Adopted Levels, Gammas

History

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

Q(β^-)=2.56×10^3 *4*; S(n)=4.71×10^3 *4*; S(p)=9.51×10^3 *4*; Q(α)=2.4×10^2 *4* 2012Wa38
Note: Current evaluation has used the following Q record 2530 404730 409490 60200 40 2003Au03.
Additional information 1.

^{145}Ce Levels

Cross Reference (XREF) Flags

A ^{145}La β^- decay
B ^{208}Pb(^{18}O,Xγ)
C ^{252}Cf SF decay

E(level)	J$^\pi$[†]	T$_{1/2}$	XREF	Comments
0.0[‡]	(5/2$^-$)	3.01 min *6*	ABC	%β^-=100 J$^\pi$: From systematics of N=87 neighboring isotones (1978Pl02, 2005Ve09). T$_{1/2}$: from 1980Ya07. Others: 2.78 min *8* (1979Ta17), 2.98 min *15* (1978Pf02), 3.20 min *24* (1981Eb01), 3.1 min *2* (1960Wi10), 3.0 min *1* (1954Ma07,1965Ho11); see also 1974Gr29, 1970OsZZ, 1969WiZX.
64.3 *2*	(−)	13 ns *3*	A	T$_{1/2}$: from 1978Pf02. J$^\pi$: E2 γ ray to (5/2$^-$).
70.0 *2*	(7/2$^-$)		AB	
118.2 *2*			A	
167.5[‡] *5*	(9/2$^-$)		B	
234.1 *3*			A	
355.9 *2*			A	
381.0			C	
447.2 *2*			A	
505.7 *2*			A	
522.2 *3*			A	
548.2[‡] *6*	(13/2$^-$)		B	
632.6 *3*			A	
664.3 *2*			A	
671.8 *2*			A	
708.7? *3*			A	
840.5 *2*			A	
946.3	(9/2$^+$)		C	
959.5 *2*			A	
1001.9			A	
1021.5			A	
1030.9			A	
1044.6	(13/2$^+$)		C	
1112.8[‡] *6*	(17/2$^-$)		B	
1126.2[#] *6*	(15/2$^+$)		B	
1155.2 *4*			A	
1166.1 *4*			A	
1284.9 *5*			A	
1427.7	(17/2$^+$)		C	
1495.0[#] *6*	(19/2$^+$)		B	
1510.8 *4*			A	
1596.5?			A	
1690.0? *5*			A	

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Adopted Levels, Gammas (continued)

^{145}Ce Levels (continued)

E(level)	Jπ†	XREF	E(level)	Jπ†	XREF	E(level)	Jπ†	XREF
1840.8‡ *7*	(21/2⁻)	B	2359.8		A	3267.9@ *8*	(29/2⁺)	B
1889.5 *4*		A	2377.1 *5*		A	3320.5 *8*		B
1946.1?		A	2543.9 *6*		A	3360.2	(29/2⁺)	C
1948.4	(21/2⁺)	BC	2606.9 *5*		A	3475.8# *8*	(31/2⁺)	B
2015.3# *7*	(23/2⁺)	B	2621.7	(25/2⁺)	C	3921.5@ *8*	(33/2⁺)	B
2156.0 *3*		A	2688.4# *7*	(27/2⁺)	B	4590.5@ *9*	(37/2⁺)	B
2205.6 *4*		A	2810.7 *7*		B			

† J^{π} assignments are based on the assumption that in yrast decays spin values increase with excitation energy. Also, they are based on the analogy to the level structure of neighboring isotones.

‡ Band(A): Band based on 5/2⁻. Configuration=$\nu f_{7/2}^{-3}$ for 5/2⁻ and 7/2⁻ states. Above 9/2⁻, configuration=$\nu h_{9/2}$ coupled to quadrupole modes.

Band(B): Band based on (15/2⁺). Configuration=$\nu h_{9/2}$ coupled to octupole modes as suggested by interband E1 transitions.

@ Band(C): Band based on (29/2⁺). Possible configuration=$\nu f_{7/2}\nu h_{9/2}\nu i_{13/2}$.

γ(^{145}Ce)

E_i(level)	J_i^{π}	E_{γ}#	I_{γ}#	E_f	J_f^{π}	Mult.	α[a]	Comments
64.3	(⁻)	64.3 *2*	100	0.0	(5/2⁻)	E2	10.45	α(K)= 3.91 *6*; α(L)= 5.01 *11*; α(M)= 1.127 *23*; α(N+..)= 0.274 *6* B(E2)(W.u.)=76 *18* Mult.: K/L=0.8 *2* (1978Pf02). E_{γ}: from ce(K), ce(L), ce(M) observed only in ce spectra (1978Pf02).
70.0	(7/2⁻)	70.0 *2*	100	0.0	(5/2⁻)			
118.2		48.2 *5*	40 *8*	70.0	(7/2⁻)			E_{γ},I_{γ}: observed in 1977Sk02.
		118.2 *2*	100 *8*	0.0	(5/2⁻)			
167.5	(9/2⁻)	97.5@	@	70.0	(7/2⁻)			
234.1		117.1†c		118.2				
		164.1 *2*	85	70.0	(7/2⁻)			
		169.8 *2*	100	64.3	(⁻)			
355.9		238.0 *2*	28	118.2				
		291.4 *2*	28	64.3	(⁻)			
		355.8 *2*	100	0.0	(5/2⁻)			
381.0		381.0&	&	0.0	(5/2⁻)			
447.2		377.0 *2*	40	70.0	(7/2⁻)			
		447.4 *2*	100	0.0	(5/2⁻)			
505.7		387.9 *2*	38	118.2				
		435.5 *2*	98	70.0	(7/2⁻)			
		505.2 *2*	100	0.0	(5/2⁻)			
522.2		288.5 *2*	16	234.1				
		403.6‡ *2*	100	118.2				
		452.0 *2*	56	70.0	(7/2⁻)			
548.2	(13/2⁻)	380.7@	@	167.5	(9/2⁻)			
632.6		515.4 *2*	37	118.2				
		632.9 *2*	100	0.0	(5/2⁻)			
664.3		430.2 *2*	100	234.1				
		664.0 *2*	30	0.0	(5/2⁻)			
671.8		671.8 *2*	100	0.0	(5/2⁻)			
708.7?		591.0 *2*	32	118.2				
		644.8 *2*	100	64.3	(⁻)			

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Adopted Levels, Gammas (continued)

γ(^{145}Ce) (continued)

E_i(level)	J_i^π	E_γ[#]	I_γ[#]	E_f	J_f^π
840.5		484.4 *2*	76	355.9	
		606.1 *2*	100	234.1	
		721.5 *2*	80	118.2	
		840.7[c] *2*	<56	0.0	(5/2$^-$)
946.3	(9/2$^+$)	565.3[&]	[&]	381.0	
959.5		327.4 *2*	77	632.6	
		840.7 *2*	54	118.2	
		889.6 *2*	100	70.0	(7/2$^-$)
		895.3 *2*	50	64.3	($^-$)
		959.9 *2*	23	0.0	(5/2$^-$)
1001.9		883.5 *2*	10	118.2	
		932.0[bc] *2*	100[b]	70.0	(7/2$^-$)
1021.5		312.0 *2*	9	708.7?	
		786.5 *2*	100	234.1	
		1021.5 *3*	80	0.0	(5/2$^-$)
1030.9		360.5	54	671.8	
		1030.9	100	0.0	(5/2$^-$)
1044.6	(13/2$^+$)	98.3[&]	[&]	946.3	(9/2$^+$)
1112.8	(17/2$^-$)	564.6[@]	[@]	548.2	(13/2$^-$)
1126.2	(15/2$^+$)	578.0[@]	[@]	548.2	(13/2$^-$)
1155.2		799.5 *2*	81	355.9	
		1036.9 *3*	100	118.2	
1166.1		932.0[b] *2*	100[b]	234.1	
1284.9		1050.8 *3*	100	234.1	
1427.7	(17/2$^+$)	383.1[&]	[&]	1044.6	(13/2$^+$)
1495.0	(19/2$^+$)	368.8[@]	[@]	1126.2	(15/2$^+$)
		382.2[@]	[@]	1112.8	(17/2$^-$)
1510.8		846.5 *2*	100	664.3	
1596.5?		1596.5 *3*	100	0.0	(5/2$^-$)
1690.0?		659.0 *2*	50	1030.9	
		668.2 *2*	40	1021.5	
		687.9 *2*	100	1001.9	
		730.6 *2*	100	959.5	
1840.8	(21/2$^-$)	727.9[@]	[@]	1112.8	(17/2$^-$)
1889.5		1819.5 *3*	100	70.0	(7/2$^-$)
1946.1?		1238.0	100	708.7?	
		1946.1	100	0.0	(5/2$^-$)
1948.4	(21/2$^+$)	520.7[@]	[@]	1427.7	(17/2$^+$)
2015.3	(23/2$^+$)	174.4[@]	[@]	1840.8	(21/2$^-$)
		520.4[@]	[@]	1495.0	(19/2$^+$)
2156.0		1922.4 *3*	68	234.1	
		2155.2 *3*	100	0.0	(5/2$^-$)
2205.6		515.4[c] *2*	<37	1690.0?	
		1050.8[c] *3*	<100	1155.2	
		2087.8 *3*	58	118.2	
		2204.7 *3*	58	0.0	(5/2$^-$)
2359.8		764.1 *5*	44	1596.5?	
		2289.0 *3*	31	70.0	(7/2$^-$)
		2295.9 *5*	31	64.3	($^-$)
		2359.4 *3*	100	0.0	(5/2$^-$)
2377.1		1222.1 *5*	63	1155.2	
		2306.8 *5*	88	70.0	(7/2$^-$)

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Adopted Levels, Gammas (continued)

γ(^{145}Ce) (continued)

E_i(level)	J_i^π	E_γ[#]	I_γ[#]	E_f	J_f^π	E_i(level)	J_i^π	E_γ[#]	E_f	J_f^π
2377.1		2377.1 *5*	100	0.0	(5/2$^-$)	3267.9	(29/2$^+$)	579.5[@]	2688.4	(27/2$^+$)
2543.9		2475.7 *5*	65	70.0	(7/2$^-$)	3320.5		509.8[@]	2810.7	
		2479.2 *5*	100	64.3	($^-$)	3360.2	(29/2$^+$)	738.5[&]	2621.7	(25/2$^+$)
2606.9		2542.6 *5*	100	64.3	($^-$)	3475.8	(31/2$^+$)	787.4[@]	2688.4	(27/2$^+$)
2621.7	(25/2$^+$)	673.3[&]	[&]	1948.4	(21/2$^+$)	3921.5	(33/2$^+$)	445.7[@]	3475.8	(31/2$^+$)
2688.4	(27/2$^+$)	673.1[@]	[@]	2015.3	(23/2$^+$)			653.6[@]	3267.9	(29/2$^+$)
2810.7		795.4[@]	[@]	2015.3	(23/2$^+$)	4590.5	(37/2$^+$)	669.0[@]	3921.5	(33/2$^+$)

† Observed only in 1977Sk02, supported by $\gamma\gamma$ from 1978Pf02, 1977Sk02.
‡ Suggested placement disagrees with that of 1977Sk02 based on strong coin with 165γ and 117γ.
# From ^{145}La β^- decay, unless otherwise specified.
@ From ^{208}Pb(^{18}O,Xγ).
& From ^{252}Cf SF decay.
[a] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
[b] Multiply placed with undivided intensity.
[c] Placement of transition in the level scheme is uncertain.

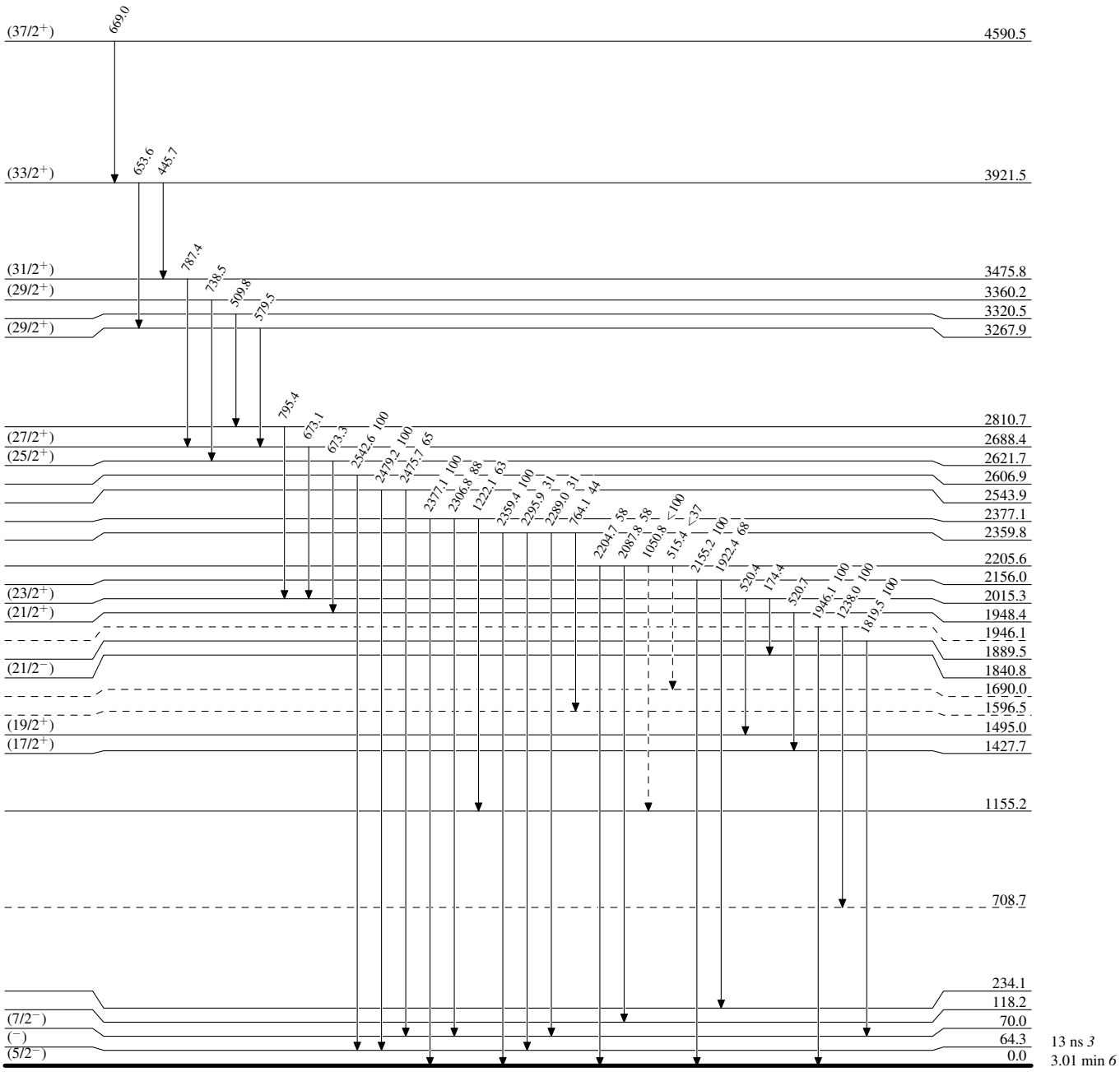
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{145}_{58}Ce_{87}$

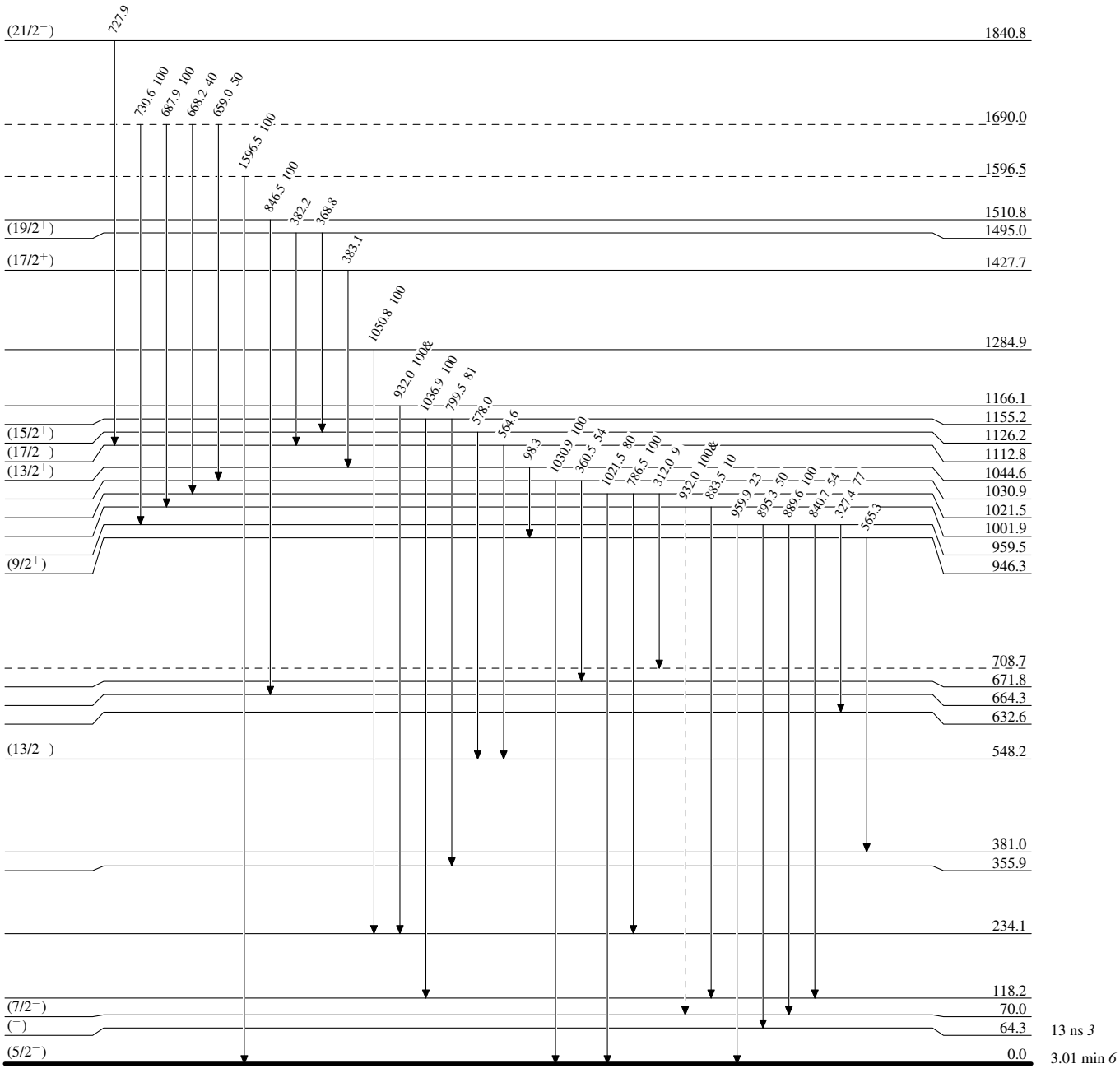
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

- - - - - - ► γ Decay (Uncertain)



$^{145}_{58}Ce_{87}$

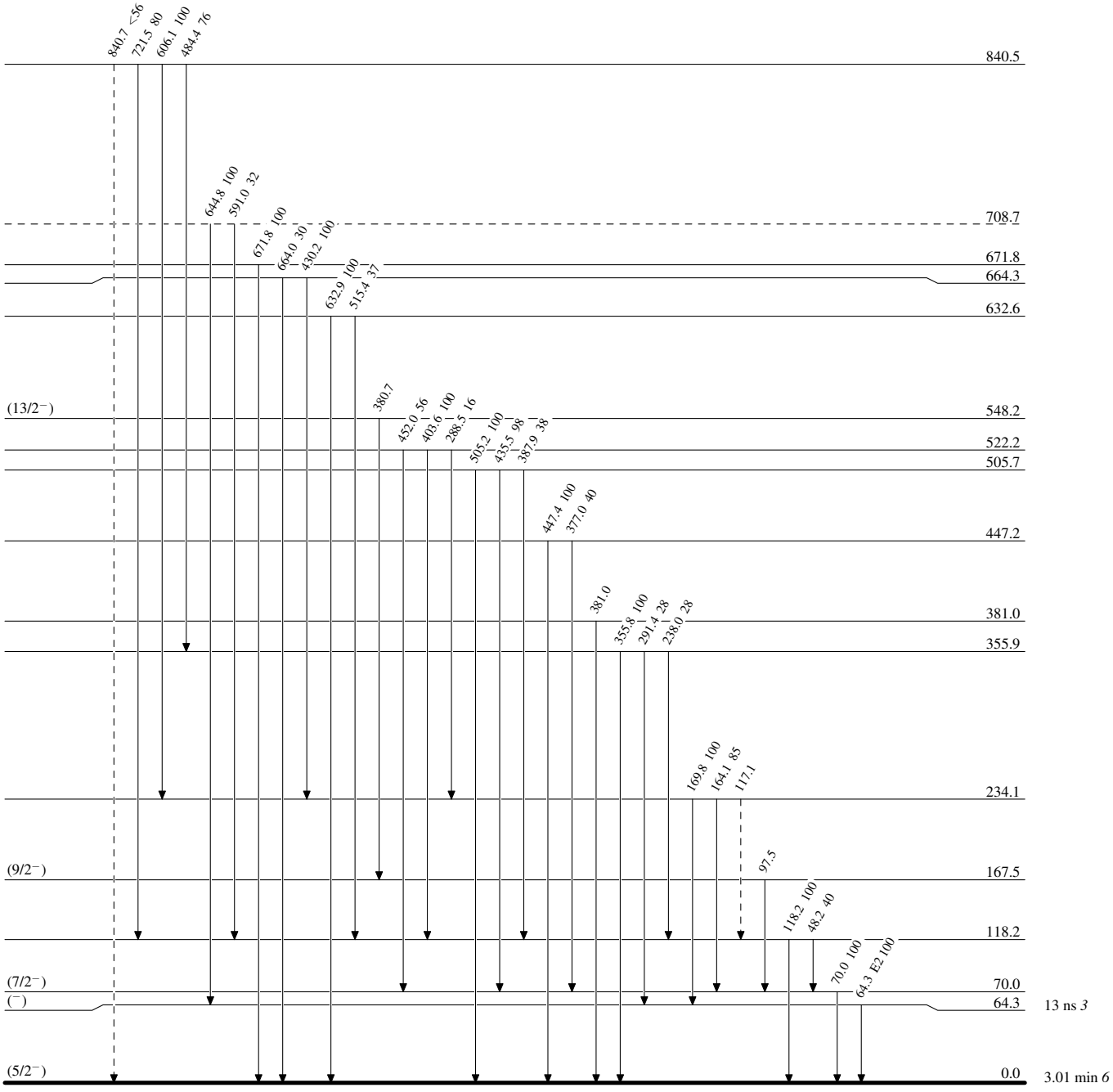
Adopted Levels, Gammas

Legend

Level Scheme (continued)

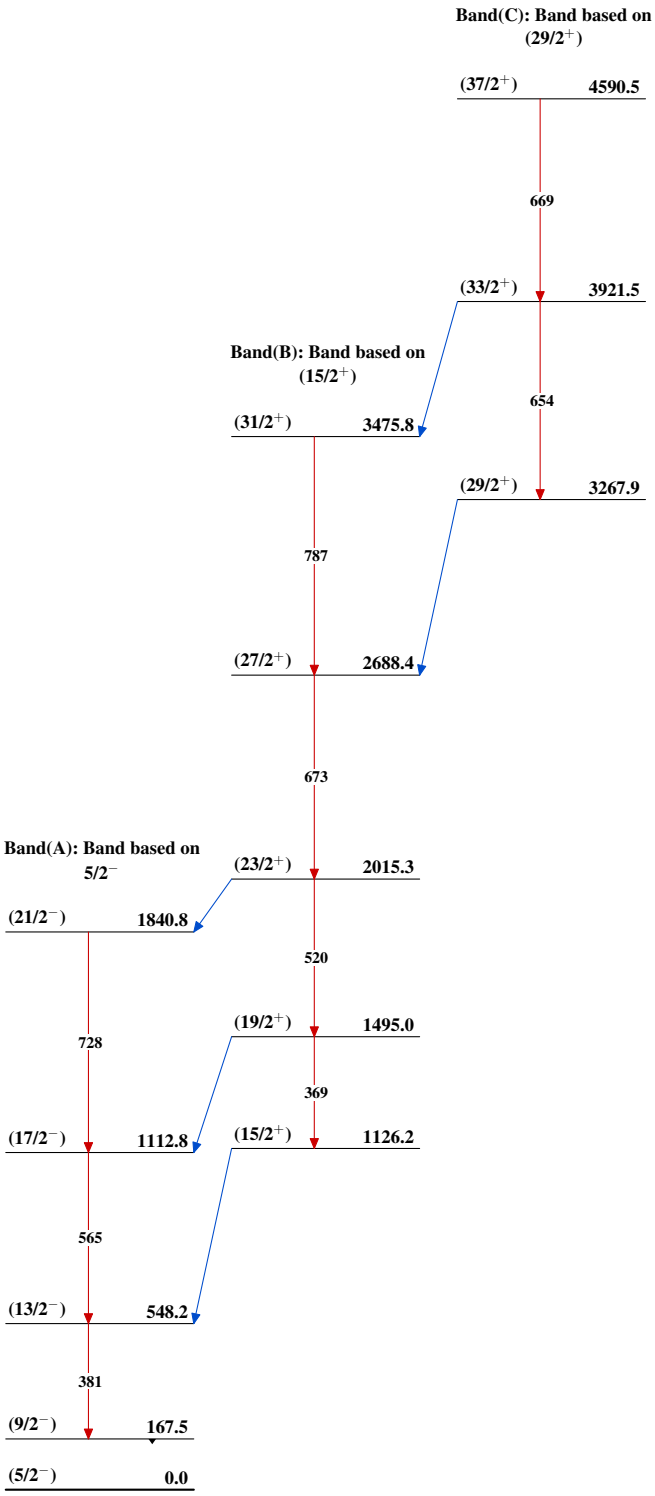
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

γ Decay (Uncertain)



$^{145}_{58}Ce_{87}$

Adopted Levels, Gammas



$^{145}_{58}Ce_{87}$