

^{252}Cf SF decay [2004Lu03](#)

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 111, 1471 (2010)	1-May-2009

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

Measured E_γ , I_γ , $\gamma\gamma$ using GAMMASPHERE array of 102 Compton-suppressed Ge detectors.

First mass assignment from fragment- γ coin, [1970Jo20](#). Z assignment of 304γ from (K x-ray) γ coin, [1972Ho08](#). Cascade assignment from half-lives, [1970Jo20](#).

154.6γ and 304γ seen by [1970Jo20](#) and [1972Ho08](#) could belong to an other nuclide.

 ^{113}Rh Levels

E(level) [†]	J^π	E(level) [†]	J^π	E(level) [†]	J^π	E(level) [†]	J^π
0.0 [‡]	(7/2 ⁺)	785.13 ^f 10	(7/2 ⁻)	1673.62 ^{&} 10	(17/2 ⁺)	2776.90 ^a 15	(25/2 ⁺)
211.72 [#] 10	(9/2 ⁺)	786.54 ^d 13	(7/2 ⁺)	1775.49 [‡] 11	(19/2 ⁺)	3090.76 [‡] 14	(27/2 ⁺)
263.21 ^c 10	(3/2 ⁺)	834.36 ^e 10	(5/2 ⁺)	2025.30 [@] 10	(19/2 ⁺)	3133.06 ^b 18	(27/2 ⁺)
351.36 ^c 10	(5/2 ⁺)	911.93 ^c 10	(9/2 ⁺)	2037.97 [#] 12	(21/2 ⁺)	3334.76 [#] 15	(29/2 ⁺)
444.00 [‡] 10	(11/2 ⁺)	936.33 ^{&} 10	(13/2 ⁺)	2133.19 ^a 12	(21/2 ⁺)	3770.04 [‡] 16	(31/2 ⁺)
570.96 [@] 10	(11/2 ⁺)	1075.73 [‡] 10	(15/2 ⁺)	2398.48 ^{&} 11	(21/2 ⁺)	4006.03 [#] 17	(33/2 ⁺)
578.99 ^c 10	(7/2 ⁺)	1258.63 ^e 13	(9/2 ⁺)	2446.49 ^b 15	(23/2 ⁺)		
600.72 ^d 10	(3/2 ⁺)	1284.26 [@] 10	(15/2 ⁺)	2470.32 [‡] 13	(23/2 ⁺)		
684.66 [#] 10	(13/2 ⁺)	1320.21 [#] 10	(17/2 ⁺)	2723.24 [#] 14	(25/2 ⁺)		

[†] From least-squares fit to E_γ 's, assuming $\Delta(E_\gamma)=0.1$ keV; stated by [2004Lu03](#) as systematic error. Minimum uncertainty in level energy is assigned as 1 keV.

[‡] Band(A): g.s. band, $\alpha=-1/2$.

[#] Band(a): g.s. band, $\alpha=+1/2$.

[@] Band(B): $11/2^+$ band, $\alpha=-1/2$.

[&] Band(b): $13/2^+$ band, $\alpha=+1/2$.

^a Band(C): $21/2^+$ band, $\alpha=+1/2$.

^b Band(c): $23/2^+$ band, $\alpha=-1/2$.

^c Band(D): $3/2^+$ band.

^d Band(E): $\pi 1/2[431]$ band, $\alpha=-1/2$.

^e Band(e): $\pi 1/2[431]$ band, $\alpha=+1/2$.

^f Band(F): $\pi 1/2[301]$ band.

 $\gamma(^{113}\text{Rh})$

E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
88.17 10	5.4	351.36	(5/2 ⁺)	263.21	(3/2 ⁺)	Decays with half-life=5 ns 1 (1970Jo20).
185.82 10	4.5	786.54	(7/2 ⁺)	600.72	(3/2 ⁺)	
206.10 10	0.6	785.13	(7/2 ⁻)	578.99	(7/2 ⁺)	
211.70 10	100	211.72	(9/2 ⁺)	0.0	(7/2 ⁺)	
227.68 10	0.7	578.99	(7/2 ⁺)	351.36	(5/2 ⁺)	
232.28 10	20.7	444.00	(11/2 ⁺)	211.72	(9/2 ⁺)	
233.69 10	2.2	834.36	(5/2 ⁺)	600.72	(3/2 ⁺)	
236.0 1		4006.03	(33/2 ⁺)	3770.04	(31/2 ⁺)	
240.65 10	15.8	684.66	(13/2 ⁺)	444.00	(11/2 ⁺)	
244.0 1		3334.76	(29/2 ⁺)	3090.76	(27/2 ⁺)	
244.48 10	7.3	1320.21	(17/2 ⁺)	1075.73	(15/2 ⁺)	

Continued on next page (footnotes at end of table)

^{252}Cf SF decay [2004Lu03](#) (continued) $\gamma(^{113}\text{Rh})$ (continued)

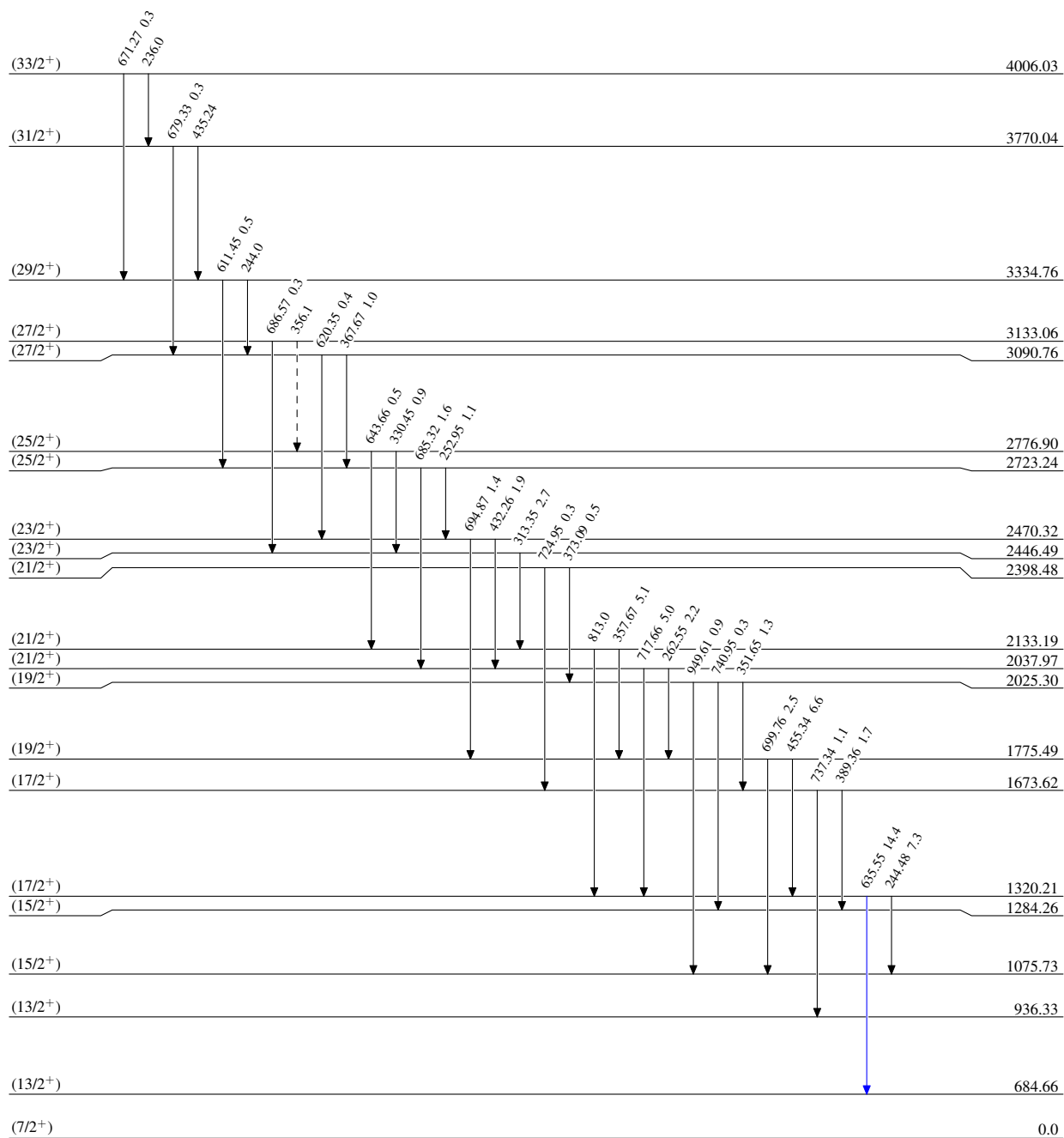
E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
252.95 <i>10</i>	1.1	2723.24	(25/2 ⁺)	2470.32	(23/2 ⁺)	
262.55 <i>10</i>	2.2	2037.97	(21/2 ⁺)	1775.49	(19/2 ⁺)	
263.17 <i>10</i>	20.3	263.21	(3/2 ⁺)	0.0	(7/2 ⁺)	
313.35 <i>10</i>	2.7	2446.49	(23/2 ⁺)	2133.19	(21/2 ⁺)	
315.73 <i>10</i>		578.99	(7/2 ⁺)	263.21	(3/2 ⁺)	
330.45 <i>10</i>	0.9	2776.90	(25/2 ⁺)	2446.49	(23/2 ⁺)	
332.97 <i>10</i>	0.3	911.93	(9/2 ⁺)	578.99	(7/2 ⁺)	
337.58 <i>10</i>	5.1	600.72	(3/2 ⁺)	263.21	(3/2 ⁺)	
347.84 <i>10</i>	2.6	1284.26	(15/2 ⁺)	936.33	(13/2 ⁺)	
351.44 <i>10</i>	6.9	351.36	(5/2 ⁺)	0.0	(7/2 ⁺)	
351.65 <i>10</i>	1.3	2025.30	(19/2 ⁺)	1673.62	(17/2 ⁺)	
356.1 [†]		3133.06	(27/2 ⁺)	2776.90	(25/2 ⁺)	
357.67 <i>10</i>	5.1	2133.19	(21/2 ⁺)	1775.49	(19/2 ⁺)	
359.26 <i>10</i>	6.2	570.96	(11/2 ⁺)	211.72	(9/2 ⁺)	
365.33 <i>10</i>	5.2	936.33	(13/2 ⁺)	570.96	(11/2 ⁺)	
367.25 <i>10</i>	0.2	578.99	(7/2 ⁺)	211.72	(9/2 ⁺)	
367.67 <i>10</i>	1.0	3090.76	(27/2 ⁺)	2723.24	(25/2 ⁺)	
373.09 <i>10</i>	0.5	2398.48	(21/2 ⁺)	2025.30	(19/2 ⁺)	E_γ : 373.2 in figure 6 of 2004Lu03 .
389.36 <i>10</i>	1.7	1673.62	(17/2 ⁺)	1284.26	(15/2 ⁺)	
391.18 <i>10</i>	8.4	1075.73	(15/2 ⁺)	684.66	(13/2 ⁺)	
424.26 <i>10</i>	1.2	1258.63	(9/2 ⁺)	834.36	(5/2 ⁺)	
432.26 <i>10</i>	1.9	2470.32	(23/2 ⁺)	2037.97	(21/2 ⁺)	
433.82 <i>10</i>		785.13	(7/2 ⁻)	351.36	(5/2 ⁺)	
435.24 <i>10</i>		3770.04	(31/2 ⁺)	3334.76	(29/2 ⁺)	
443.95 <i>10</i>	18.9	444.00	(11/2 ⁺)	0.0	(7/2 ⁺)	
455.34 <i>10</i>	6.6	1775.49	(19/2 ⁺)	1320.21	(17/2 ⁺)	
472.93 <i>10</i>	19.3	684.66	(13/2 ⁺)	211.72	(9/2 ⁺)	
483.04 <i>10</i>	0.6	834.36	(5/2 ⁺)	351.36	(5/2 ⁺)	
560.54 <i>10</i>		911.93	(9/2 ⁺)	351.36	(5/2 ⁺)	
571.0 <i>1</i>	0.9	570.96	(11/2 ⁺)	0.0	(7/2 ⁺)	
571.07 <i>10</i>	1.8	834.36	(5/2 ⁺)	263.21	(3/2 ⁺)	
599.45 <i>10</i>	1.2	1284.26	(15/2 ⁺)	684.66	(13/2 ⁺)	E_γ : 599.6 in figure 6 of 2004Lu03 .
600.7 <i>1</i>	0.7	600.72	(3/2 ⁺)	0.0	(7/2 ⁺)	
611.45 <i>10</i>	0.5	3334.76	(29/2 ⁺)	2723.24	(25/2 ⁺)	
620.35 <i>10</i>	0.4	3090.76	(27/2 ⁺)	2470.32	(23/2 ⁺)	E_γ : 620.5 in figure 6 of 2004Lu03 .
631.65 <i>10</i>	5.2	1075.73	(15/2 ⁺)	444.00	(11/2 ⁺)	
635.55 <i>10</i>	14.4	1320.21	(17/2 ⁺)	684.66	(13/2 ⁺)	
643.66 <i>10</i>	0.5	2776.90	(25/2 ⁺)	2133.19	(21/2 ⁺)	
671.27 <i>10</i>	0.3	4006.03	(33/2 ⁺)	3334.76	(29/2 ⁺)	
679.33 <i>10</i>	0.3	3770.04	(31/2 ⁺)	3090.76	(27/2 ⁺)	
685.32 <i>10</i>	1.6	2723.24	(25/2 ⁺)	2037.97	(21/2 ⁺)	
686.57 <i>10</i>	0.3	3133.06	(27/2 ⁺)	2446.49	(23/2 ⁺)	
694.87 <i>10</i>	1.4	2470.32	(23/2 ⁺)	1775.49	(19/2 ⁺)	
699.76 <i>10</i>	2.5	1775.49	(19/2 ⁺)	1075.73	(15/2 ⁺)	
713.40 <i>10</i>	0.6	1284.26	(15/2 ⁺)	570.96	(11/2 ⁺)	E_γ : 713.2 in figure 6 of 2004Lu03 .
717.66 <i>10</i>	5.0	2037.97	(21/2 ⁺)	1320.21	(17/2 ⁺)	
724.60 <i>10</i>	2.2	936.33	(13/2 ⁺)	211.72	(9/2 ⁺)	
724.95 <i>10</i>	0.3	2398.48	(21/2 ⁺)	1673.62	(17/2 ⁺)	
737.34 <i>10</i>	1.1	1673.62	(17/2 ⁺)	936.33	(13/2 ⁺)	
740.95 <i>10</i>	0.3	2025.30	(19/2 ⁺)	1284.26	(15/2 ⁺)	
785		785.13	(7/2 ⁻)	0.0	(7/2 ⁺)	
813.0 <i>1</i>		2133.19	(21/2 ⁺)	1320.21	(17/2 ⁺)	E_γ : from figure 6 of 2004Lu03 .
840.3 <i>1</i>		1284.26	(15/2 ⁺)	444.00	(11/2 ⁺)	E_γ : 840.2 in figure 6 of 2004Lu03 .
949.61 <i>10</i>	0.9	2025.30	(19/2 ⁺)	1075.73	(15/2 ⁺)	E_γ : 949.5 in figure 6 of 2004Lu03 .

[†] Placement of transition in the level scheme is uncertain.

^{252}Cf SF decay 2004Lu03**Level Scheme**Intensities: Relative I_γ

Legend

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



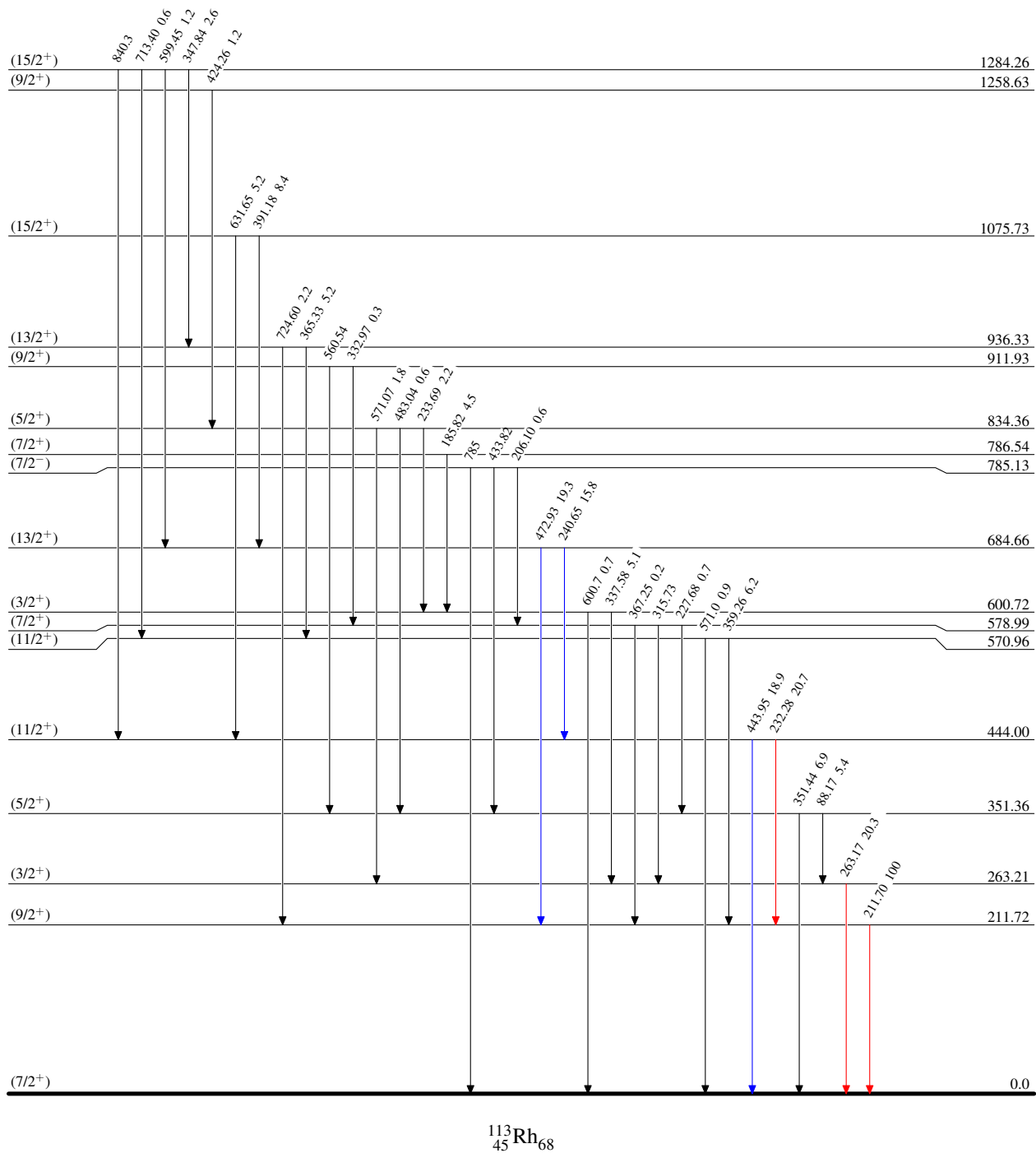
^{252}Cf SF decay **2004Lu03**

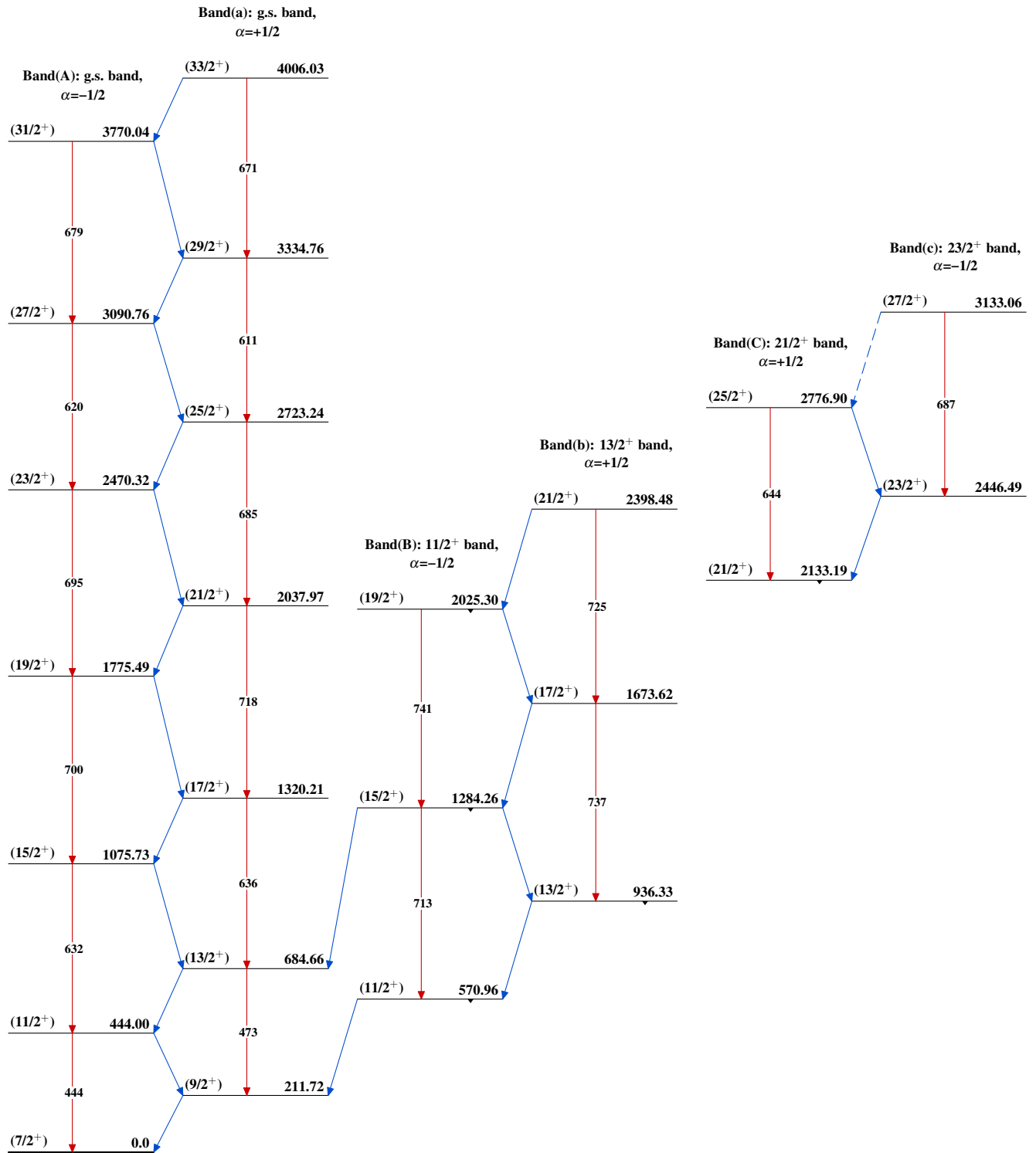
Level Scheme (continued)

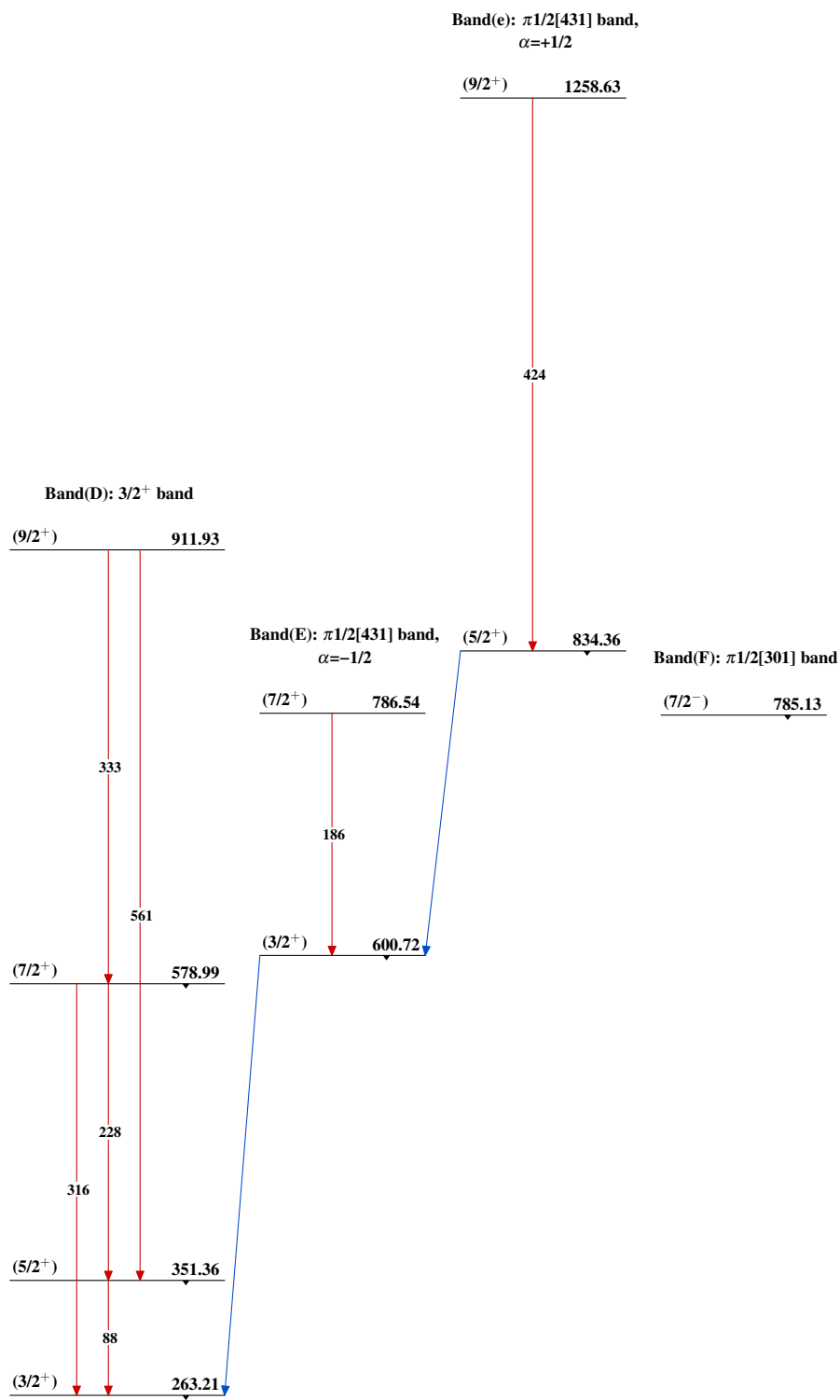
Intensities: Relative I_γ

Legend

- $\longrightarrow$ $I_\gamma < 2\% \times I_\gamma^{\max}$
 $\longrightarrow$ $I_\gamma < 10\% \times I_\gamma^{\max}$
 $\longrightarrow$ $I_\gamma > 10\% \times I_\gamma^{\max}$

 $^{113}_{45}\text{Rh}_{68}$

^{252}Cf SF decay 2004Lu03

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

 $^{113}_{45}\text{Rh}_{68}$