end of table)

$^{164}\text{Dy}(n,\gamma)$ E=2, 24 keV **1990Ka21** (continued)

$\gamma(^{165}\text{Dy})$ (continued)

† Relative intensity deduced from I_γ/E_γ^5 by the evaluator.

‡ Relative reduced primary intensity.

From E(n)=2 keV.

@ From E(n)=24 keV.

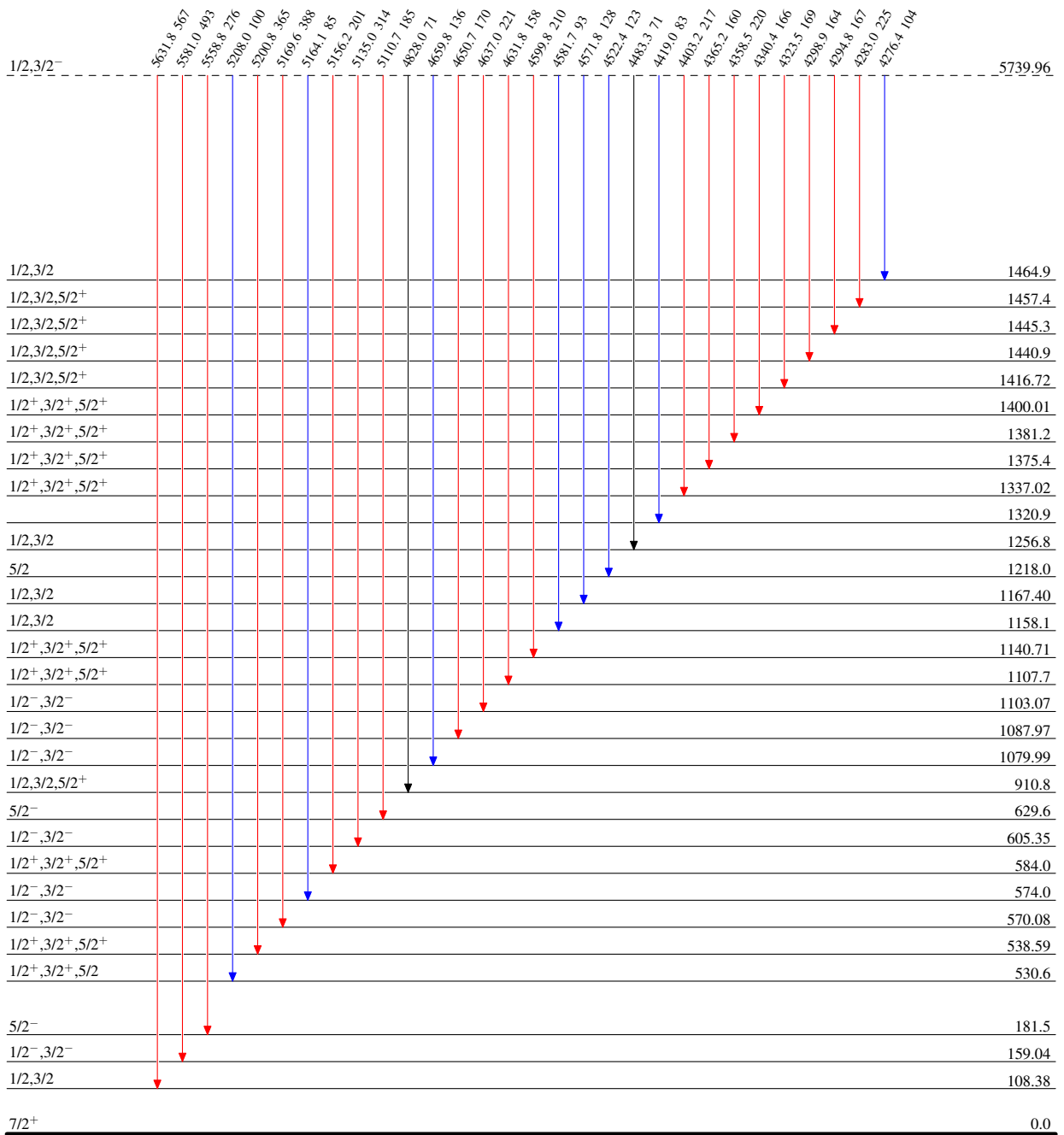
$^{164}\text{Dy}(n,\gamma) E=2, 24 \text{ keV}$ 1990Ka21

Legend

Level Scheme

Intensities: $I_\gamma/E\gamma^5$

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$



$^{164}\text{Dy}(n,\gamma) E=2, 24 \text{ keV}$ 1990Ka21

Level Scheme (continued)

Intensities: $I_\gamma/E\gamma^5$

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$

