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^-)=4.23×10^3 *4*; S(n)=6057 *18*; S(p)=8357 *15*; Q(α)=−783 *16* 2012Wa38
Note: Current evaluation has used the following Q record 4110 806170 *100* 8510 *90* −930 *90* 2003Au03.
Additional information 1.

^{145}La Levels

See 1997Gr09 for β^- feeding from 145Ba β^- decay to pseudo levels between 1300 keV and 3900 keV measured with a total γ-ray absorption spectrometer.

Cross Reference (XREF) Flags

A ^{145}Ba β^- decay
B ^{248}Cm SF decay
C ^{252}Cf SF decay

E(level)	J$^\pi$[†]	T$_{1/2}$	XREF	Comments
0.0[‡]	(5/2$^+$)	24.8 s *20*	ABC	%β^-=100 T$_{1/2}$: weighted average: 24.2 s *31* (1978Pf02), 25.2 s *26* (1977Sk02). Others: 1979En02, 1974Gr29.
65.9[‡] *2*	(7/2$^+$)	9 ns *2*	ABC	T$_{1/2}$: from ^{252}Cf SF decay (1974ClZX).
96.6 *2*	(+)		A	
189.0 *2*	(+)		A	
237.9[‡] *2*	(9/2$^+$)		ABC	
351.5 *3*	(+)		A	
380.3[‡] *3*	(11/2$^+$)		BC	
475.3 *3*			A	
492.2			A	
514.2			A	
544.0 *3*			A	
572.4[#] *4*	(11/2$^-$)		BC	
598.9 *2*			A	
622.2[‡] *3*	(13/2$^+$)		BC	
637.5?			A	
734.0 *2*			A	
805.0[#] *4*	(15/2$^-$)		BC	
810.8[‡] *4*	(15/2$^+$)		BC	
827.0?			A	
922.4? *5*			A	
973.6			A	
1033.5?			A	
1095.2[‡] *4*	(17/2$^+$)		BC	
1171.2[#] *4*	(17/2$^-$)		BC	
1171.3[#] *4*	(19/2$^-$)		BC	
1176.8?			A	
1314.6[‡] *4*	(19/2$^+$)		BC	
1598.7[#] *4*	(21/2$^-$)		BC	
1626.5[‡] *4*	(21/2$^+$)		C	

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Adopted Levels, Gammas (continued)

^{145}La Levels (continued)

E(level)	J$^{\pi}$[†]	XREF	E(level)	J$^{\pi}$[†]	XREF	E(level)	J$^{\pi}$[†]	XREF
1647.0[#] *5*	(23/2$^-$)	BC	2566.4		A	3390.1[#] *6*	(33/2$^-$)	C
1862.1[‡] *5*	(23/2$^+$)	BC	2687.7[‡] *6*	(29/2$^+$)	C	3409.7[#] *7*	(35/2$^-$)	C
2117.5[#] *5*	(25/2$^-$)	BC	2714.3[#] *5*	(29/2$^-$)	C	3595.8[‡] *7*	(37/2$^+$)	C
2186.1[‡] *6*	(25/2$^+$)	C	2846.2[#] *7*	(31/2$^-$)	BC	4152.5[‡] *7*	(41/2$^+$)	C
2210.2[#] *6*	(27/2$^-$)	BC	2998.0[‡] *5*	(31/2$^+$)	C			
2426.6[‡] *5*	(27/2$^+$)	C	3150.0[‡] *6*	(33/2$^+$)	C			

[†] g.s. $J^{\pi}=(5/2^+)$ assigned on the basis of systematics (1996Ur02). This assignment is consistent with a expected $(11/2^-)$ bandhead deexcited by E1 and E2 cascade to g.s.. Other J^{π} assigments are based on interconnecting M1 or E2 transitions and rotational band arguments from ^{248}Cm SF decay and ^{252}Cf SF decay.

[‡] Band(A): $K^{\pi}=5/2^+$ g.s. rotational band.

[#] Band(B): $K^{\pi}=11/2^-$ rotational band.

$\gamma(^{145}La)$

E$_i$(level)	J$_i^{\pi}$	E$_{\gamma}$[†]	I$_{\gamma}$[†]	E$_f$	J$_f^{\pi}$	Mult.	α[‡]	Comments
65.9	(7/2$^+$)	65.9 *2*	100	0.0	(5/2$^+$)	M1	3.59 *6*	α(K)=3.07 *5*; α(L)=0.418 *7*; α(M)=0.0869 *15*; α(N+..)=0.0224 *4* α(N)=0.0191 *4*; α(O)=0.00310 *6*; α(P)=0.000239 *4* Mult.: From α(K)exp=4 *1* (1996Ur02).
96.6	($^+$)	96.6 *2*	100	0.0	(5/2$^+$)	M1	1.193	α(K)=1.019 *16*; α(L)=0.1382 *21*; α(M)=0.0287 *5*; α(N+..)=0.00742 *12* α(N)=0.00631 *10*; α(O)=0.001026 *16*; α(P)=7.95×10^{-5} *12* Mult.: K/L=8.3 *14* (1986RoZU).
189.0	($^+$)	91.9 *2*	100	96.6	($^+$)	M1	1.377	α(K)=1.175 *18*; α(L)=0.1595 *25*; α(M)=0.0332 *5*; α(N+..)=0.00856 *14* α(N)=0.00729 *12*; α(O)=0.001184 *19*; α(P)=9.16×10^{-5} *14* Mult.: K/L=10 *3*, α(K)exp=1.3 *4* (1986RoZU).
		123.2 *2*	16.3	65.9	(7/2$^+$)	[M1]	0.598	α(K)=0.511 *8*; α(L)=0.0690 *11*; α(M)=0.01435 *22*; α(N+..)=0.00371 *6* α(N)=0.00315 *5*; α(O)=0.000513 *8*; α(P)=3.98×10^{-5} *6*
		189.5 *2*	25.6	0.0	(5/2$^+$)	[M1]	0.181	α(K)=0.1548 *23*; α(L)=0.0207 *3*; α(M)=0.00430 *7*; α(N+..)=0.001112 *16* α(N)=0.000946 *14*; α(O)=0.0001540 *22*; α(P)=1.202×10^{-5} *18* Mult.: α(K)exp=0.18 *4* (1986RoZU).
237.9	(9/2$^+$)	171.6 *2*	100	65.9	(7/2$^+$)	M1	0.238	α(K)=0.203 *3*; α(L)=0.0273 *4*; α(M)=0.00566 *9*; α(N+..)=0.001463 *21* α(N)=0.001245 *18*; α(O)=0.000203 *3*; α(P)=1.579×10^{-5} *23* Mult.: From α(K)exp=0.5 *2* and $\gamma\gamma(\theta)$ (1996Ur02).
		237.9 *2*	89	0.0	(5/2$^+$)	E2	0.0996	α(K)=0.0784 *12*; α(L)=0.01668 *24*; α(M)=0.00358 *6*; α(N+..)=0.000891 *13* α(N)=0.000770 *11*; α(O)=0.0001162 *17*; α(P)=5.04×10^{-6} *8* Mult.: From 1996Ur02.
351.5	($^+$)	162.3 *2*	100	189.0	($^+$)	(M1)	0.277	α(K)=0.237 *4*; α(L)=0.0318 *5*; α(M)=0.00661 *10*; α(N+..)=0.001708 *25*

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Adopted Levels, Gammas (continued)

γ(^{145}La) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.	α[‡]	Comments
								α(N)=0.001454 *21*; α(O)=0.000236 *4*; α(P)=1.84×10^{-5} *3* Mult.: K/L=5.3 *12*, α(K)exp=0.18 *4* (1986RoZU).
351.5	(+)	254.9 *2*	27.3	96.6	(+)			
		351.8 *2*	45.5	0.0	(5/2+)			
380.3	(11/2+)	142.3		237.9	(9/2+)			
		314.2		65.9	(7/2+)			
475.3		286.2 *2*	50	189.0	(+)			
		378.8 *2*	100	96.6	(+)			
492.2		303.2 *2*	100	189.0	(+)			
		492.7 *2*	67	0.0	(5/2+)			
514.2		162.3[#] *2*	<88	351.5	(+)			
		325.2 *2*	48	189.0	(+)			
		417.8 *2*	100	96.6	(+)			
544.0		477.8 *2*	28	65.9	(7/2+)			
		544.2 *2*	100	0.0	(5/2+)			
572.4	(11/2−)	334.4	100	237.9	(9/2+)			
598.9		247.5 *2*	25	351.5	(+)			
		361.1 *3*	23	237.9	(9/2+)			
		532.8 *2*	100	65.9	(7/2+)			
		598.8 *2*	100	0.0	(5/2+)			
622.2	(13/2+)	241.9		380.3	(11/2+)			
		384.2		237.9	(9/2+)	E2	0.0219	α(K)=0.0181 *3*; α(L)=0.00304 *5*; α(M)=0.000643 *9*; α(N+..)=0.0001623 *23* α(N)=0.0001394 *20*; α(O)=2.17×10^{-5} *3*; α(P)=1.249×10^{-6} *18* Mult.: From 1996Ur02.
637.5?		286.2	<100	351.5	(+)			
		571.9[#]	<75	65.9	(7/2+)			
734.0		544.2 *2*	<100	189.0	(+)			
		668.2	7	65.9	(7/2+)			
		734.1 *2*	14	0.0	(5/2+)			
805.0	(15/2−)	182.9		622.2	(13/2+)	E1	0.0445	α(K)=0.0382 *6*; α(L)=0.00504 *7*; α(M)=0.001040 *15*; α(N+..)=0.000265 *4* α(N)=0.000226 *4*; α(O)=3.61×10^{-5} *5*; α(P)=2.51×10^{-6} *4* Mult.: From γγγ(θ) and α(exp)=0.15 *8* (1996Ur02).
		232.6		572.4	(11/2−)			
810.8	(15/2+)	188.6		622.2	(13/2+)			
		430.5		380.3	(11/2+)			
827.0?		313.6 *2*	108	514.2				
		334.4 *2*	27.5	492.2				
		590.8 *2*	14	237.9	(9/2+)			
		730.6	100	96.6	(+)			
922.4?		378.8[#] *2*	<100	544.0				
		407.7	17	514.2				
		571.9 *2*	38	351.5	(+)			
		683.8[#]	<29	237.9	(9/2+)			
973.6		481.5	100	492.2				
		784.5	86	189.0	(+)			
1033.5?		844.5 *3*	100	189.0	(+)			
1095.2	(17/2+)	284.5		810.8	(15/2+)			
		290.2		805.0	(15/2−)			

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Adopted Levels, Gammas (continued)

γ(^{145}La) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult.	α‡	Comments
1095.2	(17/2$^+$)	473.1		622.2	(13/2$^+$)			
1171.2	(17/2$^-$)	360.4	100	810.8	(15/2$^+$)			
1171.3	(19/2$^-$)	366.2	100	805.0	(15/2$^-$)			
1176.8?		578.6 *3*	86	598.9				
		683.8	100	492.2				
		701.0	43	475.3				
		1110.4	100	65.9	(7/2$^+$)			
1314.6	(19/2$^+$)	143.3		1171.2	(17/2$^-$)	(E1)	0.0869	α(K)=0.0744 *11*; α(L)=0.00996 *14*; α(M)=0.00206 *3*; α(N+..)=0.000522 *8* α(N)=0.000447 *7*; α(O)=7.07×10^{-5} *10*; α(P)=4.76×10^{-6} *7* Mult.: From ^{252}Cf SF decay.
		219.5		1095.2	(17/2$^+$)			
		503.8		810.8	(15/2$^+$)			
1598.7	(21/2$^-$)	284.1		1314.6	(19/2$^+$)			
		427.4		1171.3	(19/2$^-$)			
1626.5	(21/2$^+$)	312.2	87	1314.6	(19/2$^+$)			
		455.2	100	1171.3	(19/2$^-$)			
1647.0	(23/2$^-$)	475.7	100	1171.3	(19/2$^-$)			
1862.1	(23/2$^+$)	263.4		1598.7	(21/2$^-$)			
		547.5		1314.6	(19/2$^+$)			
2117.5	(25/2$^-$)	255.4		1862.1	(23/2$^+$)			
		518.9		1598.7	(21/2$^-$)			
2186.1	(25/2$^+$)	539.1	100	1647.0	(23/2$^-$)			
		559.6	<1.6	1626.5	(21/2$^+$)			
2210.2	(27/2$^-$)	563.2	100	1647.0	(23/2$^-$)			
2426.6	(27/2$^+$)	309.6	67 *5*	2117.5	(25/2$^-$)			
		564.6	100 *5*	1862.1	(23/2$^+$)			
2566.4		1968.6	450	598.9				
		2021.5	100	544.0				
		2052.4	419	514.2				
		2501.0	32	65.9	(7/2$^+$)			
2687.7	(29/2$^+$)	477.5	100 *5*	2210.2	(27/2$^-$)			
		501.6	15 *2*	2186.1	(25/2$^+$)			
2714.3	(29/2$^-$)	287.9	47 *5*	2426.6	(27/2$^+$)			
		597.2	100 *7*	2117.5	(25/2$^-$)			
2846.2	(31/2$^-$)	157.6	17	2687.7	(29/2$^+$)			E_γ,I_γ: From ^{252}Cf SF Decay.
		636.0	100	2210.2	(27/2$^-$)			
2998.0	(31/2$^+$)	283.9	76 *8*	2714.3	(29/2$^-$)			
		571.3	100 *8*	2426.6	(27/2$^+$)			
3150.0	(33/2$^+$)	304.6	100 *5*	2846.2	(31/2$^-$)			
		462.2	64 *4*	2687.7	(29/2$^+$)			
3390.1	(33/2$^-$)	392.0	75 *5*	2998.0	(31/2$^+$)			
		675.8	100 *5*	2714.3	(29/2$^-$)			
3409.7	(35/2$^-$)	564.0	100	2846.2	(31/2$^-$)			
3595.8	(37/2$^+$)	185.9	18 *3*	3409.7	(35/2$^-$)			
		446.0	100 *6*	3150.0	(33/2$^+$)			
4152.5	(41/2$^+$)	556.7	100	3595.8	(37/2$^+$)			

† From ^{145}Ba β^- decay, ^{248}Cm SF decay, and ^{252}Cf SF decay.

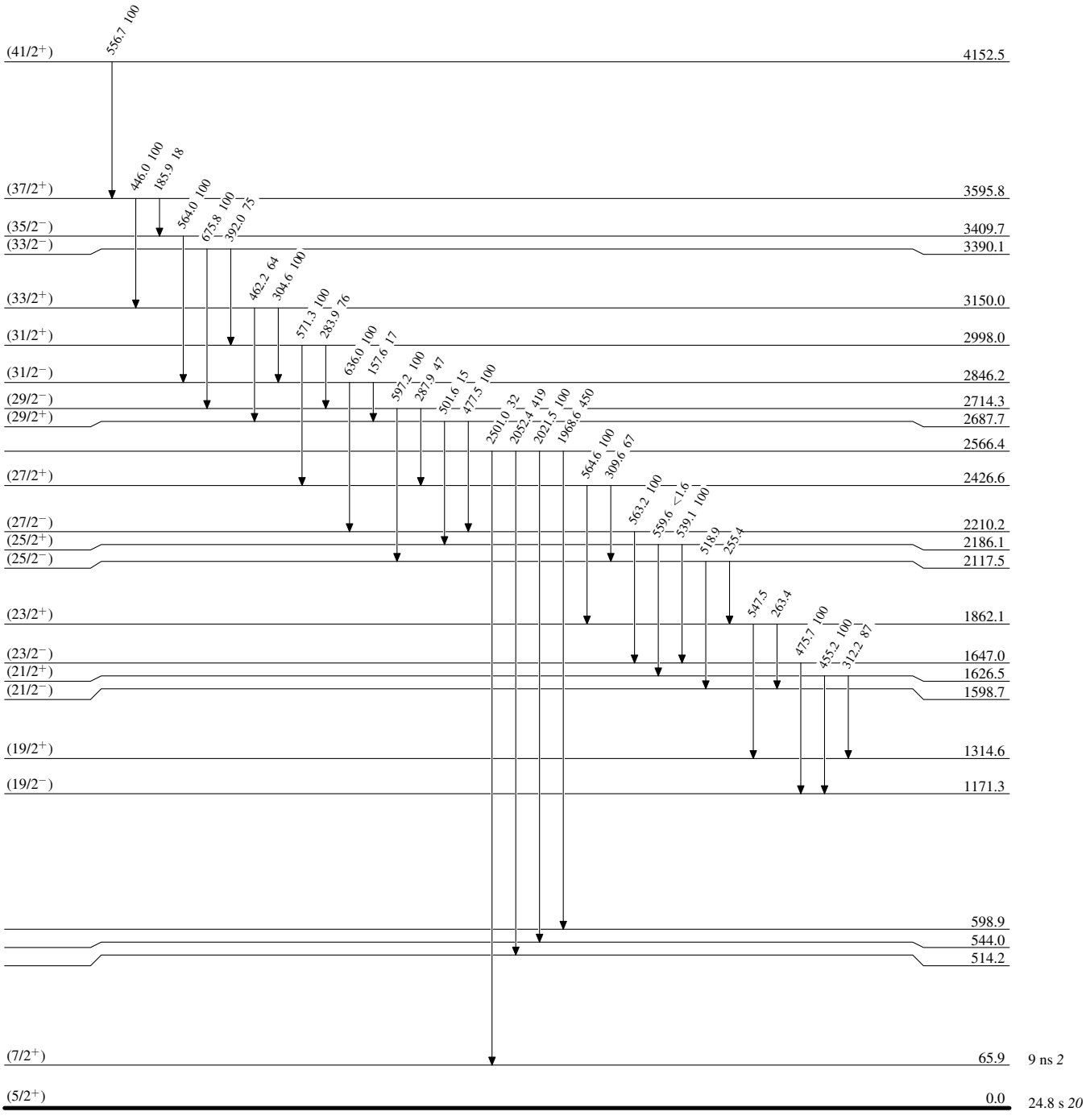
‡ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{145}_{57}La_{88}$

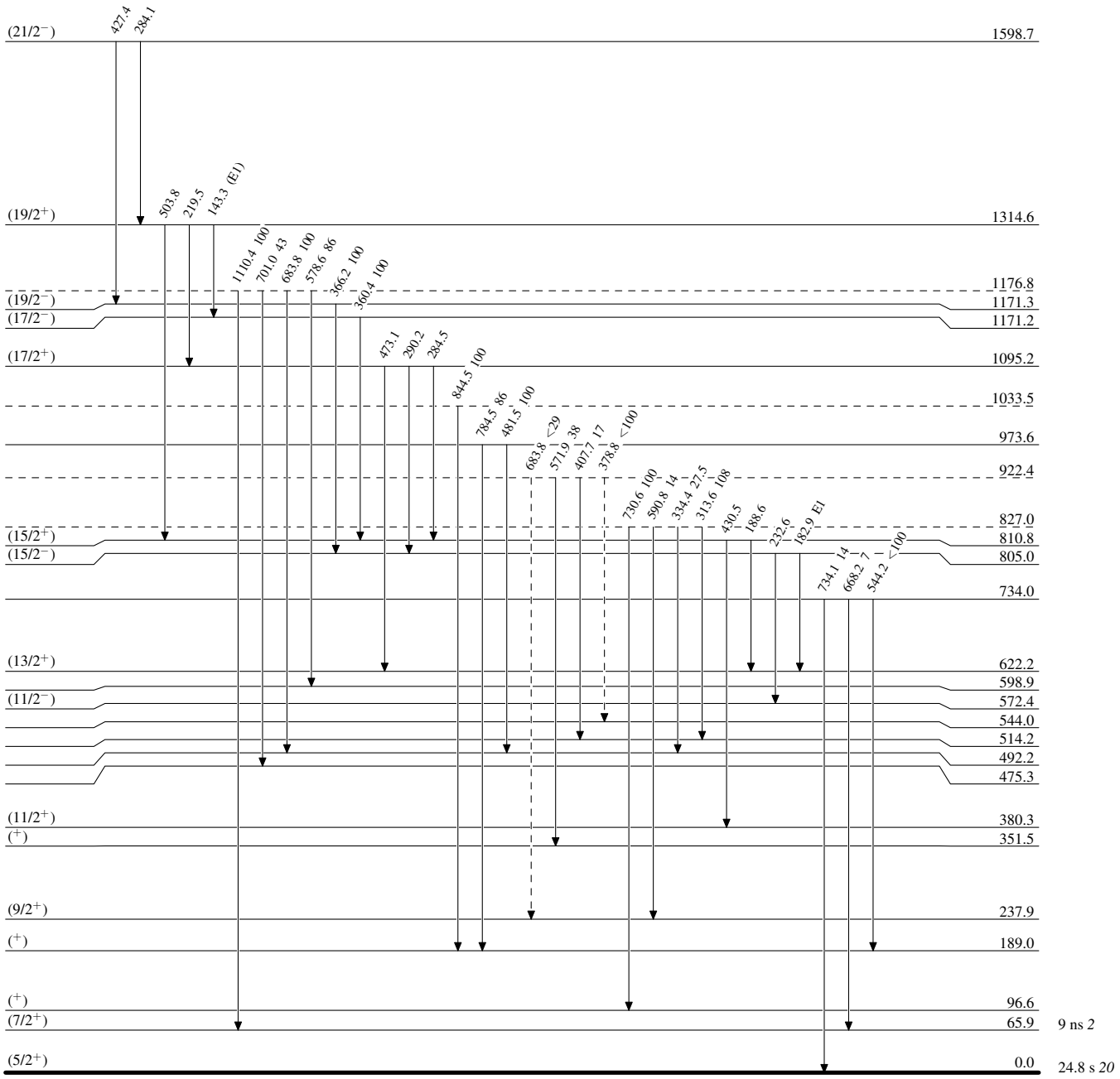
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{145}_{57}La_{88}$

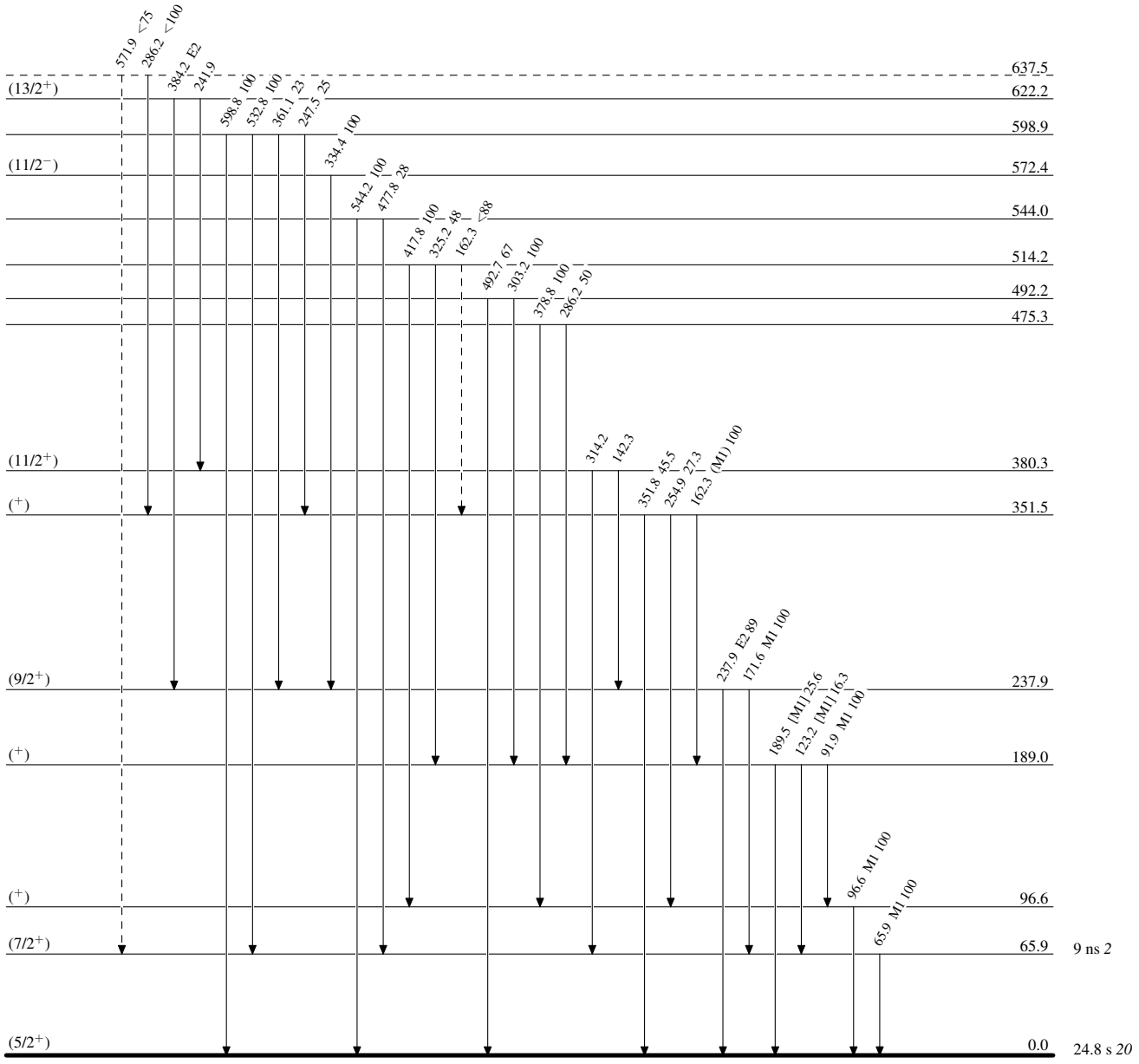
Adopted Levels, Gammas

Legend

Level Scheme (continued)

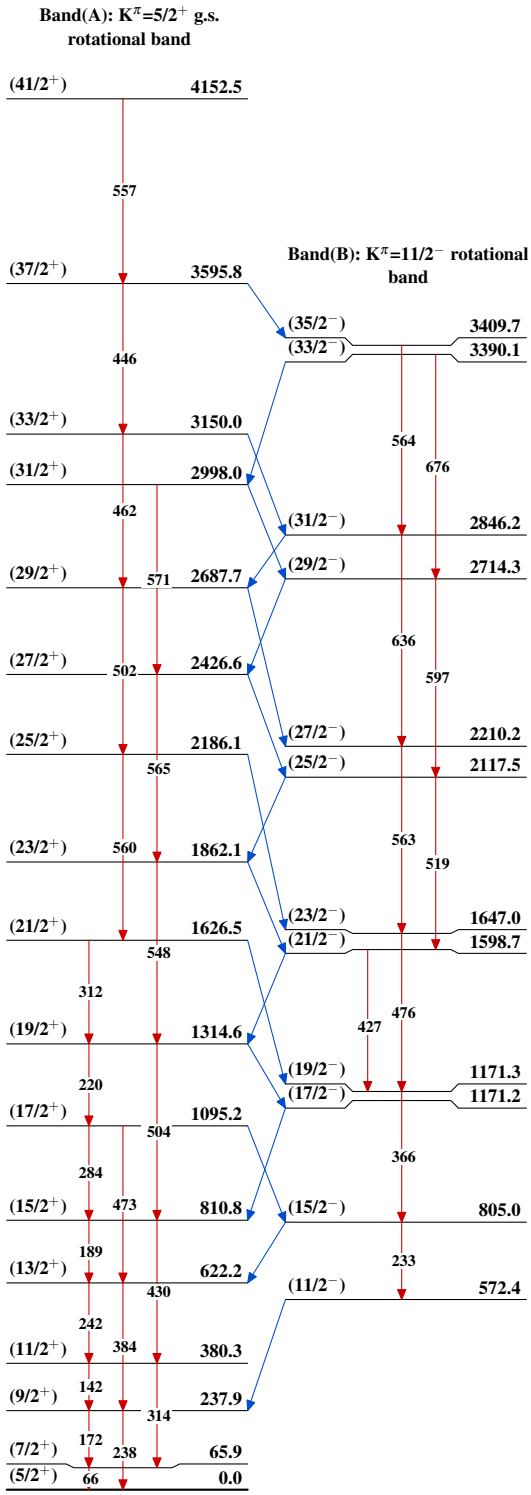
Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{145}_{57}La_{88}$

Adopted Levels, Gammas



$^{145}_{57}La_{88}$