

$^{161}\text{Dy}(n,\gamma)$  E=24 keV **1983Wa08**

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

**Additional information 1.**

Data from resonance-averaged n capture on enriched (95.94%) target. Average  $E(n)=24$  keV with neutron-energy spread, FWHM,  $\approx 1.9$  keV.  $\gamma$ 's measured with Ge detector and pair spectrometer. Capture in two individual resonances also measured. No secondary  $\gamma$ 's reported.

 $^{162}\text{Dy}$  Levels

| E(level) <sup>†</sup> | $J^\pi$ <sup>‡</sup>   | Comments   |
|-----------------------|--|--|
| 0.0                   | 0 <sup>+</sup>   | E(level): This level was not observed.   |
| 80.6 3                | 2 <sup>+</sup> ,3 <sup>+</sup>                                     |  |
| 265.5 4               | 4 <sup>+</sup>   |  |
| 888.6 4               | 2 <sup>+</sup> ,3 <sup>+</sup>                                     |  |
| 962.8 4               | 2 <sup>+</sup> ,3 <sup>+</sup>                                     |  |
| 1060.7 4              | 4 <sup>+</sup> , (2 <sup>+</sup> )                                 |  |
| 1148.3 3              | 2 <sup>-</sup> ,3 <sup>-</sup>                                     |  |
| 1210.2 3              | 2 <sup>-</sup> ,3 <sup>-</sup>                                     |  |
| 1275.8 3              | 1 <sup>-</sup>   | $J^\pi$ : Population from 2 <sup>+</sup> resonance at 3.68 eV used to eliminate 4 <sup>-</sup> assignment.                   |
| 1297.1 3              | 4 <sup>-</sup>   |  |
| 1358.0 3              | 2 <sup>-</sup> ,3 <sup>-</sup>                                     |  |
| 1453.8 5              | 2 <sup>+</sup> , (3 <sup>+</sup> ,4 <sup>+</sup> )                 |  |
| 1571.0 3              | 2 <sup>-</sup> ,3 <sup>-</sup>                                     |  |
| 1575.6 13             | 1 <sup>+</sup> ,4 <sup>+</sup> , (2 <sup>+</sup> ,3 <sup>+</sup> ) |  |
| 1637.2 3              | 1 <sup>-</sup> , (4 <sup>-</sup> )                                 |  |
| 1669.0 3              | 4 <sup>-</sup>   |  |
| 1691.4 3              | 2 <sup>-</sup> ,3 <sup>-</sup>                                     |  |
| 1728.2 5              | 2 <sup>+</sup> ,3 <sup>+</sup>                                     |  |
| 1739.1 3              | 2 <sup>-</sup> ,3 <sup>-</sup>                                     |  |
| 1746.2 9              | 4 <sup>+</sup> , (1 <sup>+</sup> )                                 |  |
| 1766.5 3              | 2 <sup>-</sup> ,3 <sup>-</sup>                                     | E(level): Intensity in 24-keV capture indicates the possibility of an additional unresolved state.                           |
| 1782.2 5              | 2 <sup>+</sup> ,3 <sup>+</sup> , (4 <sup>+</sup> )                 |  |
| 1840.3 5              | 2 <sup>+</sup> ,3 <sup>+</sup> , (4 <sup>+</sup> )                 |  |
| 1851.9 4              | 4 <sup>-</sup>   | $J^\pi$ : Population from 3 <sup>+</sup> resonance at 2.72 eV used to eliminate 1 <sup>-</sup> assignment.                   |
| 1863.6 3              | 2 <sup>-</sup> ,3 <sup>-</sup>                                     | E(level): Reduced intensities indicate an unresolved doublet.  |
| 1887.1 6              | 2 <sup>+</sup> ,3 <sup>+</sup> ,4 <sup>+</sup>                     |  |
| 1895.2 5              | 2 <sup>+</sup> ,3 <sup>+</sup>                                     |  |
| 1910.7 3              | 2 <sup>-</sup> ,3 <sup>-</sup>                                     |  |
| 1951.7 7              |  | E(level): Reduced intensities indicate an unresolved doublet.  |
| 1973.2 4              | 1 <sup>-</sup> ,4 <sup>-</sup>                                     |  |
| 1983.0 4              |  | E(level): Reduced intensities indicate an unresolved doublet.  |
| 1999.4 5              | 2 <sup>+</sup> ,3 <sup>+</sup> , (4 <sup>+</sup> )                 |  |
| 2080.1 3              | 2 <sup>-</sup> ,3 <sup>-</sup>                                     | E(level): Intensity in 24-keV capture indicates the possibility of an additional unresolved state.                           |
| 2104.5 6              | 2 <sup>+</sup> ,3 <sup>+</sup> , (4 <sup>+</sup> )                 |  |
| 2119.7 4              | 1 <sup>-</sup> ,4 <sup>-</sup>                                     |  |
| 2128.3 4              | 1 <sup>-</sup> ,4 <sup>-</sup>                                     |  |
| 2149.1 6              | 2 <sup>+</sup> ,3 <sup>+</sup> , (4 <sup>+</sup> )                 |  |
| 8221.                 |  | E(level): This level represented the 24-keV neutron capture state (1967Ba34) and is populated by both s- and p-wave capture. |

<sup>†</sup> From 1983Wa08 and based on 2- and 24-keV primary capture data.

<sup>‡</sup> From 1983Wa08 and based only on primary  $\gamma$ 's from 2- and 24-keV capture. See  $^{162}\text{Dy}$  Adopted Levels for adopted  $J^\pi$  and band structure.

$^{161}\text{Dy}(n,\gamma) E=24 \text{ keV}$  **1983Wa08** (continued) $\gamma(^{162}\text{Dy})$ 

| $E_\gamma^\dagger$ | $I_\gamma^\ddagger\#$ | $E_i(\text{level})$ | $E_f$  | $J_f^\pi$       | $E_\gamma^\dagger$ | $I_\gamma^\ddagger\#$ | $E_i(\text{level})$ | $E_f$  | $J_f^\pi$           |
|--------------------|-----------------------|---------------------|--------|-----------------|--------------------|-----------------------|---------------------|--------|---------------------|
| 6072.7 7           | 20 4                  | 8221.               | 2149.1 | $2^+,3^+,(4^+)$ | 6482.3 4           | 79 5                  | 8221.               | 1739.1 | $2^-,3^-$           |
| 6091.5 7           | 20 5                  | 8221.               | 2128.3 | $1^-,4^-$       | 6492.0 5           | 35 5                  | 8221.               | 1728.2 | $2^+,3^+$           |
| 6101.8 5           | 19 3                  | 8221.               | 2119.7 | $1^-,4^-$       | 6529.9 4           | 75 5                  | 8221.               | 1691.4 | $2^-,3^-$           |
| 6117.0 6           | 28 7                  | 8221.               | 2104.5 | $2^+,3^+,(4^+)$ | 6552.1 4           | 53 4                  | 8221.               | 1669.0 | $4^-$               |
| 6140.5 4           | 77 5                  | 8221.               | 2080.1 | $2^-,3^-$       | 6584.5 5           | 32 4                  | 8221.               | 1637.2 | $1^-,(4^-)$         |
| 6222.4 9           | 23 5                  | 8221.               | 1999.4 | $2^+,3^+,(4^+)$ | 6645.3 13          | 23 9                  | 8221.               | 1575.6 | $1^+,4^+,(2^+,3^+)$ |
| 6237.9 4           | 56 5                  | 8221.               | 1983.0 |                 | 6649.7 5           | 94 10                 | 8221.               | 1571.0 | $2^-,3^-$           |
| 6246.3 9           | 29 7                  | 8221.               | 1973.2 | $1^-,4^-$       | 6767.6 6           | 30 4                  | 8221.               | 1453.8 | $2^+,(3^+,4^+)$     |
| 6270.2 6           | 46 5                  | 8221.               | 1951.7 |                 | 6862.9 3           | 94 5                  | 8221.               | 1358.0 | $2^-,3^-$           |
| 6309.4 4           | 66 6                  | 8221.               | 1910.7 | $2^-,3^-$       | 6923.9 4           | 68 4                  | 8221.               | 1297.1 | $4^-$               |
| 6325.6 7           | 25 5                  | 8221.               | 1895.2 | $2^+,3^+$       | 6945.1 4           | 48 4                  | 8221.               | 1275.8 | $1^-$               |
| 6334.4 6           | 27 4                  | 8221.               | 1887.1 | $2^+,3^+,4^+$   | 7010.8 3           | 103 4                 | 8221.               | 1210.2 | $2^-,3^-$           |
| 6357.9 5           | 92 11                 | 8221.               | 1863.6 | $2^-,3^-$       | 7072.7 3           | 109 4                 | 8221.               | 1148.3 | $2^-,3^-$           |
| 6369.3 5           | 46 5                  | 8221.               | 1851.9 | $4^-$           | 7160.0 4           | 42 3                  | 8221.               | 1060.7 | $4^+,(2^+)$         |
| 6381.0 6           | 20 8                  | 8221.               | 1840.3 | $2^+,3^+,(4^+)$ | 7257.9 4           | 65 3                  | 8221.               | 962.8  | $2^+,3^+$           |
| 6439.7 7           | 35 8                  | 8221.               | 1782.2 | $2^+,3^+,(4^+)$ | 7332.6 4           | 63 4                  | 8221.               | 888.6  | $2^+,3^+$           |
| 6454.8 4           | 95 7                  | 8221.               | 1766.5 | $2^-,3^-$       | 7955.6 4           | 65 4                  | 8221.               | 265.5  | $4^+$               |
| 6475.0 7           | 25 4                  | 8221.               | 1746.2 | $4^+,(1^+)$     | 8140.1 3           | 100 4                 | 8221.               | 80.6   | $2^+,3^+$           |

† From 1983Wa08.

‡ Reported as  $I_\gamma/E_\gamma^5$  and converted to  $I_\gamma$  by evaluator.

# Intensity per 100 neutron captures.

$^{161}\text{Dy}(n,\gamma)$  E=24 keV 1983Wa08