

$^{145}\text{Tb}$   $\varepsilon$  decay (30.9 s) 1982No08,1982StZU

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli		NDS 110, 507 (2009)	1-Oct-2008

Parent:  $^{145}\text{Tb}$ :  $E=y$ ;  $J^\pi=(11/2^-)$ ;  $T_{1/2}=30.9$  s 6;  $Q(\varepsilon)=7.05\times 10^3$  6;  $\% \varepsilon + \% \beta^+$  decay=100.0

Measured:  $\gamma$  (1982No08,1982So02,1982StZU,1981AI23),  $\gamma\gamma$  (1982So02,1982No08).

Q value measurement by total gamma absorption method: 1993AI03.

Decay scheme is that of 1982No08.

 $^{145}\text{Gd}$  Levels

E(level)	$J^\pi^\dagger$	$T_{1/2}$	Comments
0.0	$1/2^+$		
27.3 1	$3/2^+$		
748.7	$11/2^-$	85 s 3	$T_{1/2}$ : from Adopted Levels.
1014.9	$5/2^+$		
1272.7	$7/2^-$		
1415.3	$7/2^+$		
1498.8	$5/2^+$		
1667.2	$7/2^{(-)}$		
1683.8	$9/2^-$		
1809.7	$9/2^-$		
2181.2	$(9/2^-)$		
2195.4	$11/2^-$		
2381.8	$(9/2^-)$		
2442.0	$13/2^-$		

$^\dagger$  Adopted values.

 $\varepsilon, \beta^+$  radiations

E(decay)	E(level)	$I\beta^+^\dagger$	$I\varepsilon^\dagger$	Log $ft$	$I(\varepsilon + \beta^+)^\dagger$	Comments
$(4.61\times 10^3$ 6)	2442.0	2.6 4	1.5 4	5.5 2	4.1 4	av $E\beta=$ 1490 140; $\varepsilon K=$ 0.31 6; $\varepsilon L=$ 0.046 9; $\varepsilon M+=$ 0.0132 25
$(4.67\times 10^3$ 6)	2381.8	26 4	15 4	4.5 2	41 3	av $E\beta=$ 1518 140; $\varepsilon K=$ 0.30 6; $\varepsilon L=$ 0.044 9; $\varepsilon M+=$ 0.0127 24
$(4.85\times 10^3$ 6)	2195.4	7.5 16	3.5 10	5.2 2	11 2	av $E\beta=$ 1605 140; $\varepsilon K=$ 0.27 5; $\varepsilon L=$ 0.040 8; $\varepsilon M+=$ 0.0114 22
$(4.87\times 10^3$ 6)	2181.2	7.5 16	3.5 10	5.2 2	11 2	av $E\beta=$ 1611 140; $\varepsilon K=$ 0.27 5; $\varepsilon L=$ 0.039 8; $\varepsilon M+=$ 0.0113 22
$(5.24\times 10^3$ 6)	1809.7	5.9 23	2.1 9	5.5 2	8 3	av $E\beta=$ 1784 141; $\varepsilon K=$ 0.22 4; $\varepsilon L=$ 0.032 6; $\varepsilon M+=$ 0.0092 17
$(5.37\times 10^3$ 6)	1683.8	2.1 8	0.7 3	6.0 2	2.8 10	av $E\beta=$ 1843 141; $\varepsilon K=$ 0.20 4; $\varepsilon L=$ 0.030 6; $\varepsilon M+=$ 0.0086 16
$(6.30\times 10^3$ 6)	748.7	9 5	1.6 8	5.8 2	11 5	av $E\beta=$ 2283 143; $\varepsilon K=$ 0.124 21; $\varepsilon L=$ 0.018 3; $\varepsilon M+=$ 0.0052 9

$^\dagger$  Absolute intensity per 100 decays.

<sup>145</sup>Tb ε decay (30.9 s) [1982No08,1982StZU](#) (continued)

γ(<sup>145</sup>Gd)

I<sub>γ</sub> normalization: Measured absolute G-ray intensities ([1982No08](#)).

γ's: 280.4 4 (I<sub>γ</sub>=2.1 6), 397.2 4 (3 I), 586.4 5 (3 I)?, 736.1 6 (2.5 I0), 769.0 3 (3.7 I0), 794.2 5 (2.5 I0), 858.3 5 (4 I), 1037.7 12 (2 I), 1245.8 3 (6.5 I2), 1294.1 5 (4.5 I5), 1369.1 6 (4 2), 1497.9 6 (4.2 I4), 1514.2 6 (4.0 I2), 1693.7 4 (9 2), 1747.7 7 (5.5 30)?, 1779.8 6 (4.2 I4), 1802.9 5 (7 2), 1809.9 8 (3.6 I5), 1837.5 12 (2.5 I5)?, 2352.6 I0 (6 3) were observed only in [1981Al23](#) (I<sub>γ</sub> relative to I<sub>γ</sub>(987.9)=100).

E <sub>γ</sub> <sup>#</sup>	I <sub>γ</sub> <sup>#@</sup>	E <sub>i</sub> (level)	J <sub>i</sub> <sup>π</sup>	E <sub>f</sub>	J <sub>f</sub> <sup>π</sup>	Mult.	α <sup>†</sup>	Comments
27.3 I		27.3	3/2 <sup>+</sup>	0.0	1/2 <sup>+</sup>	M1+E2	4.×10 <sup>2</sup> 4	α(L)=3.E2 3; α(M)=7.E1 7; α(N+..)=16 I6 α(N)=15 I4; α(O)=1.9 I8; α(P)=0.0034 23
200.6 3	7.2 7	2381.8	(9/2 <sup>-</sup> )	2181.2	(9/2 <sup>-</sup> )			
246.6 3	4.1 4	2442.0	13/2 <sup>-</sup>	2195.4	11/2 <sup>-</sup>			
257.7 3	39 4	1272.7	7/2 <sup>-</sup>	1014.9	5/2 <sup>+</sup>			
268.5 3	3.0 4	1683.8	9/2 <sup>-</sup>	1415.3	7/2 <sup>+</sup>			
371.5 3	1.4 3	2181.2	(9/2 <sup>-</sup> )	1809.7	9/2 <sup>-</sup>			
524.0 3	10 I	1272.7	7/2 <sup>-</sup>	748.7	11/2 <sup>-</sup>			
537.0 3	23 2	1809.7	9/2 <sup>-</sup>	1272.7	7/2 <sup>-</sup>			
572.1 3	14 2	2381.8	(9/2 <sup>-</sup> )	1809.7	9/2 <sup>-</sup>			
652.3 <sup>‡</sup> 3	1.1 4	1667.2	7/2 <sup>(-)</sup>	1014.9	5/2 <sup>+</sup>			
698.0 3	5.5 6	2381.8	(9/2 <sup>-</sup> )	1683.8	9/2 <sup>-</sup>			
721.4 3		748.7	11/2 <sup>-</sup>	27.3	3/2 <sup>+</sup>	M4	0.1454	α(K)=0.1149 I7; α(L)=0.0237 4; α(M)=0.00539 8; α(N+..)=0.001440 2I α(N)=0.001242 I8; α(O)=0.000187 3; α(P)=1.078×10 <sup>-5</sup> I6 B(M4)(W.u.)=1.95 7 Isomeric transition with T <sub>1/2</sub> =85 s, see also 85-s IT decay for I(721.4γ) and I(27.3γ).
908.5 3	7.3 8	2181.2	(9/2 <sup>-</sup> )	1272.7	7/2 <sup>-</sup>			
935.1 3	5.3 6	1683.8	9/2 <sup>-</sup>	748.7	11/2 <sup>-</sup>			
987.6 3	37 4	1014.9	5/2 <sup>+</sup>	27.3	3/2 <sup>+</sup>			
1014.9 3	5.0 6	1014.9	5/2 <sup>+</sup>	0.0	1/2 <sup>+</sup>			
1109.3 3	14 2	2381.8	(9/2 <sup>-</sup> )	1272.7	7/2 <sup>-</sup>			
1388.0 3	6.3 7	1415.3	7/2 <sup>+</sup>	27.3	3/2 <sup>+</sup>			
1432.5 3	9.6 9	2181.2	(9/2 <sup>-</sup> )	748.7	11/2 <sup>-</sup>			
1446.7 3	15 2	2195.4	11/2 <sup>-</sup>	748.7	11/2 <sup>-</sup>			
1471.5 <sup>‡</sup> 3	3.3 6	1498.8	5/2 <sup>+</sup>	27.3	3/2 <sup>+</sup>			

<sup>†</sup> Additional information 1.

<sup>‡</sup> Observed only by [1981Al23](#).

<sup>#</sup> From [1982No08](#).

<sup>@</sup> Absolute intensity per 100 decays.

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Decay Scheme

Legend

Intensities:  $I_{(\gamma+ce)}$  per 100 parent decays

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

$\% \epsilon + \% \beta^+ = 100$   $\xrightarrow{(11/2^-) \gamma}$  30.9 s  $6$   
 $Q_{\epsilon} = 7.05 \times 10^3 \text{ eV}$   
 $^{145}_{65}\text{Tb}_{80}$

