

$^{152}\text{Sm}(\text{p},3\text{n}\gamma)$ 1983So13

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	S. K. Basu, A. A. Sonzogni		NDS 114, 435 (2013)	1-Apr-2013

1983So13: Enriched(>98%) $^{148}\text{Sm}(\text{p},3\text{n})^{150}\text{Eu}$, E = 29 MeV; Planar Ge, co-axial Ge(Li) and iron-free orange spectrometer; measured in-beam γ , ce, γ -ray singles excitation function and angular distribution.

 ^{150}Eu Levels

E(level)	J^π [‡]	$T_{1/2}$	Comments
0	5 ⁻	36.9 y 9	$T_{1/2}$: From adopted values.
190.37 [†] 8	6 ⁻ #		
247.91 [†] 8	6 ⁻ #		
360.23 12	(5 ⁻)		
412.57 13	5 ⁻		
417.26 11	7 ⁻		
562.00 9	6 ⁺		
588.76 22	8 ⁺	45 ns 3	$T_{1/2}$: from $\gamma(\text{t})$.

[†] Determined from in-beam intensities of the four strong transitions in this scheme which form two parallel cascades from a 562.0-keV level to the ground state. The intensities are used to order the transitions in the cascades, thus establishing the position of the two intermediate levels in the cascades.

[‡] Adopted values.

Uniquely determined relative to the adopted value of $J^\pi=5^-$ for the ground state from measured angular distributions and $\alpha(\text{K})\text{exp}$ values.

 $\gamma(^{150}\text{Eu})$

E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [†]	Comments
26.8 # @		588.76	8 ⁺	562.00	6 ⁺	E2 [‡]	
57.5 # @		247.91	6 ⁻	190.37	6 ⁻		
144.7 4	1.4 6	562.00	6 ⁺	417.26	7 ⁻		
149.6 8		562.00	6 ⁺	412.57	5 ⁻		
169.3 2	3.5 15	417.26	7 ⁻	247.91	6 ⁻		
170.0 2		360.23	(5 ⁻)	190.37	6 ⁻		
171.5 2	7.5 9	588.76	8 ⁺	417.26	7 ⁻		
190.4 1	118 6	190.37	6 ⁻	0	5 ⁻	M1	$\alpha(\text{K})\text{exp}=0.025$ 2 I_γ derived from conversion data. E2 admixtures to M1 transitions not given.
201.8 1	1.4 6	562.00	6 ⁺	360.23	(5 ⁻)	D,E2	$\alpha(\text{K})\text{exp}<0.024$
222.2 1	26 3	412.57	5 ⁻	190.37	6 ⁻	M1	$\alpha(\text{K})\text{exp}=0.016$ 4
226.9 1	21 2	417.26	7 ⁻	190.37	6 ⁻	M1	$\alpha(\text{K})\text{exp}=0.014$ 4
247.9 1	100	247.91	6 ⁻	0	5 ⁻	M1	$\alpha(\text{K})\text{exp}=0.013$ 3
314.1 1	100 5	562.00	6 ⁺	247.91	6 ⁻	E1	$\alpha(\text{K})\text{exp}=0.0010$ 2
371.6 1	65 4	562.00	6 ⁺	190.37	6 ⁻	E1	$\alpha(\text{K})\text{exp}=0.0008$ 3
417.3 6	≤ 2	417.26	7 ⁻	0	5 ⁻		
561.8 3		562.00	6 ⁺	0	5 ⁻		$\alpha(\text{K})\text{exp}<0.0028$

[†] Determined from angular distributions and $\alpha(\text{K})\text{exp}$ values.

[‡] The 45 ns half-life excludes M2 and higher multiplicities. B(M1)(W.u.) (=0.0017 for branching=1, $\alpha(\text{K})\text{exp}=0.14$) is unreasonably small for an odd-odd nucleus. If E1, the peak should have been seen in the γ spectrum.

These as yet unobserved transitions, are inferred from the decay of the 562-keV level, populated by 45 ns 8+ isomer at 589-keV.

@ Placement of transition in the level scheme is uncertain.

