^{252}Cf SF decay 2002Hw03,2004Hw02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov and A. Rodionov, F. G. Kondev	NDS 112, 855 (2011)	31-Oct-2010

Parent: ^{252}Cf: E=0; $J^\pi=0^+$; $T_{1/2}$=2.645 y *8*; %SF decay=3.092 *8*

2002Hw03, 2004Hw02: ^{252}Cf(SF); measured Eγ, Iγ, γγ-coin, $T_{1/2}$. ^{133}Te; deduced levels, J^π, possible configurations.

GAMMASPHERE array with 102 Compton-suppressed Ge detectors. Comparison with shell model.

Others: 2003Ha49, 2005Hw06 (the same group).

The ^{133}Te level scheme is based on relative intensities and coincidences of the observed γ-transitions (2002Hw03).

Level configurations are proposed by 2002Hw03.

^{133}Te Levels

E(level)[†]	J^π[‡]	$T_{1/2}$	Comments
0.0	$(3/2^+)$	12.5 min *3*	J^π,$T_{1/2}$: from Adopted Levels.
334.3[#] *4*	$(11/2^-)$	55.4 min *4*	$T_{1/2}$: from Adopted Levels.
1484.9[#] *3*	$(15/2^-)$		
1610.4[#] *5*	$(19/2^-)$	99 ns *6*	$T_{1/2}$: from time-gated triple γ-ray coincidence method (2005Hw06).
1803.9[#] *6*	$(17/2^-)$		
2331.5[@] *5*	$(21/2^-)$		
3070.1[#] *6*	$(23/2^-)$		
3522.5[@] *7*	$(23/2^-)$		
3825.4 *7*			
3833.4 *7*			
3934.5[a] *8*	$(21/2^+)$		
4003.5[a] *7*	$(25/2^+)$		
4032.9[a] *8*	$(23/2^+)$		
4313.1[a] *8*	$(27/2^+)$		
5214.7[&] *7*	$(23/2^-)$		
5501.5[&] *8*	$(25/2^-)$		
5600.8 *7*			
5687.6[&] *7*	$(27/2^-)$		
5941.5[&] *7*	$(29/2^-)$		
6163.5[&] *8*	$(31/2^-)$		

[†] From a least-squares fit to Eγ's.

[‡] From systematics in Te isotopes. Configuration assignment is mostly based on shell-model calculations (2002Hw02).

[#] Band(A): Multiplet of $\pi(g^2_{7/2})\otimes\nu(h^{-1}_{11/2})$ configuration.

[@] Band(B): Multiplet of $\pi(g_{7/2}d_{5/2})\otimes\nu(h^{-1}_{11/2})$ configuration.

[&] Band(C): Multiplet of $\pi(g^2_{7/2})\otimes\nu((h^{-2}_{11/2})(f^{+1}_{7/2}))$ configuration.

[a] Band(D): Multiplet of $\pi(g_{7/2}h_{11/2})\otimes\nu(h^{-1}_{11/2})$ configuration.

γ(^{133}Te)

E_γ[†]	I_γ[†]	E_i(level)	J^π_i	E_f	J^π_f
125.5 *3*	78.3	1610.4	$(19/2^-)$	1484.9	$(15/2^-)$
186.1 *5*	<0.15	5687.6	$(27/2^-)$	5501.5	$(25/2^-)$
193.5 *3*	15.5	1803.9	$(17/2^-)$	1610.4	$(19/2^-)$
222.0 *5*	1.0	6163.5	$(31/2^-)$	5941.5	$(29/2^-)$
253.9 *5*	0.5	5941.5	$(29/2^-)$	5687.6	$(27/2^-)$

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^{252}Cf SF decay 2002Hw03,2004Hw02 (continued)

$\gamma(^{133}Te)$ (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Comments
286.8 *5*	<0.2	5501.5	(25/2$^-$)	5214.7	(23/2$^-$)	E_γ: Eγ=268.8 quoted by 2002Hw03 and 2003Ha49 is a typo.
309.6 *5*	1.6	4313.1	(27/2$^+$)	4003.5	(25/2$^+$)	
440.0 *5*	<0.06	5941.5	(29/2$^-$)	5501.5	(25/2$^-$)	E_γ: Eγ=540.0 quoted by 2002Hw03 and 2003Ha49 is a typo.
472.9 *5*	0.5	5687.6	(27/2$^-$)	5214.7	(23/2$^-$)	
475.9 *5*	<0.06	6163.5	(31/2$^-$)	5687.6	(27/2$^-$)	E_γ: Eγ=475.09 quoted by 2002Hw03 and 2003Ha49 is a typo.
481.0 *5*	0.9	4003.5	(25/2$^+$)	3522.5	(23/2$^-$)	
721.1 *3*	28.8	2331.5	(21/2$^-$)	1610.4	(19/2$^-$)	
738.6 *5*	9.5	3070.1	(23/2$^-$)	2331.5	(21/2$^-$)	
933.4 *5*	8.2	4003.5	(25/2$^+$)	3070.1	(23/2$^-$)	
962.8 *5*	0.5	4032.9	(23/2$^+$)	3070.1	(23/2$^-$)	
1150.6 *3*	100	1484.9	(15/2$^-$)	334.3	(11/2$^-$)	
1191.0 *5*	1.8	3522.5	(23/2$^-$)	2331.5	(21/2$^-$)	
1459.7 *5*	0.2	3070.1	(23/2$^-$)	1610.4	(19/2$^-$)	
1498.0 *5*	0.5	5501.5	(25/2$^-$)	4003.5	(25/2$^+$)	
1603.0 *5*	0.6	3934.5	(21/2$^+$)	2331.5	(21/2$^-$)	
1628.4 *5*	1.1	5941.5	(29/2$^-$)	4313.1	(27/2$^+$)	
1684.1 *5*	0.9	5687.6	(27/2$^-$)	4003.5	(25/2$^+$)	
2144.6 *5*	0.6	5214.7	(23/2$^-$)	3070.1	(23/2$^-$)	
2215.0 *5*	1.1	3825.4		1610.4	(19/2$^-$)	
2223.0 *5*	1.2	3833.4		1610.4	(19/2$^-$)	
3990.4 *5*	1.2	5600.8		1610.4	(19/2$^-$)	

† From 2002Hw03; $\Delta E\gamma$=0.3 keV for Iγ>10 and 0.5 keV for the others are assumed by the evaluators.

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Level Scheme

Intensities: Relative I_γ

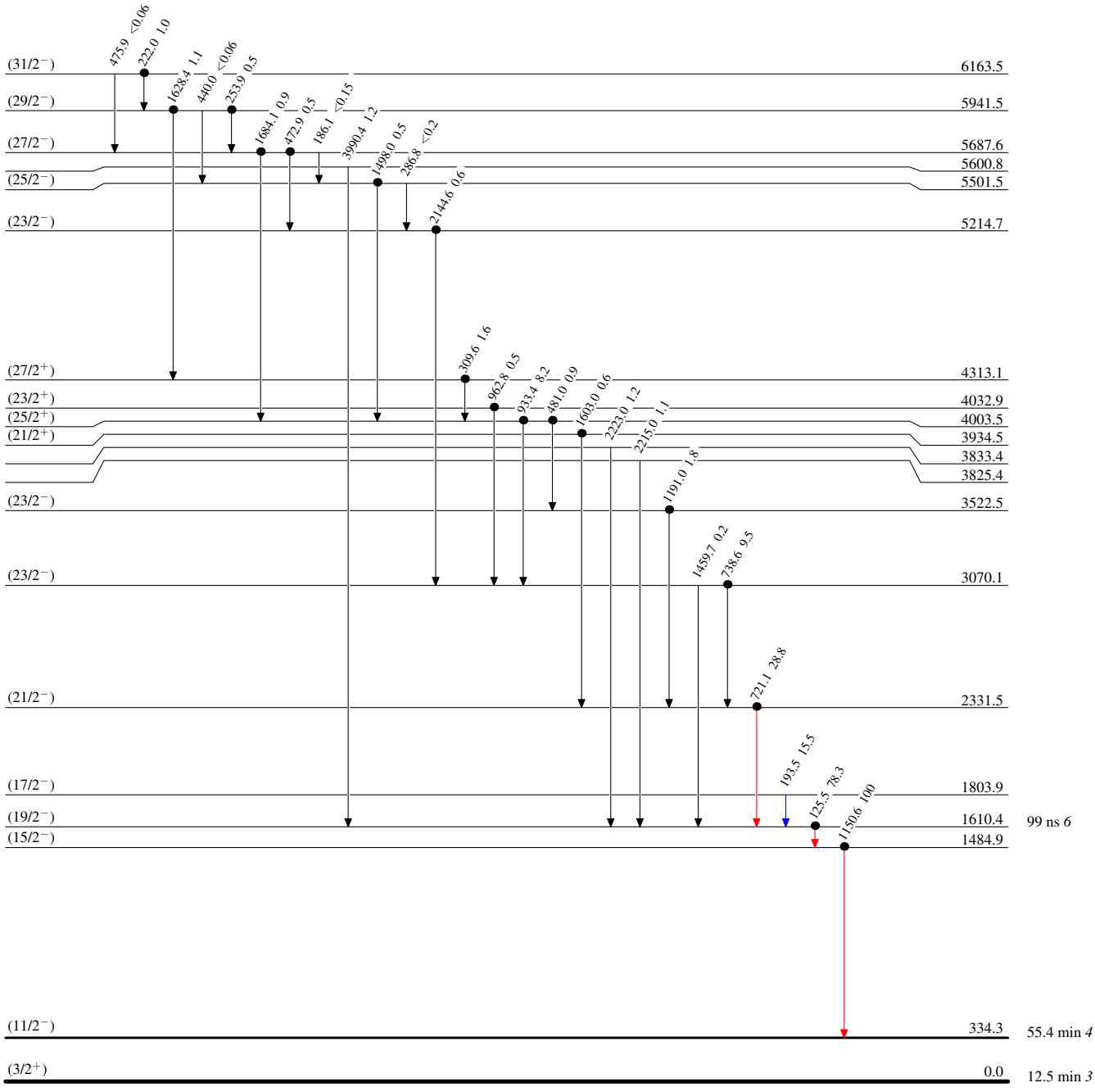
Legend

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

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

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

Coincidence



$^{133}_{52}Te_{81}$

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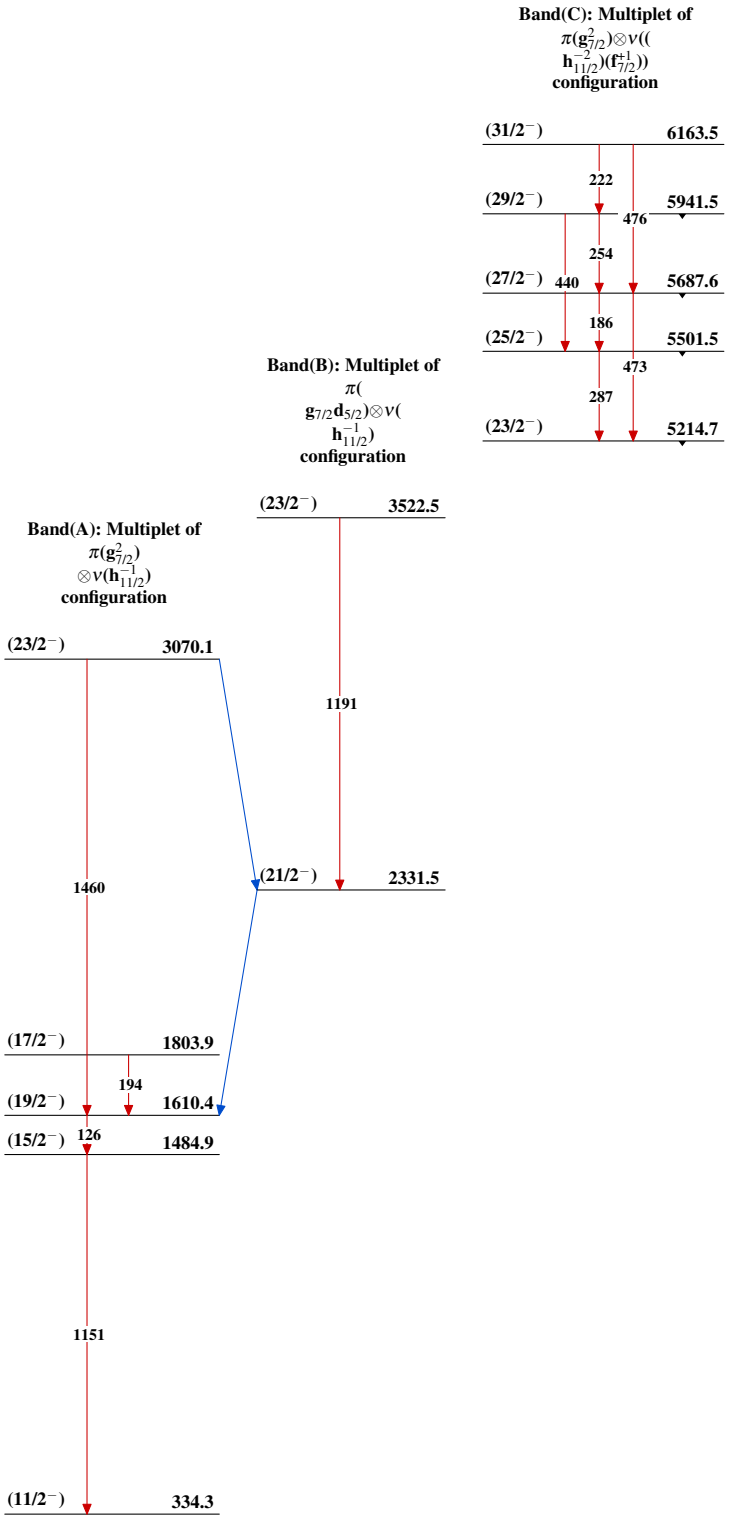
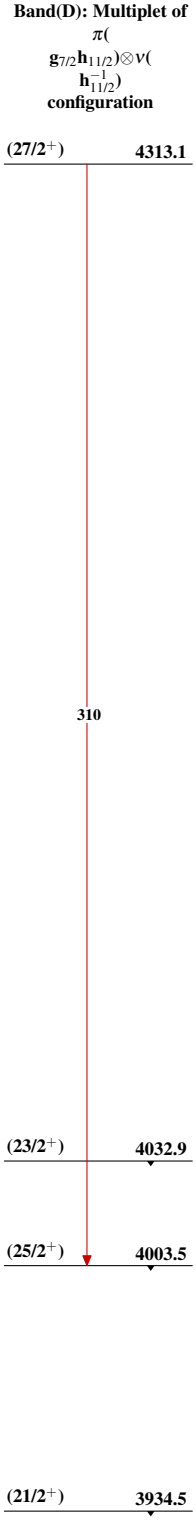


$^{133}_{52}Te_{81}$

^{252}Cf SF decay 2002Hw03,2004Hw02 (continued)



$^{133}_{52}Te_{81}$