Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	D. Abriola(a), A. A. Sonzogni	NDS 111,1 (2010)	1-May-2009

Q(β^-)=−5127 *11*; S(n)=10636 *9*; S(p)=3210 *8*; Q(α)=−2598 *7* 2012Wa38
Note: Current evaluation has used the following Q record.
Q(β^-)=−5129 *10*; S(n)=1.01×10^4 *6*; S(p)=3215 *9*; Q(α)=−2.60×10^3 *4* 2009AuZZ

^{72}Br Levels

Low spin levels follow the spin assignment of ^{72}Kr ε decay. The spin assignment for the remaining levels is based on ^{40}Ca(^{36}Ar,3pnγ). The spin assignments among the heavy-ion studies are often contradictory. We have followed the latest and most comprehensive of them.

Cross Reference (XREF) Flags

A	^{72}Kr ε decay	D	^{58}Ni(^{16}O,pnγ)
B	^{40}Ca(^{36}Ar,3pnγ)	E	^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)
C	^{40}Ca(^{40}Ca,α3pnγ)	F	^{72}Br IT decay

E(level)[†]	J$^\pi$[a]	T$_{1/2}$	XREF	Comments
0	1$^+$	78.6 s *24*	ABCDEF	%ε+%β^+=100 μ=0.60 *10* J$^\pi$: from ^{72}Kr ε decay, where the g.s. to g.s. transition has an intensity of 34%, which gives log *ft*=4.7. T$_{1/2}$: from 1974Co14. Others: ≈100 s (1970No03), 78 s *30* (1971Do01). μ=0.55 *21*, from low temperature nuclear orientation (1992Gr20,2005St24). <r^2>$^{1/2}$ (mass) = 4.22 fm *25* (2005Le43). μ: Static nuclear orientation with γ detection (1992Ba68).
100.76 *15*	(3$^-$)	10.6 s *3*	ABC EF	%ε+%β^+=?; %IT≈100 μ>0.7 T$_{1/2}$: unweighted average of 10.3 s *6* (1982Ga06) and 10.9 s *1* (1980DaZO). J$^\pi$: (M2) γ to 1$^+$ g.s. μ>0.7 (1992Gr20). 1980DaZO report a weak ε+β^+ branch, but no intensity is given. μ: Static nuclear orientation with γ detection (1992Gr20,2005St24).
124.13 *9*	(1)[&]		ABC E	J$^\pi$: log *ft*=6.2 from 0$^+$ parent, the intensity from which this is based has a 60% uncertainty, and J=2 could also be a possibility.
131.09 *15*	(2$^-$)		ABC E	J$^\pi$: (M1+E2) γ to (3$^-$), observed weakly in ε Decay of 0$^+$ parent.
162.67 *7*			A E	
218.07 *13*	(1,3)[@]		ABC E	J$^\pi$: the (1) value is from log *ft*=6.4 *2*, deduced from a total intensity with 40% uncertainty. In Heavy ion studies, this level is assigned a J^π=(3$^-$), and several higher lying levels J^π's are based on this assignment.
229.66 *23*	(3$^+$)		BC E	
289.35 *8*	(3$^+$)		B	
309.84 *6*	1$^+$[#]		ABC E	
313.61 *21*	1$^{(-)}$[@]		A	
328.44 *12*	1$^{(-)}$[@]		A	
332.98[c] *13*	(3$^-$)	0.51[‡] ns *12*	BC E	
370.56 *18*	(4$^-$)	2.1[‡] ns *4*	C E	
379.01 *22*	1$^{(-)}$[@]		ABCDE	
392.65 *15*			A	

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Adopted Levels, Gammas (continued)

^{72}Br Levels (continued)

E(level)[†]	Jπ[a]	$T_{1/2}$	XREF
398.04[d] 9	(2⁻)	101[‡] ps 20	ABCDE
402.51 15	(4⁻)		B
415.05 9	1⁺[#]		A
467.30 12	(5⁻)	0.37 ns 16	BC E
509.6 3	1⁽⁻⁾[@]		A
543.90 11	(5⁺)		B
545.28 12			A
575.72 12	1⁺[#]		A
576.74 21	1⁺[#]		A
603.1 4			E
659.11[c] 16	(5⁻)	155[‡] ps 16	BC E
668.05[d] 9	(4⁻)	106[‡] ps 14	BCDE
682.3 4	1[&]		A
707.85 17	1[&]		A
716.70 16	(6⁻)	1.7 ns 2	BC E
722.05 15	1[&]		A
748.69 19	(5⁻)		B
755.51 23	1⁺[#]		A
795.80 14			A
901.86 19	1⁺[#]		A
939.18 15	1⁺[#]		A
958.32 23	(7⁻)	9.0 ps 21	BC E
991.10[d] 13	(6⁻)	85[‡] ps 8	BCDE
1027.61 17	1⁺[#]		A
1154.20 19	1⁽⁻⁾[@]		A
1172.8 3	1[&]		A
1187.86 16	(7⁻)	16[‡] ps 2	BC E
1260.04[e] 16	(7⁻)		B
1318.98[c] 19	(7⁻)		BC E
1322.8 4	1		A
1344.73[d] 19	(8⁻)	71[‡] ps 4	BCDE
1385.92 15	1⁺[#]		A
1448.28[g] 22	(9⁺)	59[‡] ps 4	BCDE
1604.84 19	1⁺[#]		A
1612.37[b] 18	(8⁻)		BC E
1703.7 4	1⁺[#]		A
1721.8 4			C E
1771.93 18	1⁺[#]		A
1799.4 3	1⁺[#]		A
1835.46 18	1⁺[#]		A
1943.5? 7	1⁽⁻⁾[@]		A
1950.0? 7	1⁽⁻⁾[@]		A
1988.4? 10	1⁽⁻⁾[@]		A
1989.50[e] 20	(9⁻)		BC E
2082.2[c] 3	(9⁻)		BC E
2186.4[d] 3	(10⁻)		B DE
2479.7[b] 3	(10⁻)		BC E

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Adopted Levels, Gammas (continued)

^{72}Br Levels (continued)

E(level)[†]	Jπ[a]	$T_{1/2}$	XREF	Comments
2497.6[g] *3*	(11$^+$)		B DE	XREF: E(2500.3).
3026.7[e] *3*	(11$^-$)		B	
3078.0[c] *4*	(11$^-$)		B E	
3304.9? *10*	1$^+$[#]		A	
3329.6[d] *3*	(12$^-$)		B D	
3516.1[b] *4*	(12$^-$)		B E	
3628.9[g] *3*	(13$^+$)	0.35[‡] ps *10*	B DE	XREF: E(3633.3).
4204.0[c] *4*	(13$^-$)		B E	XREF: E(4209.2).
4326.7[e] *4*	(13$^-$)		B	
4715.6[d] *3*	(14$^-$)		B D	XREF: D(4721.4).
4718.4[b] *4*	(14$^-$)		B	
4886.9[g] *3*	(15$^+$)		B DE	XREF: D(4891.6).
5324.1[c] *4*	(15$^-$)		B	
5361.1 *4*			B	
5516.2[e] *9*	(15$^-$)		B	
5653.1[f] *7*	(14$^+$)		B	
5991.7[b] *4*	(16$^-$)		B	
6242.3[d] *3*	(16$^-$)		B D	XREF: D(6249.2).
6264.9[g] *3*	(17$^+$)		B D	XREF: D(6272.8).
6562.7[c] *4*	(17$^-$)		B	
7048.6[e] *13*	(17$^-$)		B	
7104.1[f] *11*	(16$^+$)		B	
7376.4[b] *4*	(18$^-$)		B	
7876.6[g] *4*	(19$^+$)		B D	XREF: D(7888).
7912.5[d] *4*	(18$^-$)		B D	XREF: D(7923).
7966.8[c] *4*	(19$^-$)		B	
8089.6 *4*			B	
8753.2[f] *15*	(18$^+$)		B	
8803.7[e] *17*	(19$^-$)		B	
8809.0[b] *4*	(20$^-$)		B	
9529.9[c] *4*	(21$^-$)		B	
9745.6[d] *7*	(20$^-$)		B	
9818.9[g] *4*	(21$^+$)		B D	XREF: D(9836).
10406.7[b] *5*	(22$^-$)		B	
10543.2[f] *15*	(20$^+$)		B	
11298.9[c] *5*	(23$^-$)		B	
11802.4[d] *12*	(22$^-$)		B	
11846.0[g] *5*	(23$^+$)		B	
12367.9[b] *5*	(24$^-$)		B	
12534.7[f] *22*	(22$^+$)		B	
13382.3[c] *5*	(25$^-$)		B	
13938.4[g] *6*	(25$^+$)		B	
14809.7[b] *7*	(26$^-$)		B	
15899.3[c] *9*	(27$^-$)		B	
16232.4[g] *10*	(27$^+$)		B	
17800.7[b] *15*	(28$^-$)		B	
18808[g] *3*	(29$^+$)		B	
18967.9[c] *20*	(29$^-$)		B	

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Adopted Levels, Gammas (continued)

^{72}Br Levels (continued)

† From least-squares fit to Eγ's.
‡ From ^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ).
# log *ft*=4.4-5.8 in ^{72}Kr ε decay.
@ log *ft*=6.2-6.6 in ^{72}Kr ε decay.
& log *ft*=6.0-6.2 in ^{72}Kr ε decay.
[a] From γ decay patterns, γ(θ), band structures, unless otherwise noted.
[b] Band(A): $\pi g^2_{9/2}\nu g^3_{9/2}$,α=0.
[c] Band(a): $\pi g^2_{9/2}\nu g^3_{9/2}$,α=1.
[d] Band(B): $\pi g^3_{9/2}\nu g^4_{9/2}$,α=0.
[e] Band(b): $\pi g^3_{9/2}\nu g^4_{9/2}$,α=1.
[f] Band(C): $\pi g^1_{9/2}\nu g^3_{9/2}$, α=0. The band changes to $\pi g^3_{9/2}\nu g^3_{9/2}$ at higher spins. Assignment as signature partner is tentative.
[g] Band(c): $\pi g^3_{9/2}\nu g^3_{9/2}$,α=1. Assignment as signature partner is tentative.

Adopted Levels, Gammas (continued)

γ(^{72}Br)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α[d]	Comments
100.76	(3⁻)	101.3† *3*	100	0	1⁺	(M2)[a]	1.145 *21*	α(K)=0.987 *18*; α(L)=0.1339 *24*; α(M)=0.0216 *4*; α(N)=0.00196 *4*; α(N+..)=0.00196 *4* B(M2)(W.u.)=7.E−6 *4*
124.13	(1)	124.4† *2*	100	0	1⁺			
131.09	(2⁻)	30.4 *3*	100	100.76	(3⁻)	(M1+E2)[#]	3.×10[1] *4*	α(K)=23 *21*; α(L)=9 *10*; α(M)=1.5 *15*; α(N)=0.11 *11*; α(N+..)=0.11 *11* E_γ: weighted average of 30.5 *5* (^{72}Kr ε decay), 30.4 *3* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
162.67		38.8† *2*	1.8 *5*	124.13	(1)			ce(K)/(γ+ce)=0.553 *17*; ce(L)/(γ+ce)=0.0618 *19*; ce(M)/(γ+ce)=0.0100 *3*
		162.7† *1*	100 *8*	0	1⁺			
218.07	(1,3)	87.2@ *5*	100 *5*	131.09	(2⁻)			E_γ: weighted average of 87.2 *5* (^{72}Kr ε decay), 86.7 *1* (^{40}Ca(^{36}Ar,3pnγ)), 86.9 *3* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)). I_γ: weighted average of 9.6 *23* (^{72}Kr ε decay), 15 *3* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
		117.6@ *2*	12 *3*	100.76	(3⁻)			
		218.8† *5*	7‡ *3*	0	1⁺			
229.66	(3⁺)	229.1 *6*	100	0	1⁺			E_γ: weighted average of 228.6 *1* (^{40}Ca(^{36}Ar,3pnγ)), 229.87 *13* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
289.35	(3⁺)	289.0 *1*	100	0	1⁺			
309.84	1⁺	91.5† *5*	0.30‡ *6*	218.07	(1,3)			
		147.2e† *1*	3.4e‡ *3*	162.67				
		178.5† *5*	16.3‡ *13*	131.09	(2⁻)			
		185.5† *7*	0.18‡ *11*	124.13	(1)			
		208.9† *3*	4.3‡ *3*	100.76	(3⁻)			
		309.9† *1*	100.0‡ *15*	0	1⁺			
313.61	1(−)	313.8† *3*	100‡	0	1⁺			
328.44	1(−)	166.1† *7*	9.2‡ *18*	162.67				
		204.4† *2*	8.6‡ *16*	124.13	(1)			
		328.4† *2*	100‡ *3*	0	1⁺			
332.98	(3⁻)	114.99 *6*	52 *18*	218.07	(1,3)	D[a]		E_γ: weighted average of 115.1 *1* (^{40}Ca(^{36}Ar,3pnγ)), 114.96 *5* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)). I_γ: weighted average of 43 *5* (^{40}Ca(^{36}Ar,3pnγ)), 87 *10* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
		201.99 *17*	100 *5*	131.09	(2⁻)			E_γ: weighted average of 201.8 *1* (^{40}Ca(^{36}Ar,3pnγ)), 202.15 *9* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)). I_γ: weighted average of 100 *10* (^{40}Ca(^{36}Ar,3pnγ)), 100 *10* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
370.56	(4⁻)	37.1@ *3*	55&	332.98	(3⁻)			

$^{72}_{35}Br_{37}$-5

Adopted Levels, Gammas (continued)

γ(^{72}Br) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α[d]	Comments
370.56	(4$^-$)	152.5[@] *5*	15[&] *5*	218.07	(1,3)			
		239.57[@] *13*	100[&] *10*	131.09	(2$^-$)			
379.01	1$^{(-)}$	254.9[†] *5*	23.7[‡] *17*	124.13	(1)			
		379.3[e†] *5*	100[e‡] *19*	0	1$^+$			
392.65		230.1[†] *3*	63[‡] *5*	162.67				
		392.7[†] *2*	100[‡] *3*	0	1$^+$			
398.04	(2$^-$)	88.0 *3*	8.0 *23*	309.84	1$^+$			E_γ: weighted average of 88.5 *5* (^{72}Kr ε decay), 87.8 *3* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)). I_γ: weighted average of 14 *11* (^{72}Kr ε decay), 7.7 *23* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
		267.0[†] *5*	15[‡] *4*	131.09	(2$^-$)			
		274.2[†] *3*	33.2[‡] *19*	124.13	(1)			
		398.01 *15*	100[‡] *5*	0	1$^+$			E_γ: weighted average of 398.4 *2* (^{72}Kr ε decay), 397.9 *1* (^{40}Ca(^{36}Ar,3pnγ)), 398.3 *4* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
402.51	(4$^-$)	184.4[b] *1*	100[c]	218.07	(1,3)			
415.05	1$^+$	105.3[†] *1*	3.7[‡] *4*	309.84	1$^+$			
		196.2[e†] *5*	2.7[e‡] *10*	218.07	(1,3)			
		252.4[†] *2*	18.2[‡] *6*	162.67				
		283.4[†] *4*	5.64[‡] *15*	131.09	(2$^-$)			
		290.7[†] *4*	0.37[‡] *7*	124.13	(1)			
		415.1[†] *2*	100[‡] *6*	0	1$^+$			
467.30	(5$^-$)	135.72 *24*	12.2 *16*	332.98	(3$^-$)			DCO=0.84 *4* E_γ: weighted average of 135.9 *3* (^{40}Ca(^{36}Ar,3pnγ)), 135.4 *4* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)). I_γ: weighted average of 12.0 *4* (^{40}Ca(^{36}Ar,3pnγ)), 28 *4* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
		249.9 *5*	100[c] *3*	218.07	(1,3)			E_γ: weighted average of 249.2 *1* (^{40}Ca(^{36}Ar,3pnγ)), 250.24 *7* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
509.6	1$^{(-)}$	130.5[†] *5*	63[‡] *10*	379.01	1$^{(-)}$	[M1]	0.0557 *10*	ce(K)/(γ+ce)=0.0468 *14*; ce(L)/(γ+ce)=0.00512 *16*; ce(M)/(γ+ce)=0.00083 *3* α(K)=0.0493 *9*; α(L)=0.00543 *10*; α(M)=0.000864 *15*; α(N)=8.02×10^{-5} *14*; α(N+..)=8.02×10^{-5} *14*
		196.2[e†] *5*	1.0×10^2[e‡] *5*	313.61	1$^{(-)}$	[M1]	0.0191	α(K)=0.0169 *3*; α(L)=0.00184 *3*; α(M)=0.000292 *5*; α(N)=2.72×10^{-5} *5*; α(N+..)=2.72×10^{-5} *5*
		199.8[†f] *5*		309.84	1$^+$			
		385.4[†] *5*	40[‡] *5*	124.13	(1)			
543.90	(5$^+$)	254.4[b] *1*	100[c]	289.35	(3$^+$)			

Adopted Levels, Gammas (continued)

γ(^{72}Br) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	Comments
545.28		147.2[e†] *1*	19[e‡] *7*	398.04	(2⁻)		
		231.8[†f] *3*		313.61	1(⁻)		
		235.5[†] *4*	100[‡] *7*	309.84	1⁺		
575.72	1⁺	160.8[†] *6*	9.6[‡] *11*	415.05	1⁺		
		177.2[†] *5*	11.8[‡] *11*	398.04	(2⁻)		
		183.3[†] *5*	24[‡] *3*	392.65			
		265.7[†] *2*	41.5[‡] *21*	309.84	1⁺		
		575.8[†] *4*	100[‡] *11*	0	1⁺		
576.74	1⁺	414.5[†] *5*	100[‡] *10*	162.67			
		452.3[†] *3*	11.3[‡] *4*	124.13	(1)		
		576.9[†] *4*	97[‡] *4*	0	1⁺		
603.1		373.7[@] *6*	100[&]	229.66	(3⁺)		
659.11	(5⁻)	192.1 *3*	8.3 *4*	467.30	(5⁻)		E_γ: weighted average of 192.2 *1* (^{40}Ca(^{36}Ar,3pnγ)), 190.8 *4* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)). I_γ: weighted average of 8.4 *4* (^{40}Ca(^{36}Ar,3pnγ)), 5 *3* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
		326.22 *21*	100 *4*	332.98	(3⁻)	E2[a]	B(E2)(W.u.)=51 *6* E_γ: weighted average of 325.8 *1* (^{40}Ca(^{36}Ar,3pnγ)), 326.32 *5* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)). I_γ: weighted average of 100 *4* (^{40}Ca(^{36}Ar,3pnγ)), 100 *5* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
668.05	(4⁻)	124.0[b] *1*	14.3[c] *6*	543.90	(5⁺)		
		201.1[b] *1*	15.9[c] *8*	467.30	(5⁻)		
		270.11 *12*	100.0 *23*	398.04	(2⁻)	E2[a]	B(E2)(W.u.)=110 *15* E_γ: weighted average of 269.8 *1* (^{40}Ca(^{36}Ar,3pnγ)), 270.16 *4* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)). I_γ: weighted average of 100 *3* (^{40}Ca(^{36}Ar,3pnγ)), 100 *9* (^{58}Ni(^{16}O,pnγ)), 100 *4* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
		378.5[b] *1*	42.2[c] *14*	289.35	(3⁺)		
		438.26 *24*	17.5 *8*	229.66	(3⁺)		E_γ: weighted average of 438.2 *1* (^{40}Ca(^{36}Ar,3pnγ)), 439.2 *4* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)). I_γ: weighted average of 17.5 *8* (^{40}Ca(^{36}Ar,3pnγ)), 18 *3* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
682.3	1	519.5[†] *5*	100[‡] *7*	162.67			
		682.5[†] *5*	100[‡] *6*	0	1⁺		
707.85	1	132.5[†] *5*	17[‡] *3*	575.72	1⁺		
		379.3[e†] *5*	10.1[e‡] *16*	328.44	1(⁻)		
		489.2[†] *5*	19[‡] *4*	218.07	(1,3)		
		545.3[†] *3*	84[‡] *5*	162.67			
		583.3[†] *5*	≈0[‡]	124.13	(1)		

$^{72}_{35}Br_{37}$-7

Adopted Levels, Gammas (continued)

γ(^{72}Br) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	Comments
707.85	1	708.0† *3*	100‡ *6*	0	1^+		
716.70	(6^-)	248.2 *4*	100	467.30	(5^-)		E_γ: weighted average of 248.0 *1* (^{40}Ca(^{36}Ar,3pnγ)), 248.9 *2* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
722.05	1	146.2† *4*	5‡ *3*	575.72	1^+		
		307.0† *5*	38‡ *4*	415.05	1^+		
		412.1† *2*	78‡ *3*	309.84	1^+		
		559.7† *4*	100‡ *4*	162.67			
		722.3† *4*	15.3‡ *23*	0	1^+		
748.69	(5^-)	346.0[b] *2*	100[c] *4*	402.51	(4^-)		
		416.2[b] *3*	92[c] *4*	332.98	(3^-)		
755.51	1^+	427.1† *3*	6.6‡ *7*	328.44	$1^{(-)}$		
		631.3† *5*	29‡ *7*	124.13	(1)		
		755.5† *4*	100‡ *7*	0	1^+		
795.80		380.8† *2*	100‡ *4*	415.05	1^+		
		485.9† *5*	72.5‡ *21*	309.84	1^+		
		633.5† *5*	73.0‡ *23*	162.67			
		671.7† *5*	20‡ *5*	124.13	(1)		
		795.7† *5*	22.9‡ *18*	0	1^+		
901.86	1^+	356.3† *5*	11.9‡ *9*	545.28			
		504.0† *7*	40‡ *11*	398.04	(2^-)		
		592.5† *4*	≈0‡	309.84	1^+		
		777.5† *5*	50‡ *5*	124.13	(1)		
		901.9† *5*	100‡ *11*	0	1^+		
939.18	1^+	541.1† *5*	13‡ *4*	398.04	(2^-)		
		546.7† *5*	13.5‡ *20*	392.65			
		610.4† *4*	9.7‡ *18*	328.44	$1^{(-)}$		
		815.1† *2*	39‡ *3*	124.13	(1)		
		939.2† *3*	100‡ *3*	0	1^+		
958.32	(7^-)	490.77 *25*	100	467.30	(5^-)		E_γ: weighted average of 490.6 *1* (^{40}Ca(^{36}Ar,3pnγ)), 491.14 *15* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
991.10	(6^-)	274.2[b] *2*	1.60[c] *20*	716.70	(6^-)		
		323.1[b] *1*	100[c] *3*	668.05	(4^-)	E2	B(E2)(W.u.)=102 *11*
		388.7[@] *5*	2.8[&] *6*	603.1			
1027.61	1^+	451.4† *5*	26‡ *5*	575.72	1^+		
		482.5† *5*	21‡ *5*	545.28			

Adopted Levels, Gammas (continued)

γ(^{72}Br) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α[d]	Comments
1027.61	1+	629.8† *5*	21.3‡ *13*	398.04	(2−)			
		635.2† *5*	100‡ *8*	392.65				
		648.8† *5*	25.8‡ *18*	379.01	1(−)			
		699.5† *5*	36.8‡ *15*	328.44	1(−)			
		865.3† *5*	14‡ *3*	162.67				
		895.4†[f] *5*	‡	131.09	(2−)			
		1027.7† *5*	23‡ *18*	0	1+			
1154.20	1(−)	579.0†[f] *5*	‡	575.72	1+			
		739.2† *3*	100‡ *8*	415.05	1+			
		844.5[e]† *5*	90[e]‡ *17*	309.84	1+			
		991.2† *5*	22‡ *6*	162.67				
1172.8	1	774.5† *8*	54‡ *11*	398.04	(2−)			
		844.5[e]† *5*	71[e]‡ *17*	328.44	1(−)			
		954.6† *5*	100‡ *17*	218.07	(1,3)			
1187.86	(7−)	471.1 *1*	100 *3*	716.70	(6−)			
		528.8 *1*	52.1 *14*	659.11	(5−)			
1260.04	(7−)	269.0[b] *1*	100[c]	991.10	(6−)			
1318.98	(7−)	570.3[b] *1*	34.8[c] *17*	748.69	(5−)			
		659.88 *24*	100[c] *4*	659.11	(5−)			E_γ: weighted average of 659.8 *1* (^{40}Ca(^{36}Ar,3pnγ)), 660.6 *3* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
1322.8	1	994.3† *5*	84‡ *6*	328.44	1(−)			
		1160.1† *5*	100‡ *16*	162.67				
1344.73	(8−)	353.44 *17*	100	991.10	(6−)	E2[a]	0.00908 *13*	α(K)=0.00803 *12*; α(L)=0.000898 *13*; α(M)=0.0001423 *20*; α(N)=1.297×10^{-5} *19* α(N+..)=1.297×10^{-5} B(E2)(W.u.)=80 *5* E_γ: weighted average of 353.1 *1* (^{40}Ca(^{36}Ar,3pnγ)), 353.53 *5* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
1385.92	1+	484.7† *5*	100‡ *8*	901.86	1+			
		590.6† *5*	9.×10^1‡ *3*	795.80				
		810.1† *2*	60‡ *3*	575.72	1+			
		840.3† *5*	73‡ *11*	545.28				
		1058.0† *5*	70‡ *9*	328.44	1(−)			
		1076.0† *5*	23‡ *4*	309.84	1+			
		1167.1† *5*	4.7‡ *22*	218.07	(1,3)			
		1386.0† *4*	38.5‡ *18*	0	1+			

Adopted Levels, Gammas (continued)

γ(^{72}Br) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	Comments
1448.28	(9$^+$)	103.58 *10*	100	1344.73	(8$^-$)	D	E_γ: weighted average of 103.7 *1* (^{40}Ca(^{36}Ar,3pnγ)), 103.50 *8* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
1604.84	1$^+$	1029.0[†] *2*	1.0×10^2[‡] *5*	575.72	1$^+$		
		1441.9[†] *7*	10.8[‡] *8*	162.67			
		1481.3[†] *5*	66.9[‡] *23*	124.13	(1)		
		1605.1[†] *6*	71[‡] *11*	0	1$^+$		
1612.37	(8$^-$)	653.7 *3*	100[c] *4*	958.32	(7$^-$)		E_γ: weighted average of 653.6 *1* (^{40}Ca(^{36}Ar,3pnγ)), 654.3 *2* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
		895.7[b] *1*	75[c] *3*	716.70	(6$^-$)		
1703.7	1$^+$	801.7[†] *5*	64[‡] *9*	901.86	1$^+$		
		908.0[†] *7*	100[‡] *21*	795.80			
		1541.0[†] *7*	16[‡] *3*	162.67			
1721.8		730.2[@] *4*	100[&]	991.10	(6$^-$)		
1771.93	1$^+$	617.9[†] *3*	34[‡] *7*	1154.20	1$^{(-)}$		
		869.9[†] *5*	21[‡] *5*	901.86	1$^+$		
		976.6[†] *5*	100[‡] *4*	795.80			
		1049.9[†] *6*	82[‡] *6*	722.05	1		
		1373.3[†] *5*	34.9[‡] *16*	398.04	(2$^-$)		
		1392.6[†] *5*	34[‡] *4*	379.01	1$^{(-)}$		
		1609.2[†] *6*	49[‡] *3*	162.67			
		1648.0[†] *7*	57.5[‡] *23*	124.13	(1)		
		1771.9[†] *6*	7.3[‡] *7*	0	1$^+$		
1799.4	1$^+$	1222.4[†] *7*	54[‡] *3*	576.74	1$^+$		
		1636.9[†] *5*	7.×10^1[‡] *3*	162.67			
		1675.0[†] *6*	100[‡] *7*	124.13	(1)		
		1799.6[†] *6*	28.1[‡] *22*	0	1$^+$		
1835.46	1$^+$	1039.5[†] *3*	100[‡] *7*	795.80			
		1457.0[†] *5*	53[‡] *4*	379.01	1$^{(-)}$		
		1672.7[†] *4*	12[‡] *4*	162.67			
		1711.2[†] *3*	81[‡] *3*	124.13	(1)		
		1835.8[†] *6*	7.3[‡] *5*	0	1$^+$		
1943.5?	1$^{(-)}$	1943.5[†f] *7*	100[‡]	0	1$^+$		
1950.0?	1$^{(-)}$	1950.0[†f] *7*	100[‡]	0	1$^+$		
1988.4?	1$^{(-)}$	1988.4[†f] *10*	100[‡]	0	1$^+$		
1989.50	(9$^-$)	644.63 *15*	100[c] *5*	1344.73	(8$^-$)		E_γ: weighted average of 644.6 *1* (^{40}Ca(^{36}Ar,3pnγ)), 645.4 *5* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
		729.7[b] *2*	36.6[c] *24*	1260.04	(7$^-$)		

Adopted Levels, Gammas (continued)

γ(^{72}Br) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Comments
2082.2	(9$^-$)	763.3 *3*	91 *17*	1318.98	(7$^-$)	E_γ: weighted average of 763.2 *1* (^{40}Ca(^{36}Ar,3pnγ)), 764.3 *4* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)). I_γ: weighted average of 98 *4* (^{40}Ca(^{36}Ar,3pnγ)), 50 *10* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
		894.1 *4*	100 *3*	1187.86	(7$^-$)	E_γ: weighted average of 894.0 *1* (^{40}Ca(^{36}Ar,3pnγ)), 895.2 *3* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)). I_γ: weighted average of 100 *3* (^{40}Ca(^{36}Ar,3pnγ)), 100 *17* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
2186.4	(10$^-$)	738.3 *4*	8.0 *13*	1448.28	(9$^+$)	E_γ: weighted average of 738.1 *2* (^{40}Ca(^{36}Ar,3pnγ)), 739.0 *4* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)). I_γ: weighted average of 8.9 *6* (^{40}Ca(^{36}Ar,3pnγ)), 4.4 *12* (^{58}Ni(^{16}O,pnγ)), 11 *5* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
		841.5 *3*	100 *3*	1344.73	(8$^-$)	E_γ: weighted average of 841.4 *1* (^{40}Ca(^{36}Ar,3pnγ)), 842.7 *4* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)). I_γ: weighted average of 100 *4* (^{40}Ca(^{36}Ar,3pnγ)), 100 *9* (^{58}Ni(^{16}O,pnγ)), 100 *11* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
2479.7	(10$^-$)	867.33 *18*	100	1612.37	(8$^-$)	E_γ: weighted average of 867.3 *1* (^{40}Ca(^{36}Ar,3pnγ)), 868.4 *6* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
2497.6	(11$^+$)	311.2 *3*	54 *5*	2186.4	(10$^-$)	E_γ: weighted average of 311.1 *1* (^{40}Ca(^{36}Ar,3pnγ)), 312.2 *4* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)). I_γ: weighted average of 56.9 *21* (^{40}Ca(^{36}Ar,3pnγ)), 47 *6* (^{58}Ni(^{16}O,pnγ)), 35 *6* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
		1049.5 *4*	100 *4*	1448.28	(9$^+$)	E_γ: weighted average of 1049.4 *1* (^{40}Ca(^{36}Ar,3pnγ)), 1050.9 *4* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)). I_γ: weighted average of 100 *4* (^{40}Ca(^{36}Ar,3pnγ)), 100 *12* (^{58}Ni(^{16}O,pnγ)), 100 *17* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
3026.7	(11$^-$)	840.1[b] *10*	28[c] *3*	2186.4	(10$^-$)	
		1037.2[b] *2*	100[c] *6*	1989.50	(9$^-$)	
3078.0	(11$^-$)	995.84 *21*	100	2082.2	(9$^-$)	E_γ: weighted average of 995.8 *1* (^{40}Ca(^{36}Ar,3pnγ)), 996.9 *5* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
3304.9?	1$^+$	3304.8[†f] *10*	100[‡]	0	1$^+$	
3329.6	(12$^-$)	1143.1[b] *1*	100[c]	2186.4	(10$^-$)	
3516.1	(12$^-$)	1036.4 *3*	100	2479.7	(10$^-$)	E_γ: weighted average of 1036.4 *1* (^{40}Ca(^{36}Ar,3pnγ)), 1038.4 *7* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
3628.9	(13$^+$)	299.2[b] *1*	17.2[c] *7*	3329.6	(12$^-$)	
		1131.42 *20*	100[c] *3*	2497.6	(11$^+$)	E_γ: weighted average of 1131.4 *1* (^{40}Ca(^{36}Ar,3pnγ)), 1133.0 *8* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
4204.0	(13$^-$)	1126.02 *18*	100	3078.0	(11$^-$)	E_γ: weighted average of 1126.0 *1* (^{40}Ca(^{36}Ar,3pnγ)), 1127.5 *8* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
4326.7	(13$^-$)	1300.0[b] *3*	100[c]	3026.7	(11$^-$)	
4715.6	(14$^-$)	1386.1[b] *1*	100[c]	3329.6	(12$^-$)	
4718.4	(14$^-$)	1202.3[b] *1*	100[c]	3516.1	(12$^-$)	
4886.9	(15$^+$)	171.4[b] *1*	10.7[c] *3*	4715.6	(14$^-$)	
		1256.2 *4*	100[c] *3*	3628.9	(13$^+$)	E_γ: weighted average of 1256.2 *1* (^{40}Ca(^{36}Ar,3pnγ)), 1252 *1* (^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ)).
5324.1	(15$^-$)	1120.3[b] *1*	100[c]	4204.0	(13$^-$)	
5361.1		1156.0[b] *2*	100[c]	4204.0	(13$^-$)	
5516.2	(15$^-$)	1189.5[b] *8*	100[c]	4326.7	(13$^-$)	
5653.1	(14$^+$)	1449.0[b] *6*	100[c]	4204.0	(13$^-$)	

$^{72}_{35}Br_{37}$-11

Adopted Levels, Gammas (continued)

γ(^{72}Br) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π
5991.7	(16$^-$)	1273.3[b] *1*	100[c]	4718.4	(14$^-$)
6242.3	(16$^-$)	1526.7[b] *1*	100[c]	4715.6	(14$^-$)
6264.9	(17$^+$)	1378.0[b] *1*	100[c]	4886.9	(15$^+$)
6562.7	(17$^-$)	1201.3[b] *1*	52.0[c] *24*	5361.1	
		1238.9[b] *1*	100[c] *4*	5324.1	(15$^-$)
7048.6	(17$^-$)	1532.4[b] *10*	100[c]	5516.2	(15$^-$)
7104.1	(16$^+$)	1451.0[b] *8*	100[c]	5653.1	(14$^+$)
7376.4	(18$^-$)	1384.7[b] *1*	100[c]	5991.7	(16$^-$)
7876.6	(19$^+$)	1611.7[b] *1*	100[c]	6264.9	(17$^+$)
7912.5	(18$^-$)	1670.2[b] *2*	100[c]	6242.3	(16$^-$)
7966.8	(19$^-$)	1404.1[b] *1*	100[c]	6562.7	(17$^-$)
8089.6		1847.3[b] *2*	100[c]	6242.3	(16$^-$)
8753.2	(18$^+$)	1649.1[b] *10*	100[c]	7104.1	(16$^+$)
8803.7	(19$^-$)	1755.0[b] *10*	100[c]	7048.6	(17$^-$)
8809.0	(20$^-$)	1432.5[b] *1*	100[c]	7376.4	(18$^-$)
9529.9	(21$^-$)	1563.0[b] *1*	100[c]	7966.8	(19$^-$)
9745.6	(20$^-$)	1833.1[b] *6*	100[c]	7912.5	(18$^-$)
9818.9	(21$^+$)	1942.3[b] *2*	100[c]	7876.6	(19$^+$)
10406.7	(22$^-$)	1597.7[b] *1*	100[c]	8809.0	(20$^-$)
10543.2	(20$^+$)	1790.0[b] *4*	100[c]	8753.2	(18$^+$)
11298.9	(23$^-$)	1769.0[b] *1*	100[c]	9529.9	(21$^-$)
11802.4	(22$^-$)	2056.7[b] *10*	100[c]	9745.6	(20$^-$)
11846.0	(23$^+$)	2027.0[b] *3*	100[c]	9818.9	(21$^+$)
12367.9	(24$^-$)	1961.2[b] *2*	100[c]	10406.7	(22$^-$)
12534.7	(22$^+$)	1991.4[b] *16*	100[c]	10543.2	(20$^+$)
13382.3	(25$^-$)	2083.4[b] *2*	100[c]	11298.9	(23$^-$)
13938.4	(25$^+$)	2092.4[b] *4*	100[c]	11846.0	(23$^+$)
14809.7	(26$^-$)	2441.7[b] *5*	100[c]	12367.9	(24$^-$)
15899.3	(27$^-$)	2516.9[b] *8*	100[c]	13382.3	(25$^-$)
16232.4	(27$^+$)	2294.0[b] *8*	100[c]	13938.4	(25$^+$)
17800.7	(28$^-$)	2991.0[b] *13*	100[c]	14809.7	(26$^-$)
18808	(29$^+$)	2575.8[b] *24*	100[c]	16232.4	(27$^+$)
18967.9	(29$^-$)	3068.6[b] *18*	100	15899.3	(27$^-$)

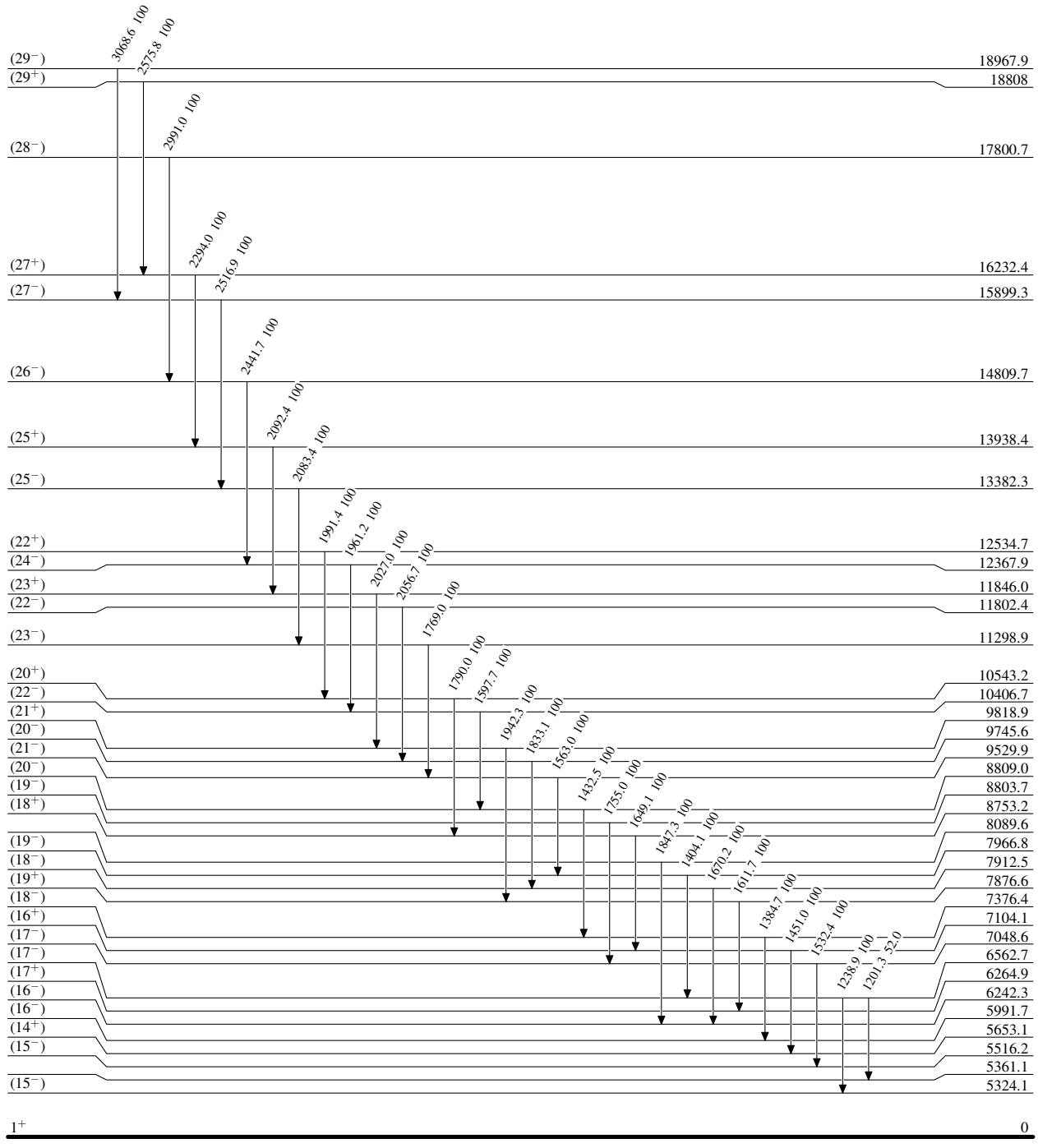
† From ^{72}Kr ε decay.
‡ From ^{72}Kr ε decay.
# From ^{72}Kr ε decay.
@ From ^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ).
& From ^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ).
[a] From ^{58}Ni(^{16}O,pnγ), ^{40}Ca(^{36}Ar,3pnγ).
[b] From ^{40}Ca(^{36}Ar,3pnγ).
[c] From ^{40}Ca(^{36}Ar,3pnγ).
[d] Total 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.
[e] Multiply placed with intensity suitably divided.
[f] Placement of transition in the level scheme is uncertain.

$^{72}_{35}Br_{37}$-12

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{72}_{35}Br_{37}$

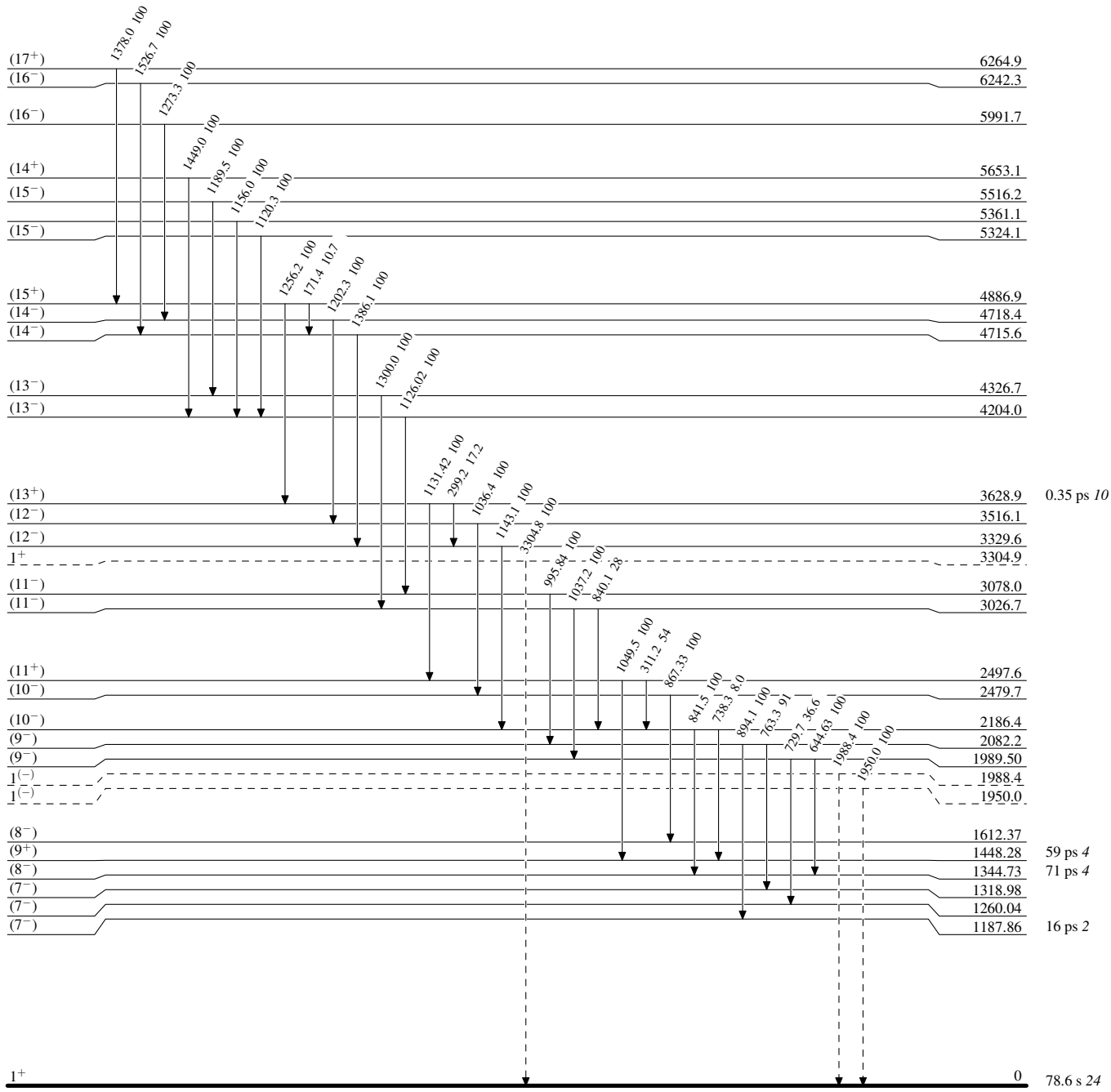
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{72}_{35}Br_{37}$

Adopted Levels, Gammas

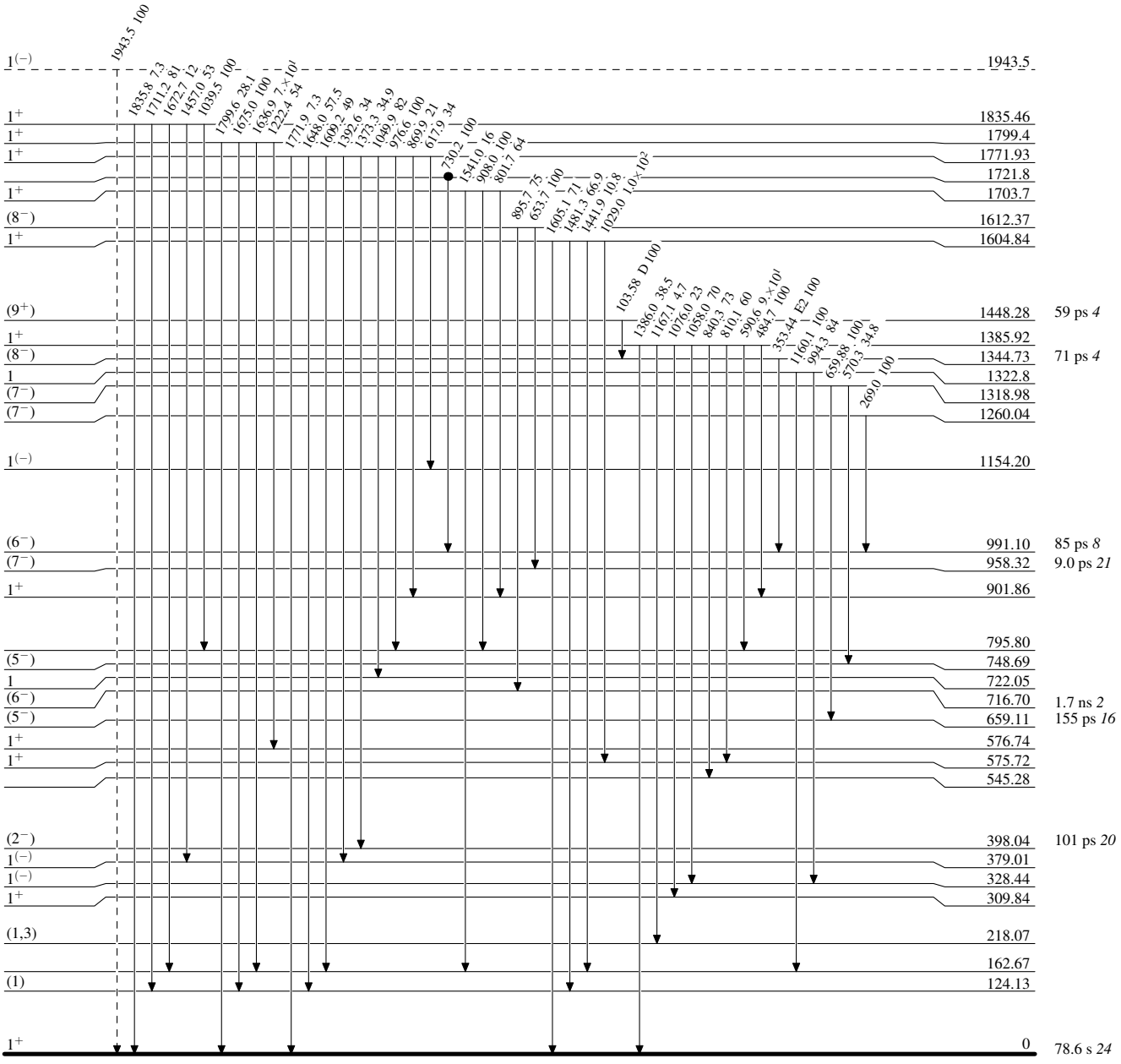
Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

Coincidence



$^{72}_{35}Br_{37}$

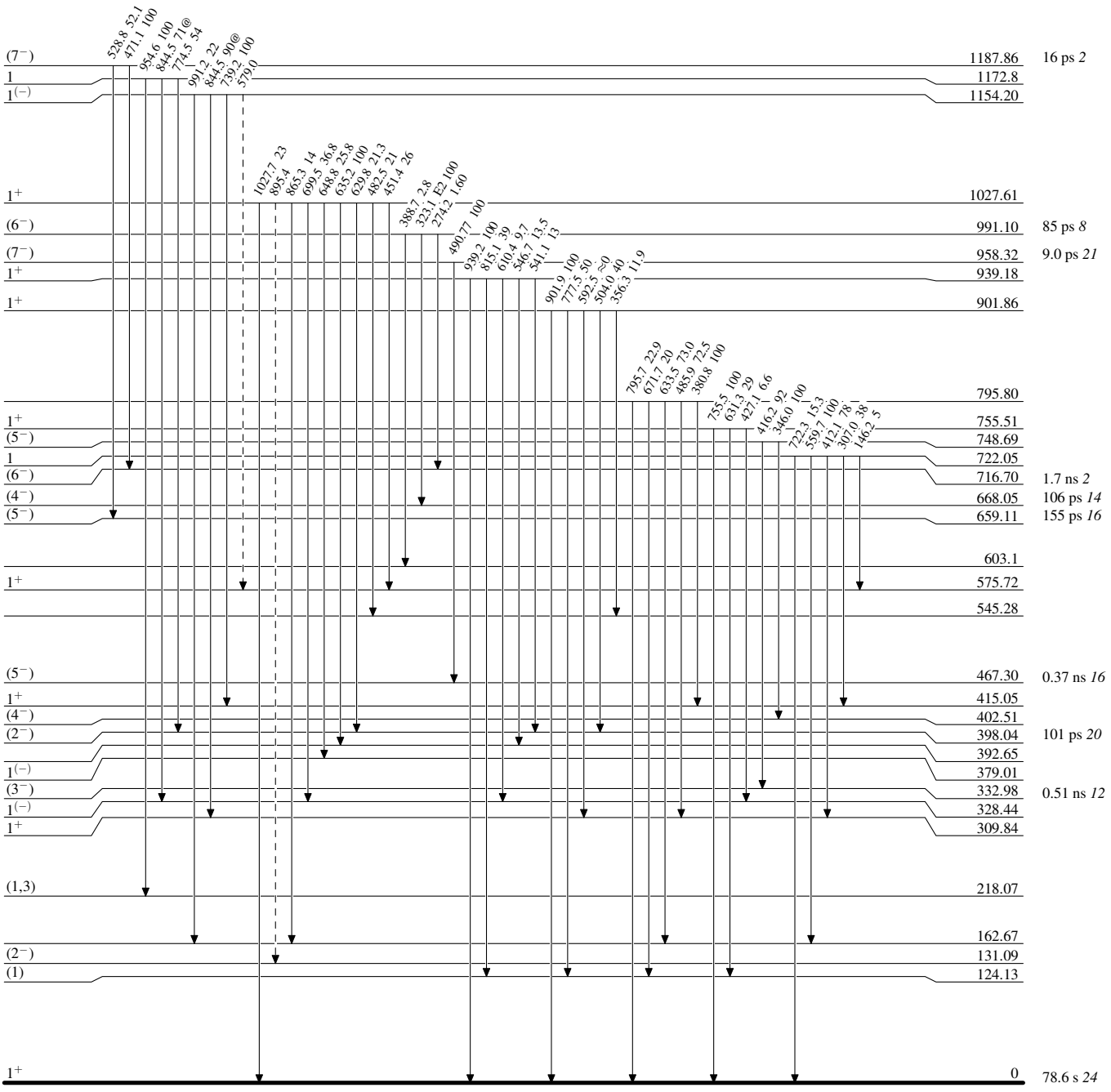
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

- - - - - - ► γ Decay (Uncertain)



$^{72}_{35}Br_{37}$

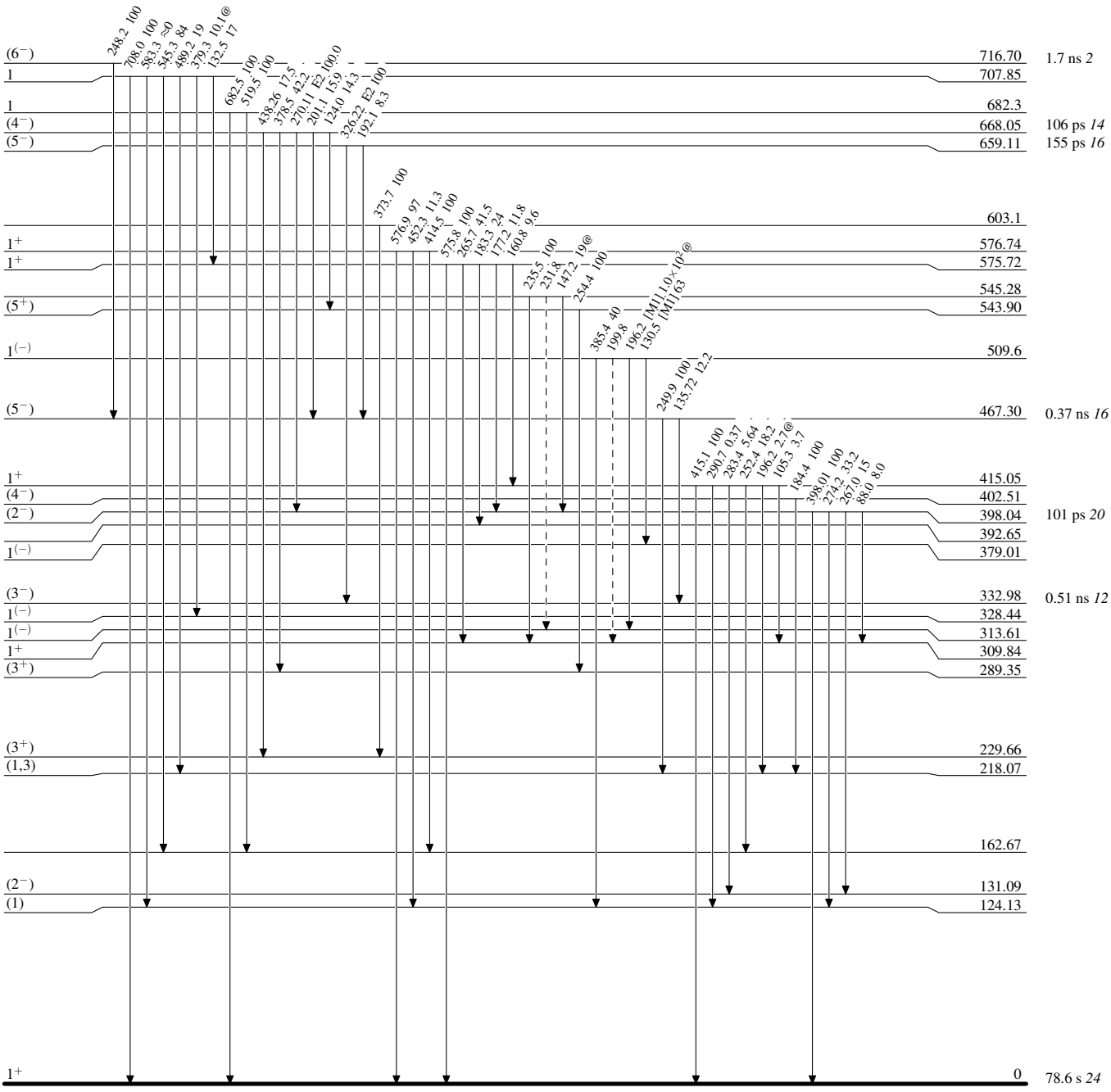
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

– – – – – – ► γ Decay (Uncertain)



$^{72}_{35}Br_{37}$

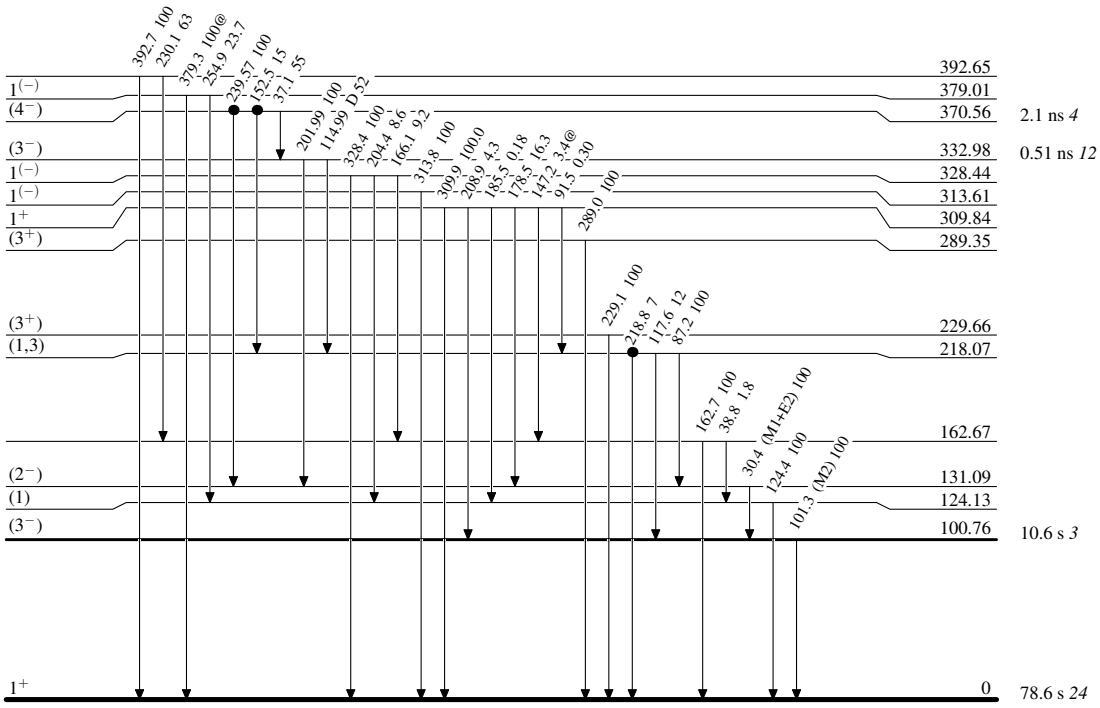
Adopted Levels, Gammas

Legend

Level Scheme (continued)

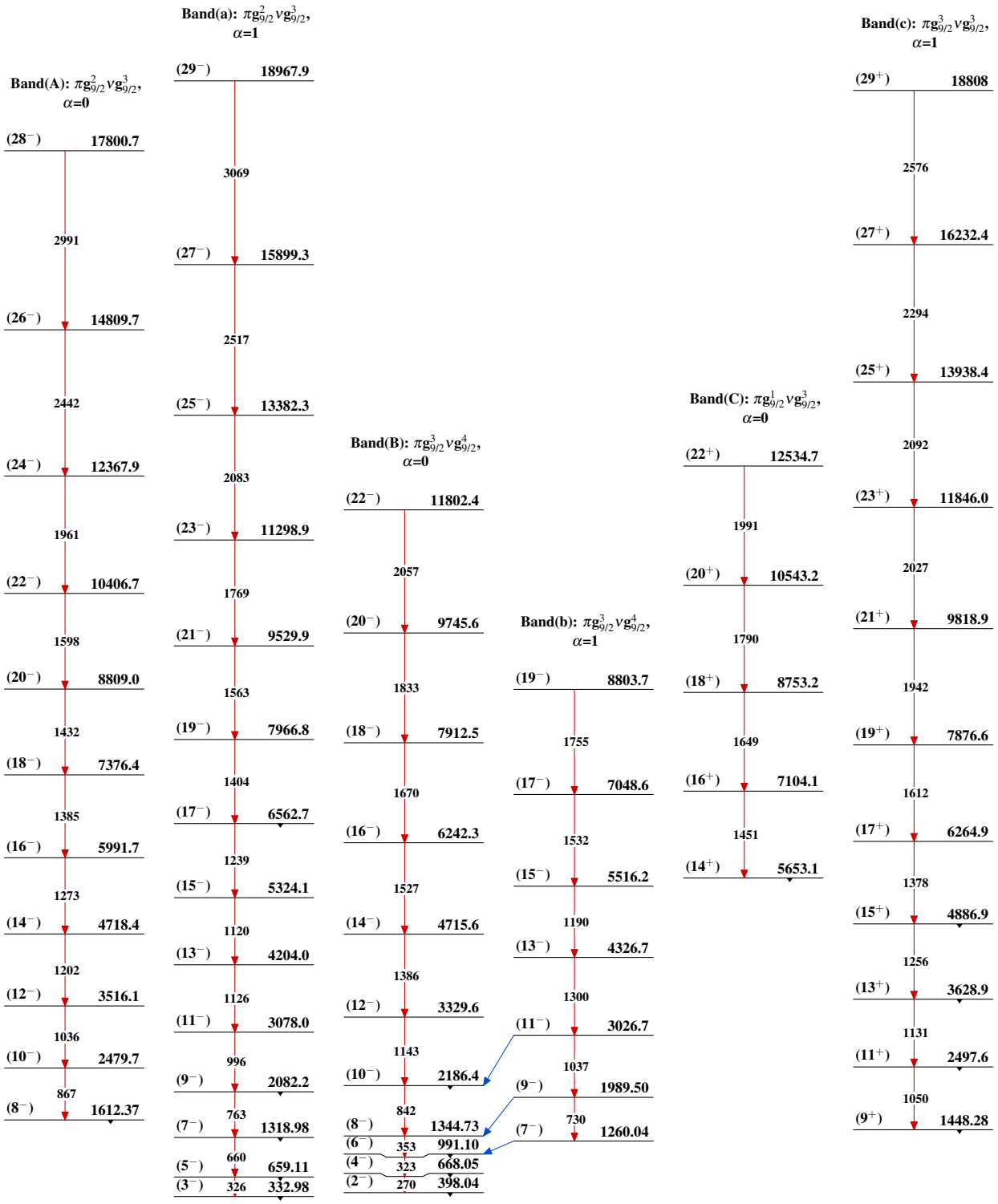
Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

● Coincidence



$^{72}_{35}Br_{37}$

Adopted Levels, Gammas



$^{72}_{35}Br_{37}$