^{252}Cf SF decay 2004Lu03,2013Li23

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. Lalkovski, F. G. Kondev	NDS 124, 157 (2015)	1-Aug-2014

Parent: ^{252}Cf: E=0; $J^{\pi}=0^+$; $T_{1/2}$=2.645 y *8*; %SF decay=3.086 *8*
2004Lu03,2013Li23, : Source: 62 μCi ^{252}Cf, placed between 10 mg/cm^2 thick Fe foils; Detectors: GAMMASPHERE array consisting of 102 Compton-suppressed Ge detectors; Measured $\gamma\gamma$, $\gamma\gamma\gamma$, Eγ, Iγ; Deduced: ^{112}Rh level scheme.
Others: 1972Ho08, 1971Ho29, 1974ClZX, 1970Jo20, 1969WiZX.

^{112}Rh Levels

E(level)[†]	J$^{\pi}$[‡]	Comments
y	(6^+)	Additional information 1.
y+60.58[#] *10*	(7^-)	$T_{1/2}$: 24 ns *6* for 60.3γ originating from a nuclide with α=112 *1* in 1970Jo20; 45 ns *3* for 60.6γ in 1974ClZX, assigned to ^{111}Rh by the authors.
y+219.86[@] *13*	(8^-)	
y+402.88[#] *13*	(9^-)	
y+557.8[&] *4*	(9^-)	
y+671.44[@] *14*	(10^-)	
y+802.7[&] *4*	(10^-)	
y+913.45[#] *15*	(11^-)	
y+1230.3[&] *5*	(11^-)	
y+1241.41[@] *15*	(12^-)	
y+1515.2[&] *6*	(12^-)	
y+1603.90[#] *16*	(13^-)	
y+1938.1[&] *8*	(13^-)	
y+1947.55[@] *17*	(14^-)	
y+2433.99[#] *17*	(15^-)	
y+2769.36[@] *18*	(16^-)	

[†] From least-squares fit to Eγ.
[‡] From 2004Lu03 and 2013Li23.
[#] Band(A): $\pi g_{9/2}\otimes\nu h_{11/2}$, α=1 rotational band.
[@] Band(a): member of $\pi g_{9/2}\otimes\nu h_{11/2}$, α=0 rotational band.
[&] Band(B): rotational band built on the (9^-) state at Y+557.8 keV.

$\gamma(^{112}Rh)$

E$_\gamma$[†]	I$_\gamma$[†]	E$_i$(level)	J$_i^{\pi}$	E$_f$	J$_f^{\pi}$	Mult.[#]	Comments
60.58 *10*	>200	y+60.58	(7^-)	y	(6^+)	(E1)	Mult.: Assumed assignment from similarities with ^{110}Rh.
154.7[‡] *5*		y+557.8	(9^-)	y+402.88	(9^-)		
159.16 *10*	100	y+219.86	(8^-)	y+60.58	(7^-)	(M1+E2)	Mult.: α(exp)=0.10 *4*, assuming 60.58γ is E1.
183.03 *10*	55.9	y+402.88	(9^-)	y+219.86	(8^-)	(M1+E2)	Mult.: α(exp)=0.06 *3*, assuming 60.58γ is E1.
[x]189.5							E$_\gamma$: from 1970Jo20, originating from a nuclide with α=112 *1*, but not seen in 2004Lu03. It is probably the ^{111}Rh γ ray depopulating the 1/2$^-$ level at 492.7 keV. The γ(t) analysis in 1970Jo20 gives $T_{1/2}$=7 ns *2*; Others: 5.7 ns *12* in 1974ClZX, but no mass assignment was made.
241.98 *10*	8.4	y+913.45	(11^-)	y+671.44	(10^-)		

Continued on next page (footnotes at end of table)

^{252}Cf SF decay 2004Lu03,2013Li23 (continued)

$\gamma(^{112}Rh)$ (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Comments
244.9‡ *5*		y+802.7	(10^-)	y+557.8	(9^-)	
268.55 *10*	29.5	y+671.44	(10^-)	y+402.88	(9^-)	
284.9‡ *5*		y+1515.2	(12^-)	y+1230.3	(11^-)	
327.96 *10*	6.9	y+1241.41	(12^-)	y+913.45	(11^-)	
335.4 *1*		y+2769.36	(16^-)	y+2433.99	(15^-)	
337.9‡ *5*		y+557.8	(9^-)	y+219.86	(8^-)	
342.42 *10*	3.7	y+402.88	(9^-)	y+60.58	(7^-)	E_γ: 342.3 in figure 7 of 2004Lu03.
343.68 *10*	2.0	y+1947.55	(14^-)	y+1603.90	(13^-)	
362.43 *10*	3.1	y+1603.90	(13^-)	y+1241.41	(12^-)	
399.6‡ *5*		y+802.7	(10^-)	y+402.88	(9^-)	
422.9‡ *5*		y+1938.1	(13^-)	y+1515.2	(12^-)	
427.6‡ *5*		y+1230.3	(11^-)	y+802.7	(10^-)	
451.46 *10*	5.1	y+671.44	(10^-)	y+219.86	(8^-)	
486.47 *10*	1.6	y+2433.99	(15^-)	y+1947.55	(14^-)	
497.2‡ *5*		y+557.8	(9^-)	y+60.58	(7^-)	
510.7 *1*		y+913.45	(11^-)	y+402.88	(9^-)	E_γ: 510.6 in figure 7 of 2004Lu03.
569.86 *10*	10.3	y+1241.41	(12^-)	y+671.44	(10^-)	
582.8‡ *5*		y+802.7	(10^-)	y+219.86	(8^-)	
672.5‡ *5*		y+1230.3	(11^-)	y+557.8	(9^-)	
690.56 *10*	5.1	y+1603.90	(13^-)	y+913.45	(11^-)	
706.08 *10*	4.4	y+1947.55	(14^-)	y+1241.41	(12^-)	
707.8‡@ *5*		y+1938.1	(13^-)	y+1230.3	(11^-)	
712.5‡ *5*		y+1515.2	(12^-)	y+802.7	(10^-)	
821.77 *10*		y+2769.36	(16^-)	y+1947.55	(14^-)	
830.10 *10*		y+2433.99	(15^-)	y+1603.90	(13^-)	

† From 2004Lu03, unless otherwise noted.
‡ From 2013Li23. Uncertainties were estimated by the evaluators.
# From the intensity imbalances and α in 2004Lu03.
@ Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

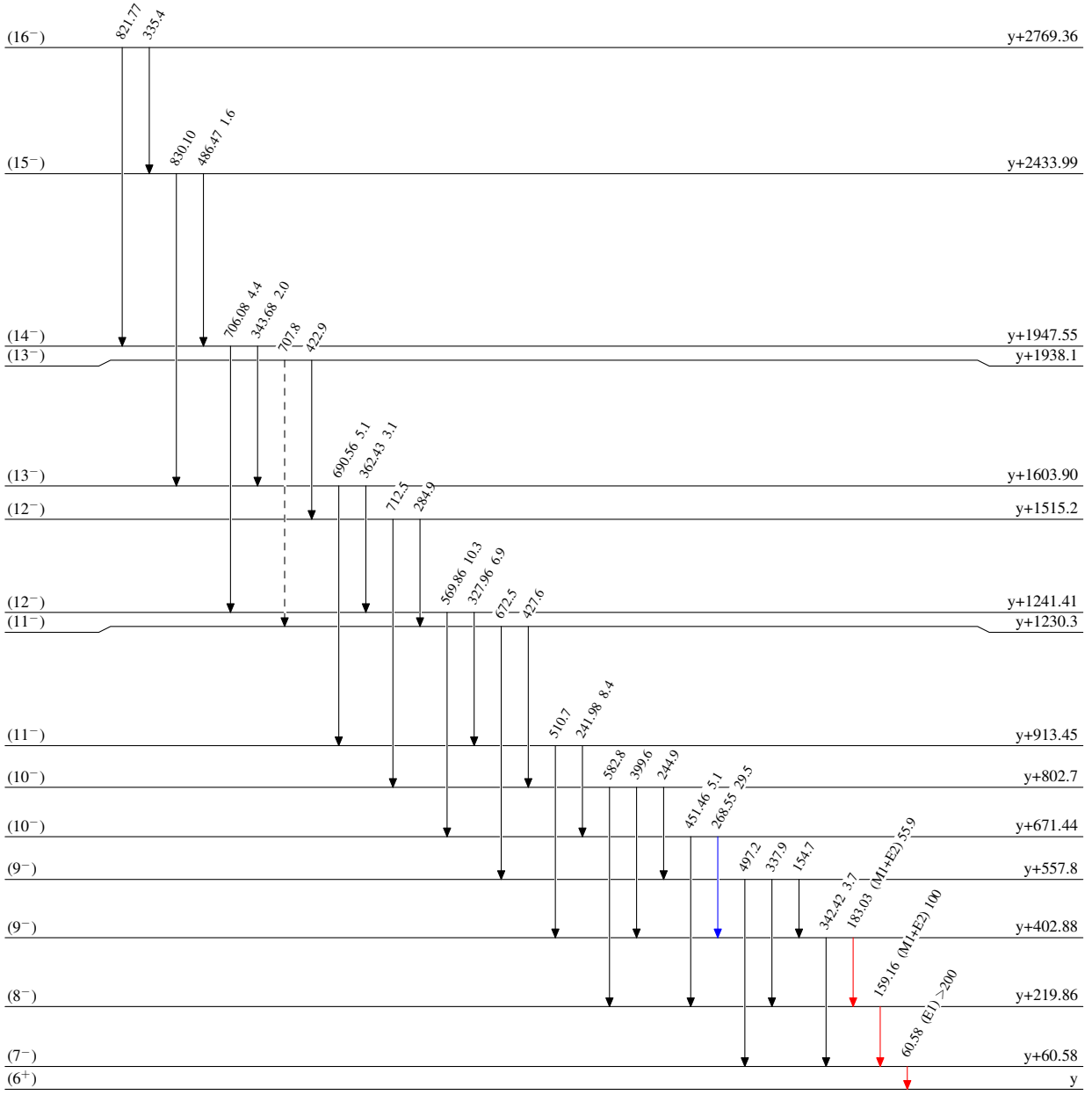
^{252}Cf SF decay 2004Lu03,2013Li23

Level Scheme

Intensities: Relative I_γ

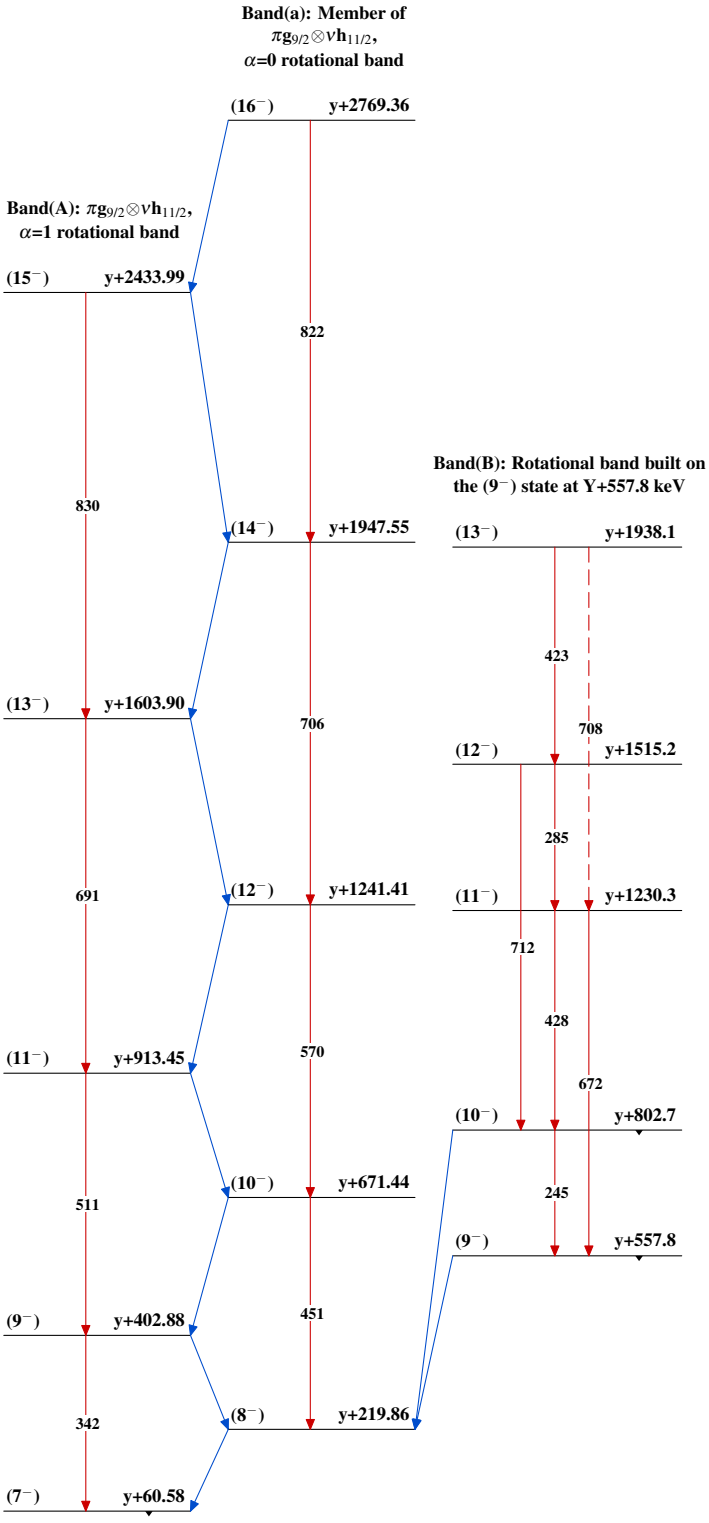
Legend

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



$^{112}_{45}Rh_{67}$

^{252}Cf SF decay 2004Lu03,2013Li23



$^{112}_{45}Rh_{67}$