

<sup>252</sup>Cf SF decay 2014Lu07

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	20-Jul-2015

Parent: <sup>252</sup>Cf: E=0; J<sup>π</sup>=0<sup>+</sup>; T<sub>1/2</sub>=2.645 y 8; %SF decay=?

2014Lu07: <sup>252</sup>Cf source of 62 μCi was used. Measured E<sub>γ</sub>, I<sub>γ</sub>, γγ-coin in double-gated spectra with γ rays from complementary fission fragments. Gamma rays were detected by Gammasphere array at LBNL. Comparison with projected shell-model (PSM) calculations.

<sup>106</sup>Nb Levels

E(level)	J <sup>π</sup> †	T <sub>1/2</sub>	Comments
0	(1 <sup>-</sup> )		Configuration=π3/2[301]⊗ν5/2[413].
107.9 2	(1 <sup>+</sup> )		Configuration=π3/2[301]⊗ν5/2[532].
202.2 1	(2 <sup>+</sup> )		Configuration=π1/2[431]⊗ν5/2[413].
204.8 1	(3 <sup>+</sup> )	0.82 μs 6	%IT=100 T <sub>1/2</sub> : from Adopted Levels.
337.6 2	(2 <sup>-</sup> )		Configuration=π1/2[431]⊗ν5/2[413].
470.6 ‡ 2	(2 <sup>-</sup> )		Configuration=π3/2[301]⊗ν1/2[411].
627.3 # 2	(3 <sup>-</sup> )		
815.2 ‡ 2	(4 <sup>-</sup> )		
995.0 4			
1039.9 # 3	(5 <sup>-</sup> )		
1274.4 ‡ 3	(6 <sup>-</sup> )		
1589.2 # 4	(7 <sup>-</sup> )		
1838.8 ‡ 4	(8 <sup>-</sup> )		

† The assignments are proposed by 2014Lu07, based on possible 2-qp states from potential-energy surface (PES) and projected shell model (PSM) calculations.

‡ Band(A): π1/2[431]⊗ν5/2[532], K<sup>π</sup>=2<sup>-</sup>, α=0. Configuration proposed by 2014Lu07.

# Band(a): π1/2[431]⊗ν5/2[532], K<sup>π</sup>=2<sup>-</sup>, α=1.

γ(<sup>106</sup>Nb)

E <sub>γ</sub> †	I <sub>γ</sub> †	E <sub>i</sub> (level)	J <sub>i</sub> <sup>π</sup>	E <sub>f</sub>	J <sub>f</sub> <sup>π</sup>	Mult.	α ‡
94.5 3		202.2	(2 <sup>+</sup> )	107.9	(1 <sup>+</sup> )		
108.1 3		107.9	(1 <sup>+</sup> )	0	(1 <sup>-</sup> )		
132.8 1	74.2 22	337.6	(2 <sup>-</sup> )	204.8	(3 <sup>+</sup> )		
133.0 1	59.8 18	470.6	(2 <sup>-</sup> )	337.6	(2 <sup>-</sup> )		
156.7 1	30.8 9	627.3	(3 <sup>-</sup> )	470.6	(2 <sup>-</sup> )		
188.0 2	19.4 10	815.2	(4 <sup>-</sup> )	627.3	(3 <sup>-</sup> )		
202.2 1	95.4 29	202.2	(2 <sup>+</sup> )	0	(1 <sup>-</sup> )		
204.8 1	100 3	204.8	(3 <sup>+</sup> )	0	(1 <sup>-</sup> )	[M2]	0.189
224.7 2	12.8 6	1039.9	(5 <sup>-</sup> )	815.2	(4 <sup>-</sup> )		
234.5 3	4.8 5	1274.4	(6 <sup>-</sup> )	1039.9	(5 <sup>-</sup> )		
249.7 # 3		1838.8	(8 <sup>-</sup> )	1589.2	(7 <sup>-</sup> )		
289.7 3	6.5 7	627.3	(3 <sup>-</sup> )	337.6	(2 <sup>-</sup> )		
314.7 3	2.3 2	1589.2	(7 <sup>-</sup> )	1274.4	(6 <sup>-</sup> )		
344.6 2	14.7 7	815.2	(4 <sup>-</sup> )	470.6	(2 <sup>-</sup> )		
412.6 2	10.5 5	1039.9	(5 <sup>-</sup> )	627.3	(3 <sup>-</sup> )		
459.2 2	12.6 6	1274.4	(6 <sup>-</sup> )	815.2	(4 <sup>-</sup> )		

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$^{252}\text{Cf}$  SF decay 2014Lu07 (continued) $\gamma(^{106}\text{Nb})$  (continued)

<u><math>E_\gamma</math></u> <sup>†</sup>	<u><math>I_\gamma</math></u> <sup>†</sup>	<u><math>E_i(\text{level})</math></u>	<u><math>J_i^\pi</math></u>	<u><math>E_f</math></u>	<u><math>J_f^\pi</math></u>
524.4 3	7.5 8	995.0		470.6	(2 <sup>-</sup> )
549.3 3	5.3 5	1589.2	(7 <sup>-</sup> )	1039.9	(5 <sup>-</sup> )
564.4 3	7.5 8	1838.8	(8 <sup>-</sup> )	1274.4	(6 <sup>-</sup> )

<sup>†</sup> Based on a general statement in 2014Lu07 that energy and intensity uncertainties are 0.1-0.3 keV and 3-10%, respectively, evaluator assigns as follows: 0.1 keV and 3% for  $I_\gamma > 20$ , 0.2 keV and 5% for  $I_\gamma = 10-20$ , and 0.3 keV and 10% for  $I_\gamma < 10$ .

<sup>‡</sup> Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on  $\gamma$ -ray energies, assigned multiplicities, and mixing ratios, unless otherwise specified.

<sup>#</sup> Placement of transition in the level scheme is uncertain.

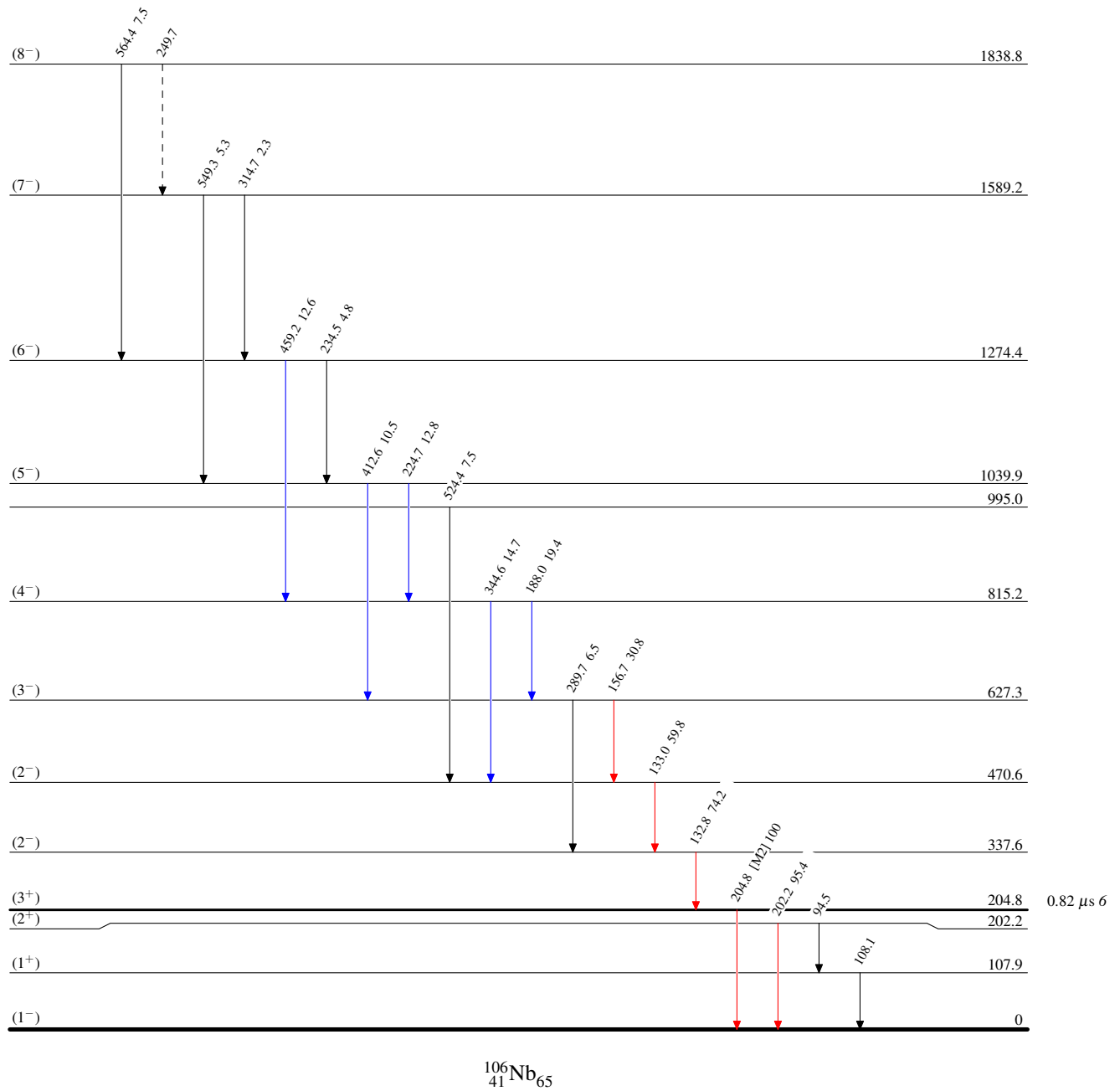
$^{252}\text{Cf}$  SF decay 2014Lu07

## Level Scheme

Intensities: Relative  $I_\gamma$ 

## Legend

- $I_\gamma < 2\% \times I_\gamma^{\max}$
- $I_\gamma < 10\% \times I_\gamma^{\max}$
- $I_\gamma > 10\% \times I_\gamma^{\max}$
- - - - -  $\gamma$  Decay (Uncertain)



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