^{144}Sm(p,2nγ) E=30 MeV   1981Ar02

Measured: γ ray, $\gamma\gamma$, $\gamma(\theta)$.

^{143}Eu Levels

E(level)	J$^{\pi\dagger}$	E(level)	J$^{\pi\dagger}$	E(level)	J$^{\pi\dagger}$	E(level)	J$^{\pi\dagger}$
0.0	5/2$^+$	1057.45 6	11/2$^+$	1676.50 8		2330.29 21	17/2$^-$
258.82 3	(3/2)$^+$	1057.59 5	13/2$^-$	1754.24 8	$-$	2357.83 14	
271.93 3	7/2$^+$	1188.42 6	11/2$^-$	1893.89 11	15/2$^-$	2378.25 12	19/2$^-$
389.49 4	11/2$^-$	1213.93 10	11/2$^-$	1908.02 10	15/2$^-$	2457.35 12	17/2$^+$
463.61 5	(1/2)$^+$	1256.88 6	11/2$^+$	2018.52 12	(9/2$^-$)	2559.11 14	19/2$^+$
804.1 3		1306.05 6	15/2$^-$	2116.81 10	17/2$^-$	2600.6 6	
906.96 6	9/2$^+$	1331.24 11	11/2$^+$	2121.19 11	(15/2$^+$)		
977.49 5	(9/2)$^-$	1602.72 10		2196.65 8	(11/2$^-$)		

† From Adopted Levels.

$\gamma(^{143}$Eu)

E$_\gamma$	I$_\gamma$	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult.	Comments
(102)		2559.11	19/2$^+$	2457.35	17/2$^+$		
117.57† 5	3.7 2	389.49	11/2$^-$	271.93	7/2$^+$		Mult.: $\gamma(\theta)$ isotropic.
131.1† 1	0.30 8	1188.42	11/2$^-$	1057.45	11/2$^+$		Mult.: A$_2$=+0.10 3.
204.77† 5	5.0 4	463.61	(1/2)$^+$	258.82	(3/2)$^+$		Mult.: $\gamma(\theta)$ isotropic.
210.9 1	1.1 3	1188.42	11/2$^-$	977.49	(9/2)$^-$	D	Mult.: A$_2$=−0.39 10, A$_4$=+0.15 10.
248.4 1	1.6 2	1306.05	15/2$^-$	1057.59	13/2$^-$	D	Mult.: A$_2$=−0.39 10, A$_4$=+0.15 10.
258.81† 3	7.7 5	258.82	(3/2)$^+$	0.0	5/2$^+$		
271.94† 3	100	271.93	7/2$^+$	0.0	5/2$^+$		Mult.: $\gamma(\theta)$ isotropic.
340.5 3	1.0 1	804.1		463.61	(1/2)$^+$		
389.47† 5	1.5 2	389.49	11/2$^-$	0.0	5/2$^+$		Mult.: $\gamma(\theta)$ isotropic.
442.3 1	11.9 8	2559.11	19/2$^+$	2116.81	17/2$^-$		
463.7 1	2.8 2	463.61	(1/2)$^+$	0.0	5/2$^+$		
497.3† 1		1754.24	$-$	1256.88	11/2$^+$		I$_\gamma$: weak.
588.00† 3	12.7 8	977.49	(9/2)$^-$	389.49	11/2$^-$	D	Mult.: A$_2$=−0.41 2, A$_4$=+0.03 2.
601.7 2	7.5 7	1908.02	15/2$^-$	1306.05	15/2$^-$		Mult.: A$_2$=+0.9 4.
625.23† 8		1602.72		977.49	(9/2)$^-$		I$_\gamma$: weak.
668.10† 3	27.3 16	1057.59	13/2$^-$	389.49	11/2$^-$	D+Q	Mult.: A$_2$=−0.68 3, A$_4$=−0.02 4.
776.8† 1		1754.24	$-$	977.49	(9/2)$^-$		I$_\gamma$: weak.
785.56† 6	8.7 5	1057.45	11/2$^+$	271.93	7/2$^+$	Q	Mult.: A$_2$=+0.23 6, A$_4$=−0.04 3.
798.89† 6	8.2 5	1188.42	11/2$^-$	389.49	11/2$^-$	D	Mult.: A$_2$=−0.22 1, A$_4$=−0.09 2; contradict A$_2$=+0.5 2 in (α,p4nγ).
810.4 2	1.6 3	2116.81	17/2$^-$	1306.05	15/2$^-$		
824.43† 9	10.3 6	1213.93	11/2$^-$	389.49	11/2$^-$	Q	Mult.: A$_2$=+0.09 2, A$_4$=−0.02 6.
830.1† 1		2018.52	(9/2$^-$)	1188.42	11/2$^-$		I$_\gamma$: weak.
836.3† 1	4.2 3	1893.89	15/2$^-$	1057.59	13/2$^-$		
850.5 1	1.8 3	1908.02	15/2$^-$	1057.59	13/2$^-$		
906.96† 6	5.6 6	906.96	9/2$^+$	0.0	5/2$^+$		
916.53† 5	2.4 4	1306.05	15/2$^-$	389.49	11/2$^-$	Q	Mult.: A$_2$=+0.31 3, A$_4$=−0.03 4.

^{144}Sm(p,2nγ) E=30 MeV   **1981Ar02** (continued)

γ(^{143}Eu) (continued)

E$_γ$	I$_γ$	E$_i$(level)	J^π_i	E$_f$	J^π_f	Mult.	Comments
984.93[†] 5	3.9 3	1256.88	11/2$^+$	271.93	7/2$^+$	Q	Mult.: A$_2$=+0.15 8, A$_4$=+0.06 10.
1059.3[‡] 1	8.3[‡] 5	1331.24	11/2$^+$	271.93	7/2$^+$	Q	E$_γ$,I$_γ$: from 1978Fi02 in ^{143}Gd ε decay. Mult.: A$_2$=+0.24 4, A$_4$=−0.07 5.
1059.3[‡] 1	8.3[‡] 5	2116.81	17/2$^-$	1057.59	13/2$^-$		Mult.: A$_2$=+0.24 4, A$_4$=−0.07 5.
1063.6 1	3.2 3	2121.19	(15/2$^+$)	1057.45	11/2$^+$	Q	Mult.: A$_2$=+0.39 10.
1072.2 1	2.4 3	2378.25	19/2$^-$	1306.05	15/2$^-$	Q	Mult.: A$_2$=+0.27 14.
1143.9 1	2.0 2	2357.83		1213.93	11/2$^-$		
1151.3 1	2.4 3	2457.35	17/2$^+$	1306.05	15/2$^-$		
1272.7 2	2.3 3	2330.29	17/2$^-$	1057.59	13/2$^-$		Mult.: A$_2$=−0.15 10, A$_4$=+0.08 6 is not compatible with ΔJ=2, Q in (α,p4nγ) (1988Mu12).
1386.7 6	0.20 5	2600.6		1213.93	11/2$^-$		
1404.56[†] 7	3.6 3	1676.50		271.93	7/2$^+$		
1807.14[†] 7	19.6 13	2196.65	(11/2$^-$)	389.49	11/2$^-$	Q+D	Mult.: A$_2$=+0.72 48.

[†] From 1978Fi02 in ^{143}Gd ε decay.
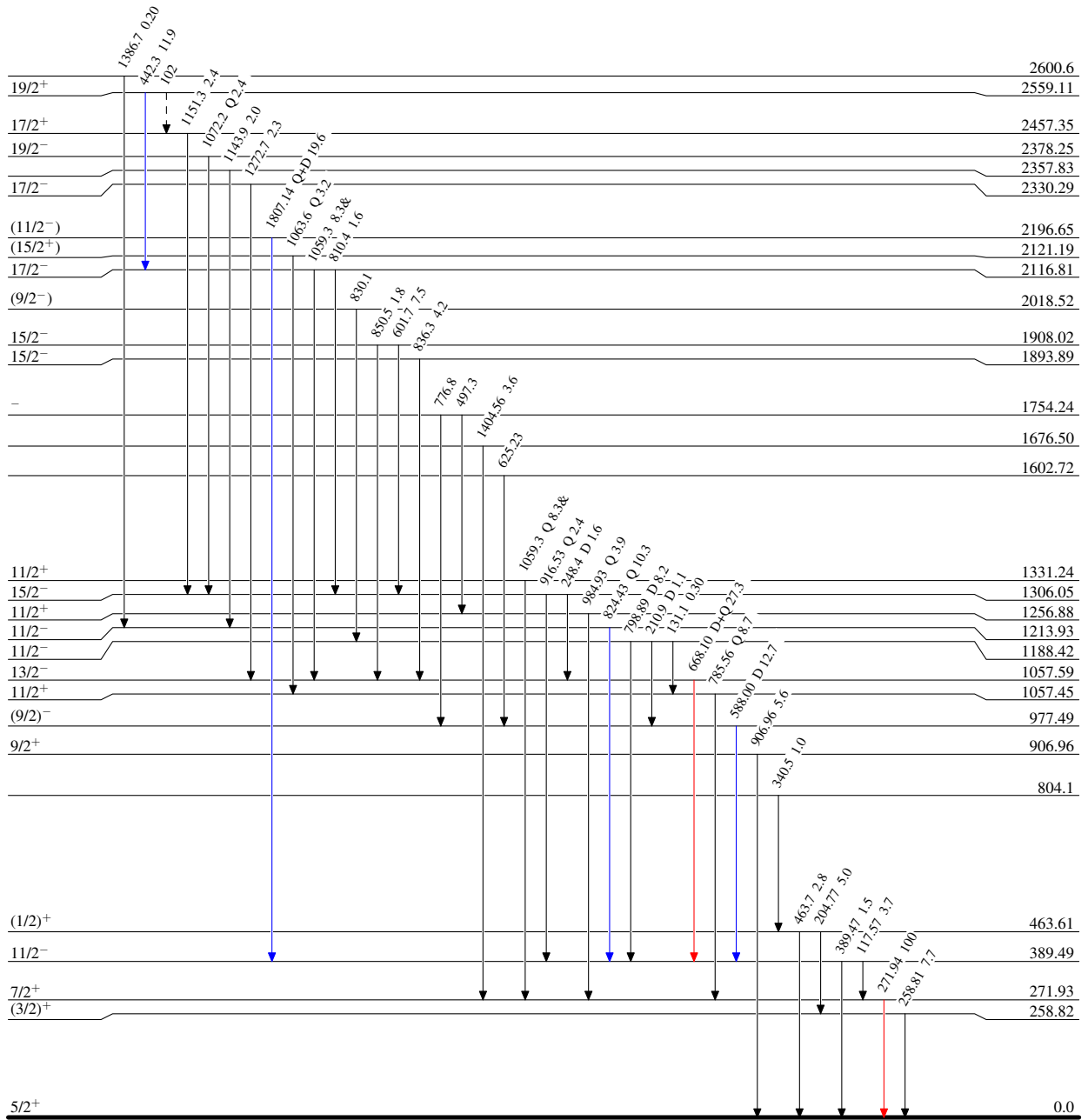[‡] Multiply placed with undivided intensity.

$^{144}\text{Sm}(p,2n\gamma)$ E=30 MeV　　　1981Ar02

Level Scheme

Intensities: Type not specified
& Multiply placed: undivided intensity given

Legend

→　$I_\gamma < 2\% \times I_\gamma^{max}$
→　$I_\gamma < 10\% \times I_\gamma^{max}$
→　$I_\gamma > 10\% \times I_\gamma^{max}$
--→　γ Decay (Uncertain)

$^{143}_{63}\text{Eu}_{80}$