^{252}Cf SF decay 1999Zh31,2001Ha14

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 110, 507 (2009)	1-Oct-2008

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

Additional information 1.

Measured Eγ, Iγ, γγ coin, triple γ-ray coincidences in fission fragments produced from spontaneous fission of 252Cf. Detector: GAMMASPHERE, an array of 72 Compton-suppressed germanium detectors. Others: 1995Zh34, 1996Te04, 1997Ha64.

^{145}Ba Levels

E(level)†	Jπ‡	$T_{1/2}$	Comments
0.0#	$5/2^-$		
112.94@ *24*	$(7/2)^-$	0.220 ns *12*	$T_{1/2}$: Value quoted in 1999Sm05. γ-factor=−0.40 *28*, time-integral perturbed angular correlations (1999Sm05).
277.56# *24*	$(9/2)^-$		
463.2@ *3*	$(11/2)^-$		
508.4 *3*	$(11/2)^-$		
618.3a *3*	$(13/2)^+$		
641.7# *3*	$(13/2)^-$		
671.0& *5*	$(11/2^+)$		
866.6a *4*	$(17/2)^+$		
900.8@ *4*	$(15/2)^-$		
972.0& *4*	$(15/2^+)$		
1098.4# *4*	$(17/2)^-$		
1240.8a *5*	$(21/2)^+$		
1384.0& *5*	$(19/2^+)$		
1394.3@ *5*	$(19/2^-)$		
1462.4b *6*	$(19/2^-)$		
1640.2# *5*	$(21/2)^-$		
1719.2a *6*	$(25/2)^+$		
1812.9b *6*	$(23/2^-)$		
1889.7& *6*	$(23/2^+)$		
1940.4@ *7*	$23/2^-$		
2206.5# *7*	$25/2^-$		
2235.0b *6*	$(27/2^-)$		
2283.5a *6*	$(29/2)^+$		
2428.7& *12*	$(27/2^+)$		
2725.7b *7*	$(31/2^-)$		
2923.6a *7*	$(33/2)^+$		
3289.7b *8*	$(35/2^-)$		
3630.2a *9*	$(37/2^+)$		
3922.3b *9*	$(39/2^-)$		
4624.1b *11*	$(43/2^-)$		

† Deduced by evaluators from least-squares fit to G-ray energies, assuming Δ(Eγ)=0.3 keV for Iγ>5 and 0.5 keV for Iγ<5.

‡ From Adopted Levels.

Band(A): Band based on $5/2^-$ g.s., α=+1/2. Interpreted as negative parity members of S=−i band.

@ Band(a): Band based on $5/2^-$ g.s., α=−1/2.

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^{252}Cf SF decay 1999Zh31,2001Ha14 (continued)

^{145}Ba Levels (continued)

[&] Band(B): Band based on $(11/2^+)$. Interpreted as positive parity members of S=−i band.
[a] Band(C): Band based on $13/2^+$. Interpreted as positive parity members of S=+i band.
[b] Band(D): Band based on $(19/2^-)$. Interpreted as negative parity members of S=+i band.

γ(^{145}Ba)

E_γ	I_γ [†]	E_i(level)	J_i^π	E_f	J_f^π	Comments
23.5[‡]		641.7	$(13/2)^-$	618.3	$(13/2)^+$	
109.9	5.5	618.3	$(13/2)^+$	508.4	$(11/2)^-$	
112.9	100	112.94	$(7/2)^-$	0.0	$5/2^-$	
126.5	0.3	1098.4	$(17/2)^-$	972.0	$(15/2^+)$	I_γ: 0.5 (1999Zh31).
155.0	29	618.3	$(13/2)^+$	463.2	$(11/2)^-$	
164.7	28	277.56	$(9/2)^-$	112.94	$(7/2)^-$	
178.5	2.8	641.7	$(13/2)^-$	463.2	$(11/2)^-$	
185.7	24	463.2	$(11/2)^-$	277.56	$(9/2)^-$	
197.7	<0.1	1098.4	$(17/2)^-$	900.8	$(15/2)^-$	
197.9[‡]	<0.1	2923.6	$(33/2)^+$	2725.7	$(31/2^-)$	
230.8	1.5	508.4	$(11/2)^-$	277.56	$(9/2)^-$	
231.6	0.6	1098.4	$(17/2)^-$	866.6	$(17/2)^+$	
245.9	<0.1	1640.2	$(21/2)^-$	1394.3	$(19/2^-)$	
248.2	28	866.6	$(17/2)^+$	618.3	$(13/2)^+$	
249.5	<0.1	1889.7	$(23/2^+)$	1640.2	$(21/2)^-$	
256.2	0.5	1640.2	$(21/2)^-$	1384.0	$(19/2^+)$	
259.1	2.4	900.8	$(15/2)^-$	641.7	$(13/2)^-$	
277.6	7.9	277.56	$(9/2)^-$	0.0	$5/2^-$	
282.6	1.7	900.8	$(15/2)^-$	618.3	$(13/2)^+$	
285.6	1.6	1384.0	$(19/2^+)$	1098.4	$(17/2)^-$	
295.9	<0.1	1394.3	$(19/2^-)$	1098.4	$(17/2)^-$	
301.0	0.4	972.0	$(15/2^+)$	671.0	$(11/2^+)$	
330.3	3.4	972.0	$(15/2^+)$	641.7	$(13/2)^-$	
350.1	18	463.2	$(11/2)^-$	112.94	$(7/2)^-$	
350.5		1812.9	$(23/2^-)$	1462.4	$(19/2^-)$	
364.2	12	641.7	$(13/2)^-$	277.56	$(9/2)^-$	
366.1	<0.1	3289.7	$(35/2^-)$	2923.6	$(33/2)^+$	I_γ: 0.6 (1999Zh31).
374.2	17	1240.8	$(21/2)^+$	866.6	$(17/2)^+$	
393.5	1.8	671.0	$(11/2^+)$	277.56	$(9/2)^-$	
395.5	10	508.4	$(11/2)^-$	112.94	$(7/2)^-$	
412.1	1.0	1384.0	$(19/2^+)$	972.0	$(15/2^+)$	
422.1	1.1	2235.0	$(27/2^-)$	1812.9	$(23/2^-)$	
437.6	4.9	900.8	$(15/2)^-$	463.2	$(11/2)^-$	
442.1	1.6	2725.7	$(31/2^-)$	2283.5	$(29/2)^+$	
456.8	4.7	1098.4	$(17/2)^-$	641.7	$(13/2)^-$	
478.4	11	1719.2	$(25/2)^+$	1240.8	$(21/2)^+$	
490.7	1.2	2725.7	$(31/2^-)$	2235.0	$(27/2^-)$	
493.6	0.2	1394.3	$(19/2^-)$	900.8	$(15/2)^-$	
505.7	<0.1	1889.7	$(23/2^+)$	1384.0	$(19/2^+)$	I_γ: 0.8 (1999Zh31).
515.8	3.9	2235.0	$(27/2^-)$	1719.2	$(25/2)^+$	
527.5	1.1	1394.3	$(19/2^-)$	866.6	$(17/2)^+$	
539[‡]	0.3	2428.7	$(27/2^+)$	1889.7	$(23/2^+)$	
541.8	1.8	1640.2	$(21/2)^-$	1098.4	$(17/2)^-$	
546.1	0.1	1940.4	$23/2^-$	1394.3	$(19/2^-)$	
564.0	1.0	3289.7	$(35/2^-)$	2725.7	$(31/2^-)$	
564.3	7.4	2283.5	$(29/2)^+$	1719.2	$(25/2)^+$	
566.3	0.6	2206.5	$25/2^-$	1640.2	$(21/2)^-$	

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^{252}Cf SF decay 1999Zh31,2001Ha14 (continued)

$\gamma(^{145}Ba)$ (continued)

E_γ	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Comments
572.1	3.3	1812.9	$(23/2^-)$	1240.8	$(21/2)^+$	
595.8	1.0	1462.4	$(19/2^-)$	866.6	$(17/2)^+$	
632.6	0.8	3922.3	$(39/2^-)$	3289.7	$(35/2^-)$	
640.1	2.1	2923.6	$(33/2)^+$	2283.5	$(29/2)^+$	
701.8	0.2	4624.1	$(43/2^-)$	3922.3	$(39/2^-)$	
706.6	0.5	3630.2	$(37/2^+)$	2923.6	$(33/2)^+$	I_γ: 0.6 (1999Zh31).

† From 2001Ha14. In a few cases these differ from those in 1999Zh31.
‡ Placement of transition in the level scheme is uncertain.

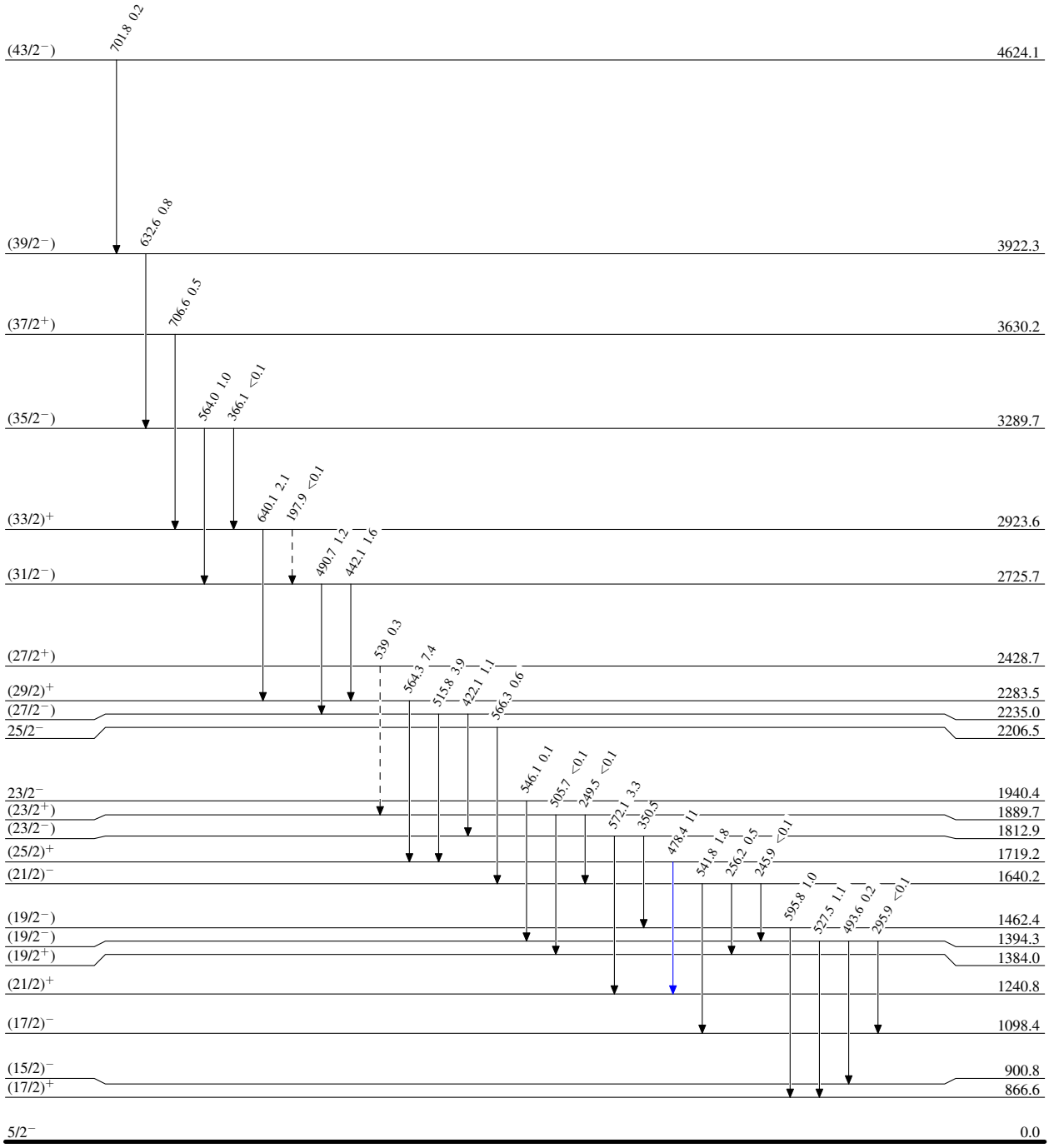
^{252}Cf SF decay 1999Zh31,2001Ha14

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)



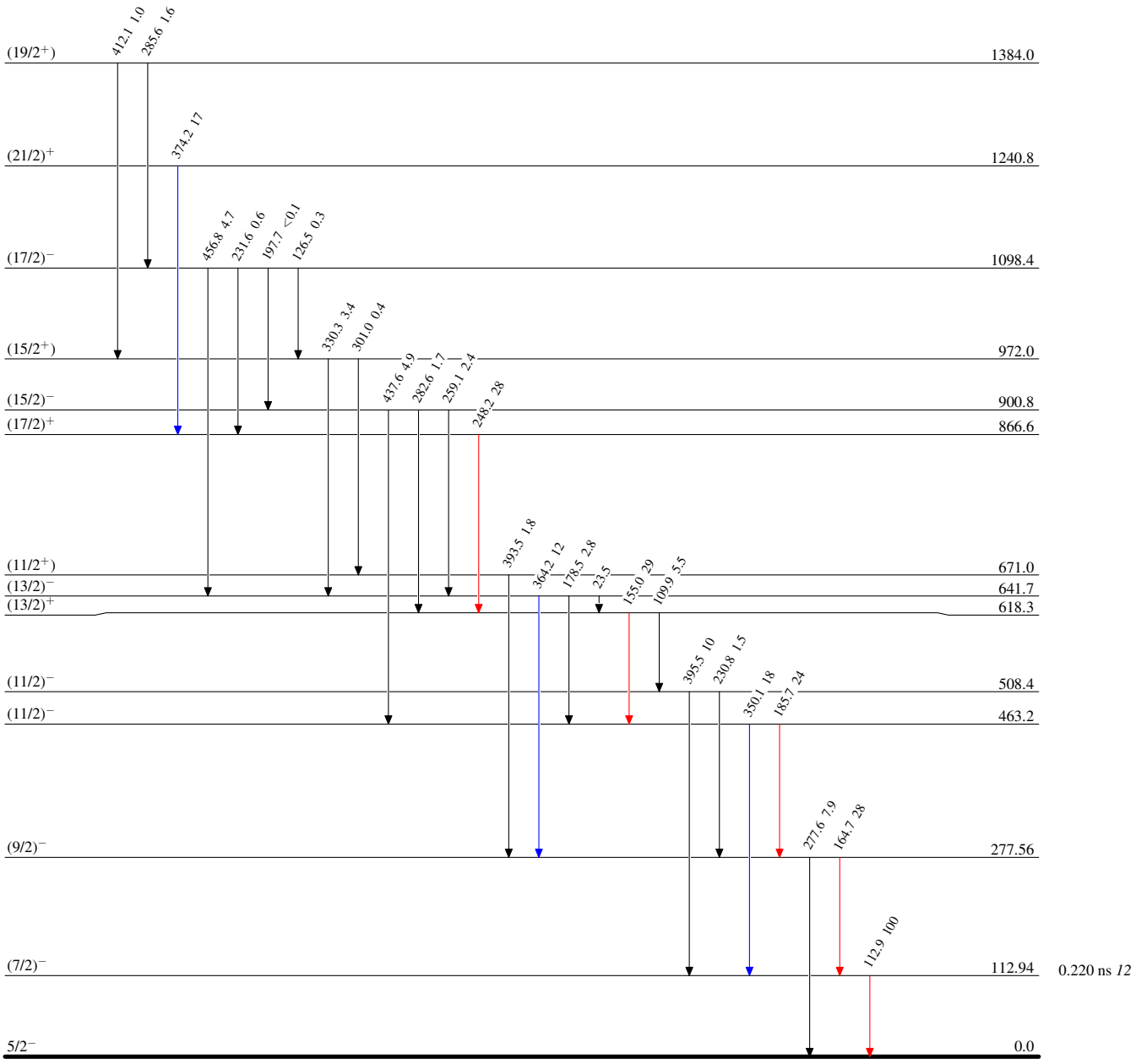
$^{145}_{56}Ba_{89}$

^{252}Cf SF decay 1999Zh31,2001Ha14

Level Scheme (continued)

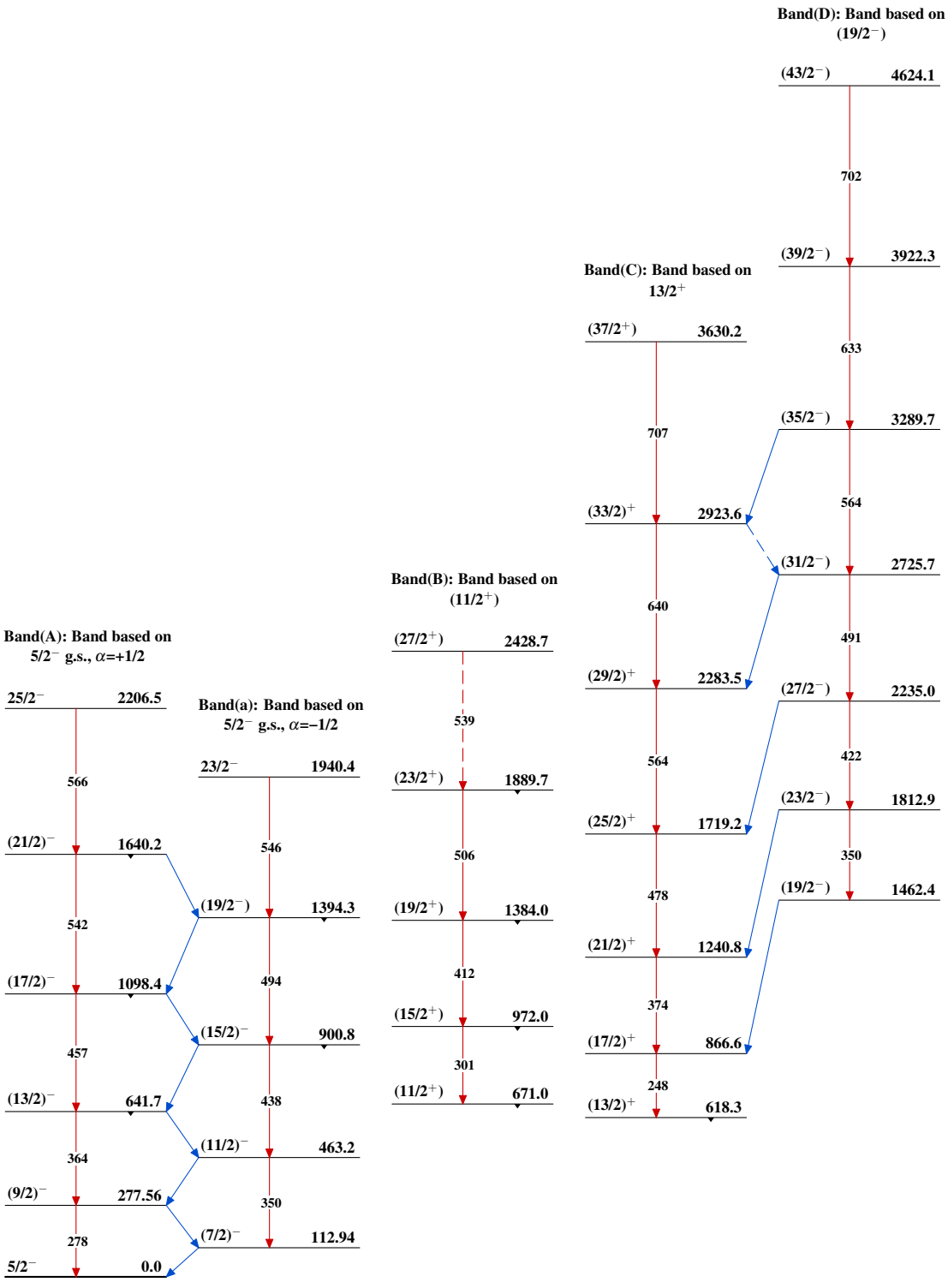
Intensities: Relative I_γ

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)



$^{145}_{56}Ba_{89}$

^{252}Cf SF decay 1999Zh31,2001Ha14



$^{145}_{56}Ba_{89}$