

<sup>155</sup>Gd(<sup>20</sup>Ne,4n $\gamma$ )    **1983Ar09,1986De01**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin, E. A. Mccutchan		NDS 151, 334 (2018)	30-Jun-2018

See **1983Ar09** (<sup>20</sup>Ne on <sup>155</sup>Gd) and **1986De01** (<sup>48</sup>Ti on <sup>126</sup>Te) for continuum  $\gamma$ -ray spectra at high spins.

**1983Ar09**: <sup>155</sup>Gd(<sup>20</sup>Ne,4n $\gamma$ ), E(<sup>20</sup>Ne)=110 MeV; Gd targets enriched to 92% in <sup>155</sup>Gd; measured E $\gamma$ , I $\gamma$  (2

Compton-suppression spectrometers; HPGe,  $\gamma$ X detectors (average suppression factor=10)),  $\gamma\gamma$  coin,  $\gamma$ - $\gamma$ -time 3-parameter coin,  $\gamma\gamma(\theta)$ ,  $\gamma(\theta)$  (6 angles, 0° to 90°, Ge(Li) monitor at 135°), excitation functions; showed probable spectrum for transitions in unfavored band, but did not report analysis of data; used cranked shell model to interpret level structure.

The level scheme and all data are from **1983Ar09**. **1983Ar09** also show spectrum for transitions tentatively assigned to the unfavored i<sub>13/2</sub> band, but do not report analysis of data. For these, E $\gamma$ =124, 262, 372, 457, 522, 552 and 570; only the 457 $\gamma$  appears to be confirmed in subsequent (HL,xn $\gamma$ ) studies (see Adopted Levels, Gammas).

<sup>171</sup>W Levels

E(level) <sup>†</sup>	J $\pi$ <sup>‡</sup>
0.0+x	13/2 <sup>+</sup>
212.6+x 2	17/2 <sup>+</sup>
556.3+x 3	21/2 <sup>+</sup>
1006.8+x 4	25/2 <sup>+</sup>
1539.0+x 5	29/2 <sup>+</sup>
2128.3+x 5	33/2 <sup>+</sup>
2752.1+x 6	37/2 <sup>+</sup>
3394.5+x 7	41/2 <sup>+</sup>
4068.2+x 7	45/2 <sup>+</sup>

<sup>†</sup> From least-squares fit to E $\gamma$ . From Adopted Levels, x=183.1 keV; its uncertainty of 0.6 keV has not been included In E(level) values given here.

<sup>‡</sup> Authors' values, based on cascading stretched Q transitions and assumption that lowest level has J $\pi$ =13/2<sup>+</sup>, similar to i<sub>13/2</sub> bands in odd-N Hf isotopes (favored sequence). See <sup>171</sup>W Adopted Levels for evaluator's assignments.

$\gamma$ (<sup>171</sup>W)

E $\gamma$	I $\gamma$ <sup>†</sup>	E <sub>i</sub> (level)	J $\pi$ <sub>i</sub>	E <sub>f</sub>	J $\pi$ <sub>f</sub>	Mult. <sup>‡</sup>	Comments
212.6 2	110 3	212.6+x	17/2 <sup>+</sup>	0.0+x	13/2 <sup>+</sup>	Q	A <sub>2</sub> =+0.17 2, A <sub>4</sub> =-0.11 3 ( <b>1983Ar09</b> ).
343.7 2	100	556.3+x	21/2 <sup>+</sup>	212.6+x	17/2 <sup>+</sup>	Q	A <sub>2</sub> =+0.08 2, A <sub>4</sub> =-0.04 2 ( <b>1983Ar09</b> ).
450.5 2	90.5 12	1006.8+x	25/2 <sup>+</sup>	556.3+x	21/2 <sup>+</sup>	Q	A <sub>2</sub> =+0.16 2, A <sub>4</sub> =-0.05 2 ( <b>1983Ar09</b> ).
532.2 3		1539.0+x	29/2 <sup>+</sup>	1006.8+x	25/2 <sup>+</sup>		Peak includes overlapping contaminant.
589.3 2	59.8 11	2128.3+x	33/2 <sup>+</sup>	1539.0+x	29/2 <sup>+</sup>	Q	A <sub>2</sub> =+0.13 3, A <sub>4</sub> =-0.02 5 ( <b>1983Ar09</b> ).
623.8 3	34.2 11	2752.1+x	37/2 <sup>+</sup>	2128.3+x	33/2 <sup>+</sup>	Q	A <sub>2</sub> =+0.09 10, A <sub>4</sub> =-0.02 5 ( <b>1983Ar09</b> ).
642.4 3		3394.5+x	41/2 <sup>+</sup>	2752.1+x	37/2 <sup>+</sup>		Peak includes overlapping contaminant.
673.7 3	20.0 15	4068.2+x	45/2 <sup>+</sup>	3394.5+x	41/2 <sup>+</sup>	Q	A <sub>2</sub> =+0.15 11, A <sub>4</sub> =-0.07 20 ( <b>1983Ar09</b> ).

<sup>†</sup> Relative photon intensity from <sup>155</sup>Gd(<sup>20</sup>Ne,4n $\gamma$ ).

<sup>‡</sup> Inferred from  $\gamma$ -ray angular distributions; stretched Q assignments were based on positive A<sub>2</sub> and slightly negative A<sub>4</sub>.

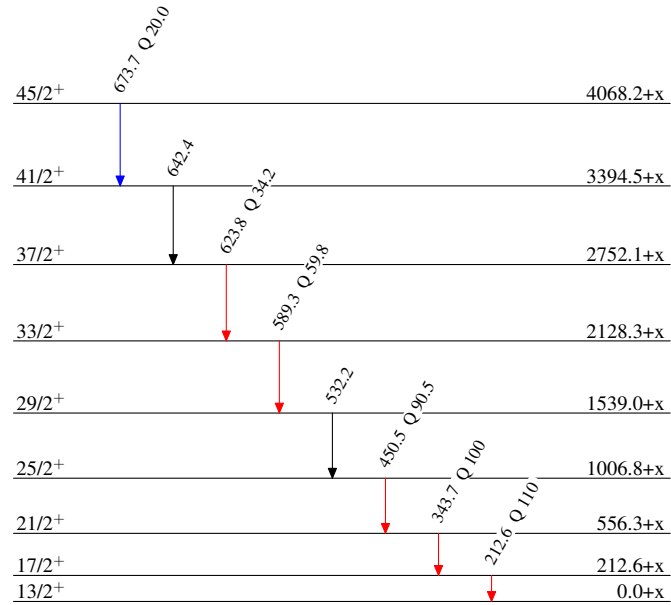
${}^{155}\text{Gd}({}^{20}\text{Ne},4\text{n}\gamma)$  1983Ar09,1986De01

## Level Scheme

Intensities: Relative  $I_\gamma$  for  ${}^{155}\text{Gd}({}^{20}\text{Ne},4\text{n}\gamma)$ 

## Legend

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

 ${}^{171}_{74}\text{W}_{97}$