^{144}Sm(α,p6nγ) 1988Gu09

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 187,1 (2023)	12-Oct-2022

E=95, 107 MeV.
Measured: γ, $\gamma\gamma$, $\gamma(\theta)$, DCO.

^{141}Eu Levels

E(level)	J$^\pi$†	E(level)	J$^\pi$†	E(level)	J$^\pi$†	E(level)	J$^\pi$†
0.0	$5/2^+$	2030.6?	$19/2^{(+)}$	2848?	$27/2^{(+)}$	3684.2	$31/2^-$
96.4	$11/2^-$	2177.3	$23/2^-$	3024.3	$27/2^-$	4156.3	$33/2^-$
622.5	$15/2^-$	2229.1?	$21/2^{(+)}$	3076.4	$27/2^-$	4370.4	$35/2^-$
1344.9	$19/2^-$	2441.1	$23/2^{(+)}$	3417.6	$29/2^-$		
1902.8	$17/2^{(+)}$	2750.5	$(25/2^+)$	3596.6	$31/2^-$		

† Adopted values.

$\gamma(^{141}$Eu)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.†	α‡	Comments
(52)		3076.4	$27/2^-$	3024.3	$27/2^-$			Required by $\gamma\gamma$ data.
96.4		96.4	$11/2^-$	0.0	$5/2^+$			
127.8 *3*	12 *3*	2030.6?	$19/2^{(+)}$	1902.8	$17/2^{(+)}$	D		Mult.: A_2=−0.29 *3*, A_4=−0.03 *4*; DCO=1.91 *17*.
198.5 *2*	20 *3*	2229.1?	$21/2^{(+)}$	2030.6?	$19/2^{(+)}$	D		Mult.: A_2=−0.32 *3*, A_4=+0.00 *4*; DCO=1.82 *13* for 198.5γ(^{141}Eu)+ 197.2γ(^{19}F).
212.0 *1*	18 *3*	2441.1	$23/2^{(+)}$	2229.1?	$21/2^{(+)}$	D		Mult.: A_2=−0.33 *3*, A_4=+0.04 *4*; DCO=1.88 *14* for 212.0γ(^{141}Eu)+ 211.6γ(^{138}Pm).
266.5 *1*	12 *2*	3684.2	$31/2^-$	3417.6	$29/2^-$	D		Mult.: A_2=−0.42 *13*, A_4=+0.07 *15*; DCO=2.12 *26*.
309.4 *2*	6 *2*	2750.5	$(25/2^+)$	2441.1	$23/2^{(+)}$	D		Mult.: A_2=−0.31 *4*, A_4=+0.01 *5*; DCO=1.7 *7* for 309.4γ(^{141}Eu)+ 309.5γ(^{141}Sm)+310.2γ(^{142}Gd).
341.2# *2*	12 *2*	3417.6	$29/2^-$	3076.4	$27/2^-$	D		Mult.: A_2=−0.40 *8*, A_4=+0.16 *16*; DCO=1.75 *18*.
407.1 *2*	4 *2*	2848?	$27/2^{(+)}$	2441.1	$23/2^{(+)}$			
472.2 *2*	9 *2*	4156.3	$33/2^-$	3684.2	$31/2^-$	D		Mult.: DCO=1.8 *3*.
526.1 *2*	100 *5*	622.5	$15/2^-$	96.4	$11/2^-$	E2	0.0118	α(K)=0.0096; α(L)=0.00165 Mult.: A_2=+0.20 *2*, A_4=−0.07 *3*; DCO=0.99 *5*.
572.3 *2*	13 *3*	3596.6	$31/2^-$	3024.3	$27/2^-$	E2	0.0095	α(K)=0.00781; α(L)=0.00129 Mult.: A_2=+0.20 *10*, A_4=−0.10 *13*; DCO=1.15 *18*.
686.2# *3*	10 *3*	2030.6?	$19/2^{(+)}$	1344.9	$19/2^-$			α(K)=0.0071 *21*; α(L)=0.00102 *23* Mult.: A_2=+0.12 *4*, A_4=−0.04 *7*; DCO=2.03 *24*; ΔJ=(0). Placement not adopted from this level.
722.4 *2*	62 *15*	1344.9	$19/2^-$	622.5	$15/2^-$	E2	0.00542	α(K)=0.00450; α(L)=0.00069 Mult.: A_2=+0.14 *2*, A_4=−0.09 *3*; DCO=1.15 *18* for 722γ(^{141}Eu)+ 723γ(^{142}Eu).
773.8 *3*	10 *2*	4370.4	$35/2^-$	3596.6	$31/2^-$	E2	0.00462	α(K)=0.00385; α(L)=0.00058 Mult.: A_2=+0.08 *4*, A_4=−0.04 *6*; DCO=1.21 *23* for 773.8γ(^{141}Eu)+ 773.7γ(^{140}Nd).
832.4 *2*	44 *8*	2177.3	$23/2^-$	1344.9	$19/2^-$	E2	0.00392	α(K)=0.00327; α(L)=0.00049 Mult.: A_2=+0.16 *4*, A_4=−0.12 *5*; DCO=1.00 *5*.

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^{144}Sm(α,p6nγ) 1988Gu09 (continued)

$\gamma(^{141}Eu)$ (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[‡]	Comments
847.0 *3*	24 *3*	3024.3	27/2$^-$	2177.3	23/2$^-$	E2	0.00377	α(K)=0.00315; α(L)=0.00047 Mult.: A_2=+0.23 *3*, A_4=+0.00 *4*; DCO=1.06 *8* for 847.0$\gamma(^{141}Eu)$+ 846.8$\gamma(^{142}Gd)$.
899.1 *3*	11 *3*	3076.4	27/2$^-$	2177.3	23/2$^-$	E2	0.00331	α(K)=0.00277; α(L)=0.00040 Mult.: A_2=+0.36 *8*, A_4=+0.12 *10*; DCO=1.02 *15* for 899.1$\gamma(^{141}Eu)$+ 899γ (unknown origin).
1280.3 *2*	18 *3*	1902.8	17/2$^{(+)}$	622.5	15/2$^-$	D		Mult.: A_2=−0.30 *8*, A_4=−0.08 *10*; DCO=1.70 *20*.

[†] From $\gamma(\theta)$ and RUL Q γ's are E2.

[‡] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

[#] Placement of transition in the level scheme is uncertain.

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Level Scheme

Intensities: Relative I_γ

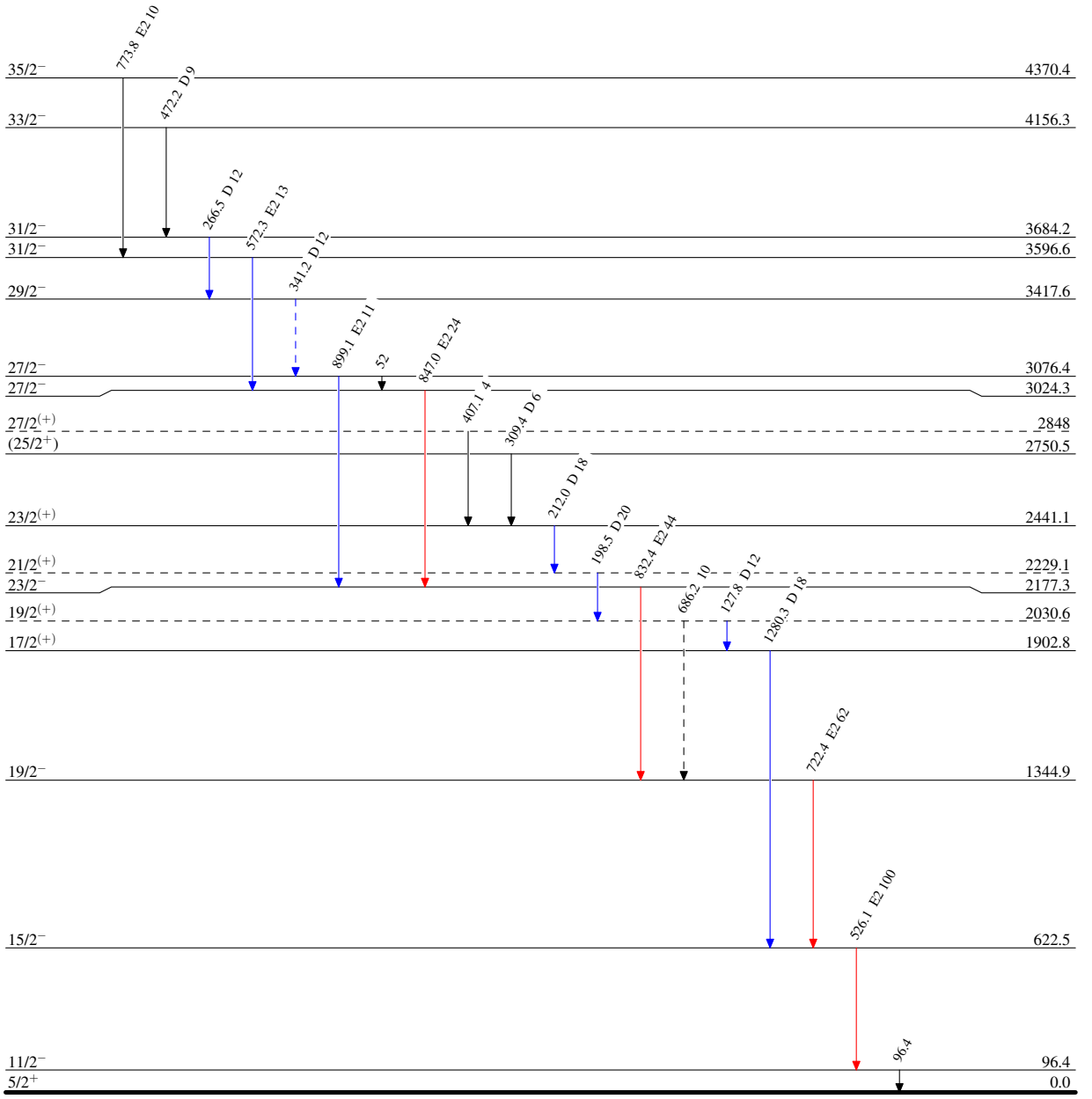
Legend

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

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

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

γ Decay (Uncertain)



$^{141}_{63}Eu_{78}$