²⁴⁸Cm SF decay 2013Rz02

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

Parent: ²⁴⁸Cm: E=0; $J^{\pi}=0^+$; $T_{1/2}=3.48\times10^5$ y 6; %SF decay=?

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

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

⁸⁷Se 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.

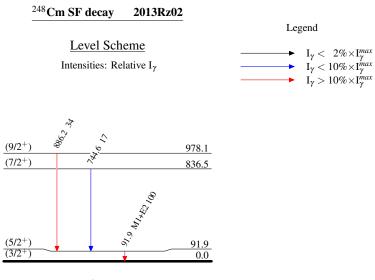
E(level) [†]	$J^{\pi \ddagger}$	Comments
0.0	(3/2+)	J^{π} : Systematics of the N=53 isotones suggest either 5/2 ⁺ or 3//2 ⁺ . Based on shell model calculations of for the E(5/2 ⁺) and E(3/2 ⁺) for the N=53 isotones. The calculations indicate large and nearly constant B(E2) values with a significant deformation.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

[†] From least-squares fit to $E\gamma$ data.

[‡] Authors' suggested values from systematics and comparisons with shell model calculations.

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

Eγ	I_{γ}	E _i (level)	\mathbf{J}_i^{π}	\mathbf{E}_{f}	\mathbf{J}_{f}^{π}	Mult.	Comments
91.9 2	100 8	91.9	(5/2+)	0.0	(3/2+)	M1+E2	Mult., δ : Based on angular correlations for the 91.9-886.2 keV cascade. A ₂ = +0.10 5, A ₄ = -0.11 9 leading to δ = +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 δ of 0.41, resulting in T _{1/2} >27 μ s. As this likely would have been observed, E1+M2 may be excluded.
744.6 2 886.2 2	17 <i>3</i> 34 <i>4</i>	836.5 978.1	(7/2 ⁺) (9/2 ⁺)		(5/2 ⁺) (5/2 ⁺)		



⁸⁷₃₄Se₅₃