^{252}Cf SF decay 2009Lu11

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 117, 1 (2014)	1-Oct-2013

Parent: ^{252}Cf: E=0.0; $J^\pi=0^+$; $T_{1/2}$=2.645 y *8*; %SF decay=?

2009Lu11: γ rays from the spontaneous fission of ^{252}Cf were detected with the Gammasphere array. Measured Eγ, Iγ, $\gamma\gamma$-coincidence.

1974ClZX: measured Eγ, Iγ, γ(t). On the basis of multiparameter coincidences, 1974ClZX assigned 56γ to ^{147}La; however, 1984Ch02 demonstrated that 56γ depopulates level in ^{148}La, not in ^{147}La.

Others: 1970Jo20, 1971Ho29.

^{148}La Levels

The bands observed in ^{148}La are interpreted as aligned coupling of $[\pi h_{11/2}\nu h_{9/2}]_{low\ spin}$ to the deformed core rotor. (2009Lu11).

E(level)[†]	J^π[‡]	$T_{1/2}$	Comments
0.0	(2^-)[#]		
56.33 *25*	(1^+)[#]	58 ns *3*	$T_{1/2}$: from 1974ClZX (γ(t)).
141.07[@] *25*	(2^+)		J^π: M1 γ to (1^+), 56 (0^+,1^+ excluded by authors presumably based on the rotational character of this nucleus).
282.4[&] *4*	(3^+)		
350.8[@] *4*	(4^+)		
441.9[&] *4*	(5^+)		
663.2[@] *4*	(6^+)		
708.4[&] *5*	(7^+)		
1060.3[@] *5*	(8^+)		
1102.0[&] *6*	(9^+)		
1496.1[@] *6*	(10^+)		
1612.6[&] *7*	(11^+)		
1980.2[@] *7*	(12^+)		
2226.2[&] *7*	(13^+)		

[†] From least-squares fit to Eγ's assuming 0.3 keV uncertainty for each γ (by evaluator).
[‡] For levels assigned In either band, assumed by 2009Lu11 based on the rotational character of this nucleus.
[#] From Adopted Levels dataset (2009Lu11 give same value As firm assignment).
[@] Band(A): Band based on (2^+), α=0. Upbend at $\hbar\omega\approx$0.2 MeV.
[&] Band(a): Band based on (3^+), α=1.

$\gamma(^{148}La)$

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	Comments
56.33	(1^+)	56.3 *3*	100	0.0	(2^-)	E1	I_γ: 1974ClZX report 305 *21* photons per 1.0×10^5 fissions. Mult.: from α(exp)=0.96 *24* (2009Lu11).
141.07	(2^+)	84.7 *3*	100	56.33	(1^+)	M1	Mult.: from α(exp)=1.51 *49* (2009Lu11).
		141.1 *3*	20.2	0.0	(2^-)		
282.4	(3^+)	141.3 *3*	100	141.07	(2^+)	M1(+E2)	Mult.: from α(exp)=0.54 *18* (2009Lu11).
350.8	(4^+)	68.4 *3*	18.9	282.4	(3^+)		
		209.7 *3*	100	141.07	(2^+)		
441.9	(5^+)	91.1 *3*	53.6	350.8	(4^+)		

Continued on next page (footnotes at end of table)

^{252}Cf SF decay 2009Lu11 (continued)

$\gamma(^{148}La)$ (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π
441.9	(5^+)	159.5 *3*	100	282.4	(3^+)	1102.0	(9^+)	393.6 *3*	100	708.4	(7^+)
663.2	(6^+)	221.3 *3*	13.9	441.9	(5^+)	1496.1	(10^+)	435.8 *3*	100	1060.3	(8^+)
		312.4 *3*	100	350.8	(4^+)	1612.6	(11^+)	510.6 *3*	100	1102.0	(9^+)
708.4	(7^+)	266.5 *3*	100	441.9	(5^+)	1980.2	(12^+)	484.1 *3*	100	1496.1	(10^+)
1060.3	(8^+)	351.9† *3*	<4	708.4	(7^+)	2226.2	(13^+)	613.6 *3*	100	1612.6	(11^+)
		397.1 *3*	100	663.2	(6^+)						

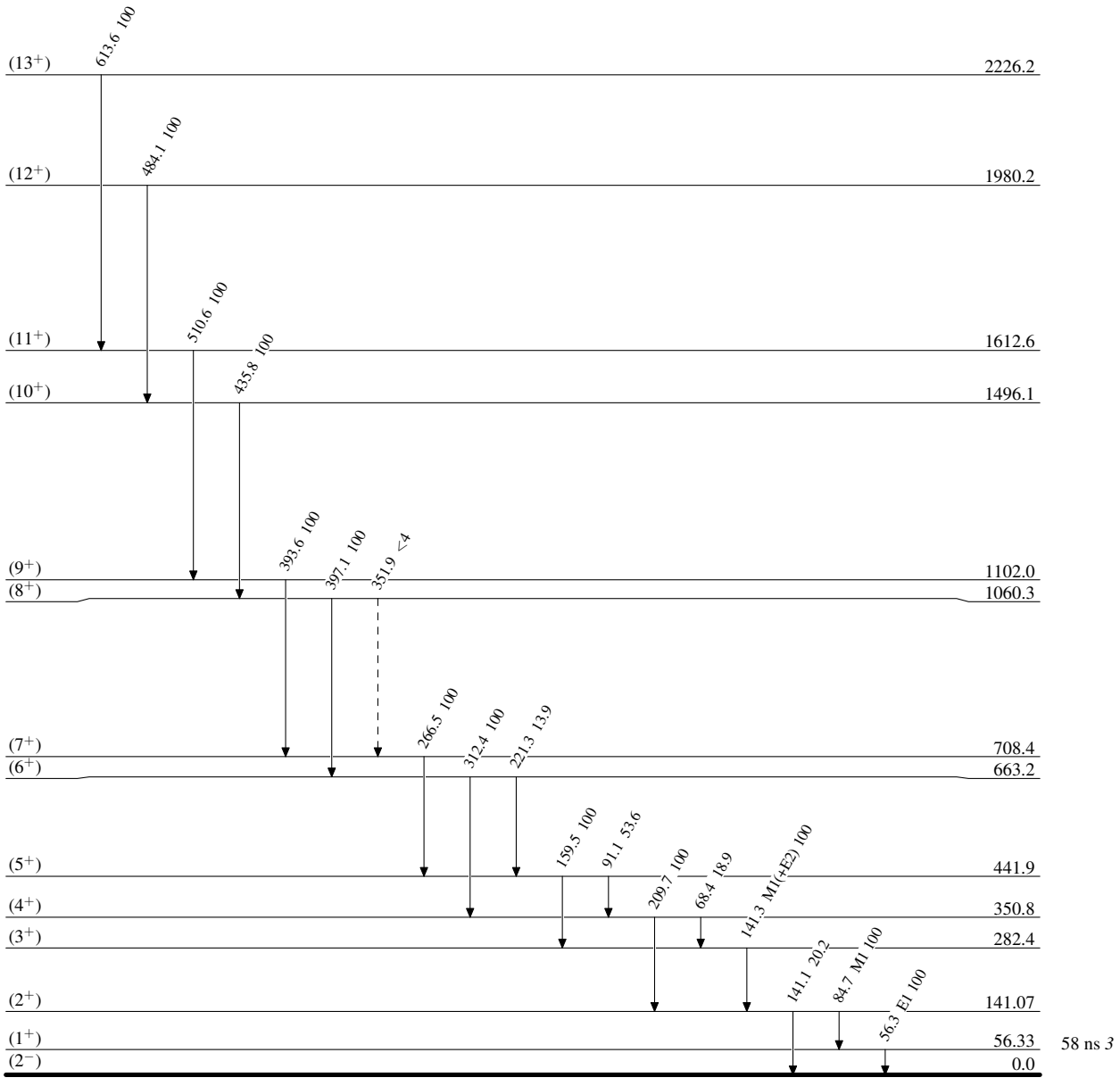
† Placement of transition in the level scheme is uncertain.

^{252}Cf SF decay 2009Lu11 Legend

Level Scheme

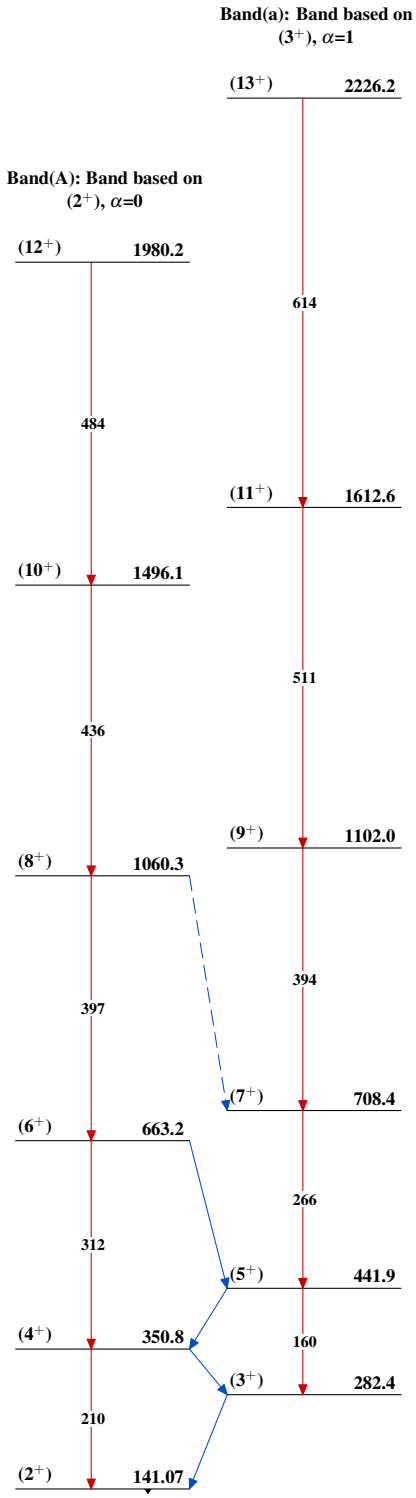
Intensities: Relative photon branching from each level

– – – – – – ► γ Decay (Uncertain)



$^{148}_{57}La_{91}$

^{252}Cf SF decay 2009Lu11



$^{148}_{57}La_{91}$