

$^{248}\text{Cm}$  SF decay 2013Rz02

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	T. D. Johnson and W. D. Kulp(a)		NDS 129, 1 (2015)	27-Jul-2015

Parent:  $^{248}\text{Cm}$ :  $E=0$ ;  $J^\pi=0^+$ ;  $T_{1/2}=3.48\times 10^5$  y 6; %SF decay=?

$^{248}\text{Cm}$  SF decay: EUROGAM2 array of 52 large GE detectors with anti-Compton shields and 24 CLOVERs. Measured triple coincidences,  $E_\gamma$ ,  $I_\gamma$ ,  $\gamma\gamma$  coin,  $\gamma\gamma(\theta)$ . Transitions in  $^{87}\text{Se}$  were identified using mass correlations with the probable  $^{158}\text{Sm}$  fission partner.

Compared observed level structure with large-scale shell model calculations and with known structure of N=53 isotones.

 $^{87}\text{Se}$  Levels

Structure interpreted (2013Rz02) as dominating of  $3\nu d_{5/2+}$  and protons in  $f_{5/2-}$  and  $p_{3/2-}$ . The level ordering is argued to be due to deformation.

E(level) <sup>†</sup>	$J^\pi$ <sup>‡</sup>	Comments
0.0	(3/2 <sup>+</sup> )	$J^\pi$ : Systematics of the N=53 isotones suggest either 5/2 <sup>+</sup> or 3/2 <sup>+</sup> . Based on shell model calculations of for the E(5/2 <sup>+</sup> ) and E(3/2 <sup>+</sup> ) for the N=53 isotones. The calculations indicate large and nearly constant B(E2) values with a significant deformation. Calculations assuming a K=3/2 band were consistent with the excitation levels and B(E2) values, thus placing the 3/2 <sup>+</sup> spin level below that for 5/2 <sup>+</sup> . See 2013Rz02 for details.
91.9 2	(5/2 <sup>+</sup> )	
836.5 3	(7/2 <sup>+</sup> )	
978.1 3	(9/2 <sup>+</sup> )	

<sup>†</sup> From least-squares fit to  $E_\gamma$  data.

<sup>‡</sup> Authors' suggested values from systematics and comparisons with shell model calculations.

 $\gamma(^{87}\text{Se})$ 

$E_\gamma$	$I_\gamma$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult.	Comments
91.9 2	100 8	91.9	(5/2 <sup>+</sup> )	0.0	(3/2 <sup>+</sup> )	M1+E2	Mult., $\delta$ : Based on angular correlations for the 91.9-886.2 keV cascade. $A_2 = +0.10$ 5, $A_4 = -0.11$ 9 leading to $\delta = +0.53$ +31-12 or +5.0 +162, -27. Additionally, as B(M2)(W.u.)<1 from RUL, a half life can be calculated for E1+M2, assuming the lowest allowed $\delta$ of 0.41, resulting in $T_{1/2}>27$ $\mu\text{s}$ . As this likely would have been observed, E1+M2 may be excluded.
744.6 2	17 3	836.5	(7/2 <sup>+</sup> )	91.9	(5/2 <sup>+</sup> )		
886.2 2	34 4	978.1	(9/2 <sup>+</sup> )	91.9	(5/2 <sup>+</sup> )		

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## Level Scheme

Intensities: Relative  $I_\gamma$ 

## Legend

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

