Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Janos Timar and Zoltan Elekes, Balraj Singh	NDS 121, 143 (2014)	31-May-2014

Q(β^-)=−3739 *22*; S(n)=7756 *11*; S(p)=6421 *12*; Q(α)=−295 *11* 2012Wa38
S(2n)=18388 *16*, S(2p)=11320 *11* (2012Wa38).
1950Th08, 1950Fi11: identification and production of ^{129}Ba in proton bombardment of ^{133}Cs, measured half-life. Later decay studies: 1959He45, 1961Ar05, 1963Ya05, 1966Li05, 1970Is04, 1971Is02, 1972Ta02, 1973Is04, 1983TaZI.

^{129}Ba Levels

Cross Reference (XREF) Flags

A ^{129}La ε decay (11.6 min)
B ^{120}Sn(^{12}C,3nγ),^{116}Cd(^{18}O,5nγ)
C ^{130}Ba(pol d,t),(d,t)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
0.0[m]	1/2$^+$	2.23[&] h *11*	ABC	%ε+%β^+=100 μ=−0.398 *16* (1979Be25,1983Mu12,2014StZZ) μ: atomic beam with laser fluorescence spectroscopy (1979Be25); result of 1979Be25 re-evaluated by 1983Mu12. Evaluated rms charge radius=4.8248 fm *49* (2013An02). Charge radius measurements: 1983Mu12, 1979Ba74. Jπ: L=0 and analyzing power in (d,t).
8.42[i] *6*	7/2$^+$	2.135[@] h *10*	ABC	%ε+%β^+≈100; %IT=? μ=+0.930 *17* (1979Be25,1983Mu12,2014StZZ) Q=+1.75 *14* (1979Be25,2013StZZ,2014StZZ) μ,Q: atomic beam with laser fluorescence spectroscopy (1979Be25); re-evaluated by 2013StZZ. Other: +1.60 *13* (result of 1979Be25 re-evaluated by 1983Mu12). Jπ: L=4 and analyzing power in (d,t).
110.57[n] *5*	3/2$^+$		ABC	Jπ: L=2 and analyzing power in (d,t); M1 γ to 1/2$^+$.
182.04[b] *11*	9/2$^-$	15.2 ns *10*	BC	μ=−0.864 *27* (2013Ka27,2014StZZ) μ: from g factor=−0.192 *6* (2013Ka27,TDPAD method). Jπ: L=5 and analyzing power in (d,t); E1 γ to 7/2$^+$. $T_{1/2}$: from γ(t). Weighted average of 15 ns *1* (2013Ka27) and 16 ns *2* (1992By03).
253.76 *5*	3/2$^+$		A C	Jπ: L=2 and analyzing power in (d,t).
263.1[j] *1*	9/2$^+$		B	
278.57 *5*	1/2$^+$		A C	Jπ: L=0 and analyzing power in (d,t).
278.81[a] *12*	11/2$^-$		BC	Jπ: L=5 and analyzing power in (d,t); ΔJ=1, M1+E2 γ to 9/2$^-$.
318.38 *5*	1/2$^-$,3/2$^-$		A	E(level): level energy and deexciting Eγ are very similar to those of the 318.4 level in (HI,xnγ), but multipolarities are quite different. Evaluators regard it as a different level. Jπ: E1 gammas to 1/2$^+$ and (3/2)$^+$.
318.4[m] *1*	5/2$^+$		BC	E(level): see comments on 318.38 level above. Jπ: L=2 and analyzing power in (d,t).
457.02 *6*	3/2$^+$		A C	Jπ: L=2 and analyzing power in (d,t); M1,E2 γ to 1/2$^+$; M1(+E2) γ to 3/2$^+$; (E2) γ to 7/2$^+$.
459.29 *9*	5/2$^+$		A C	Jπ: L=2 and analyzing power in (d,t).
467.3[n] *1*	7/2$^+$		B	
542.27 *8*	5/2$^+$		A C	Jπ: L=2 and analyzing power in (d,t).
544.74[i] *10*	11/2$^+$	10.6 ps *3*	B	
617.81 *7*	(3/2$^+$,5/2$^+$)		A	Jπ: gammas to 1/2$^+$ and 7/2$^+$; log *ft*=6.5 from (3/2$^+$).

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Adopted Levels, Gammas (continued)

^{129}Ba Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
631.3 *13*	7/2⁻		C	Jπ: L=3 and analyzing power in (d,t). L(d,t)=2 was also reported by 1974Gr22, which is inconsistent.
643.6[b] *1*	13/2⁻		B	
659.97 *8*	5/2⁺		A C	Jπ: L=2 and analyzing power in (d,t).
667.77 *10*	(1/2,3/2,5/2)		A	Jπ: gammas to 1/2⁻,3/2⁻ and 3/2⁺.
711.92 *6*	(3/2,5/2)⁺		A	Jπ: M1,E2 γ to 3/2⁺; γ to 7/2⁺; log *ft*=6.0 from (3/2⁺).
787.07 *22*	(1/2,3/2,5/2)		A C	Jπ: log *ft*=7.5 from (3/2⁺).
797.4[a] *1*	15/2⁻	6.5 ps *2*	B	
799.6 *50*	(3/2⁺,5/2⁺)		C	Jπ: L(d,t)=(2).
806.84[m] *20*	9/2⁺		BC	
849.44 *9*	5/2⁺		A C	Jπ: L=2 and analyzing power in (d,t).
864.1[j] *1*	13/2⁺		B	
883.43[f] *13*	13/2⁻		B	
888.65 *6*	(3/2⁺,5/2⁺)		A	Jπ: gammas to 1/2⁺ and 7/2⁺; log *ft*=6.3 from (3/2⁺).
892.1 *15*			C	
906.70 *9*	1/2⁻,3/2⁻		A C	Jπ: L(d,t)=1.
911.38 *21*	(1/2,3/2,5/2)		A	Jπ: log *ft*=7.9 from (3/2⁺).
928.59 *9*	1/2⁺		A C	Jπ: L=0 and analyzing power in (d,t).
999.1[n] *1*	11/2⁺		B	
1012.4 *9*			C	
1035.4 *15*	9/2⁻,11/2⁻		C	Jπ: L(d,t)=5.
1062.65 *10*	3/2⁺		A C	Jπ: L=2 and analyzing power in (d,t).
1068.1 *3*	(1/2,3/2,5/2)		A	Jπ: log *ft*=7.8 from (3/2⁺).
1094.96 *8*	(3/2⁺,5/2⁺)		A	Jπ: gammas to 1/2⁺ and 7/2⁺.
1097.8 *15*	1/2⁻		C	Jπ: L=1 and analyzing power in (d,t).
1119.85 *12*	1/2⁺		A C	Jπ: L=0 and analyzing power in (d,t).
1204.1 *2*	7/2⁺		C	Jπ: L=4 and analyzing power in (d,t).
1210.0[e] *1*	15/2⁻		B	Jπ: (M1+E2) γ to 13/2⁻; ΔI=0 dipole γ to 15/2⁻; (M1+E2) from 17/2⁻.
1210.5[i] *2*	15/2⁺	1.68 ps *5*	B	
1219.73 *25*	3/2⁺,5/2⁺		A C	Jπ: L(d,t)=2.
1258.1 *3*	(1/2,3/2,5/2)		A	Jπ: log *ft*=7.5 from (3/2⁺).
1282.5 *8*	5/2⁺		C	Jπ: L=2 and analyzing power in (d,t).
1303.8 *8*	(9/2)⁺		C	Jπ: L=4 and analyzing power in (d,t).
1318.4[b] *1*	17/2⁻		BC	XREF: C(1324.7).
1338.9 *10*	9/2⁻		C	Jπ: L=5 and analyzing power in (d,t).
1389.54 *9*	(1/2,3/2,5/2)		A C	Jπ: log *ft*=6.9 from (3/2⁺).
1401.0 *20*	5/2⁺		C	Jπ: L=2 and analyzing power in (d,t).
1438.4[m] *3*	(13/2⁺)		B	
1439.23 *6*	3/2⁺,5/2⁺		A C	Jπ: L(d,t)=2.
1475.4[a] *1*	19/2⁻	1.0 ps *4*	B	
1504.3 *5*	(5/2)⁺		C	Jπ: L=2 and analyzing power in (d,t).
1530.2 *30*			C	
1536.9 *46*	7/2⁺,9/2⁺		C	Jπ: L(d,t)=4.
1545.3[f] *2*	17/2⁻		B	
1566.0 *17*	(3/2⁺,5/2⁺)		C	Jπ: L(d,t)=(2).
1590.2[j] *2*	17/2⁺		B	
1610.20 *8*	(5/2⁻)		A C	Jπ: L(d,t)=(3); γ to 1/2⁺.
1635.40 *10*	1/2⁺		A C	Jπ: L=0 and analyzing power in (d,t).
1651.4 *24*	(9/2⁻,11/2⁻)		C	Jπ: L(d,t)=(5).
1654.6[n] *2*	(15/2⁺)		B	
1692.3 *13*	11/2⁻		C	Jπ: L=5 and analyzing power in (d,t).
1712.9 *23*	1/2⁺		C	Jπ: L=0 and analyzing power in (d,t).
1768.2 *30*	1/2⁺		C	Jπ: L=0 and analyzing power in (d,t).
1778.28 *10*	(1/2,3/2,5/2⁺)		A C	XREF: C(1782.8).

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Adopted Levels, Gammas (continued)

^{129}Ba Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
				Jπ: γ to 1/2+; log *ft*=6.4 from (3/2+).
1804.80 *18*	3/2+,5/2+		A C	Jπ: L(d,t)=2.
1837.3 *30*			C	
1845.0[e] *2*	19/2−		B	
1866.33 *9*	3/2+,5/2+		A C	Jπ: L(d,t)=2.
1906.1 *57*	3/2+,5/2+		C	Jπ: L(d,t)=2.
1951.8 *55*	(1/2+)		C	Jπ: L=(0) and analyzing power in (d,t).
1976.3 *45*			C	
1989.9[i] *1*	19/2+	0.82 ps *10*	B	
1990.50 *12*	1/2+		A C	Jπ: L=0 and analyzing power in (d,t).
2008.1 *55*	3/2−		C	Jπ: L=1 and analyzing power in (d,t).
2071.60 *17*	(1/2,3/2,5/2+)		A	Jπ: possible γ to 1/2+; log *ft*=6.7 from (3/2+).
2146.3[b] *2*	(21/2−)		B	
2171.4[m] *4*	(17/2+)		B	
2281.2[a] *2*	(23/2−)		B	
2285.31 *17*	(1/2,3/2,5/2)		A	Jπ: log *ft*=6.9 from (3/2+).
2336.7[f] *2*	(21/2−)		B	
2340.2[n] *3*	(19/2+)		B	
2369.40 *22*	(1/2,3/2,5/2)		A	Jπ: log *ft*=6.9 from (3/2+).
2387.4 *4*	(13/2− to 21/2−)		B	Jπ: γ to 17/2−.
2412.9[j] *2*	21/2+		B	
2429.7 *3*	(19/2+)		B	
2462.6[g] *2*	(23/2+)	47 ns *1*	B	μ=−2.68 *8* (2013Ka27,2014StZZ) Jπ: 2013Ka27 propose 3-qp admixture of configurations= ν(7/2[404]⊗7/2[523]⊗9/2[514]) and ν(5/2[402]⊗7/2[523]⊗11/2[505]). $T_{1/2}$: from γ(t), pulsed beam. Weighted average of 47 ns *1* (2013Ka27) and 47 ns *2* (1992By03). μ: from g factor=−0.233 *7* (2013Ka27, TDPAD method).
2509.9 *3*	(19/2+)		B	
2599.6[e] *2*	(23/2−)		B	
2653.7 *2*	(21/2+)		B	
2674.7 *2*	(21/2+)		B	
2742.6 *3*	(17/2 to 21/2−)		B	Jπ: γ to 17/2−.
2815.5[i] *2*	23/2+		B	
2874.0 *2*	(23/2+)		B	
2903.1[n] *4*	(23/2+)		B	
2913.7[h] *2*	(25/2+)		B	
3044.2 *3*			B	
3079.1[l] *2*	25/2+	1.2 ps *3*	B	
3094.2[b] *2*	(25/2−)		B	
3179.4[a] *2*	(27/2−)		B	
3368.2[k] *2*	(27/2+)		B	
3378.9[g] *2*	(27/2+)		B	
3430.6[e] *2*	(27/2−)		B	
3525.3 *4*	(27/2 to 31/2−)		B	Jπ: γ to 27/2−.
3687.5 *2*	(27/2−)		B	
3704.5 *2*	(31/2−)		B	
3741.8[l] *2*	(29/2+)		B	
3848.5 *3*	(27/2 to 31/2+)		B	Jπ: γ to 27/2+.
3852.8 *5*			B	
3895.9[h] *2*	(29/2+)		B	
3948.1[b] *2*	(29/2−)		B	

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Adopted Levels, Gammas (continued)

^{129}Ba Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
4054.4[k] 2	(31/2$^+$)	B	
4137.6[a] 2	(31/2$^-$)	B	
4286.1[c] 2	(31/2$^-$)	B	
4320.2 2	(31/2$^+$)	B	
4333.6 3		B	
4351.4 3	(31/2$^-$)	B	
4458.7[g] 3	(31/2$^+$)	B	
4502.8[l] 2	(33/2$^+$)	B	
4617.1[d] 2	(33/2$^-$)	B	
4663.9 3	(31/2 to 35/2$^+$)	B	Jπ: γ to 31/2$^+$.
4871.5[k] 2	(35/2$^+$)	B	
4951.1[h] 6	(33/2$^+$)	B	
5047.4[c] 2	(35/2$^-$)	B	
5152.0[a] 4	(35/2$^-$)	B	
5379.6[l] 3	(37/2$^+$)	B	
5469.3[d] 3	(37/2$^-$)	B	
5807.6[k] 3	(39/2$^+$)	B	
5975.6[c] 3	(39/2$^-$)	B	
6223.8[a] 6	(39/2$^-$)	B	
6352.1[l] 4	(41/2$^+$)	B	
6450.7[d] 3	(41/2$^-$)	B	
6843.6[k] 4	(43/2$^+$)	B	
6975.3[c] 4	(43/2$^-$)	B	
7434.0[l] 5	(45/2$^+$)	B	
7501.9[d] 6	(45/2$^-$)	B	
7964.1[k] 5	(47/2$^+$)	B	
9144.2[k] 7	(51/2$^+$)	B	
10388.3[k] 13	(55/2$^+$)	B	

[†] From least-squares fit to the adopted Eγ values.

[‡] For high-spin (J>13/2) levels populated in ^{120}Sn(^{12}C,3nγ), ^{116}Cd(^{18}O,5nγ), assignments are from multipolarities assigned on the basis of γ(θ), DCO, and band structures. No separate arguments are given for most of these levels. Ascending order of spins with excitation energy is assumed based on yrast pattern of population in high-spin studies.

[#] From recoil distance technique (2000St07), unless otherwise noted.

[@] Weighted average of 2.11 h *5* for 420ce, 2.10 h *5* for 597ce, 2.10 h *5* for 459ce, 2.04 h *10* for 481ce, 2.14 h *10* for 501ce, 2.08 h *5* for 534ce, 2.22 h *10* for 546ce, 2.13 h *5* for 748ce, 2.13 h *6* for 690ce, 2.07 h *12* for 872ce, 2.07 h *10* for 780ce, 2.00 h *12* for 803ce, 2.22 h *12* for 1034ce, 2.15 h *10* for 1045+1047ce, 2.09 h *5* for 392ce, 2.08 h *5* for 679ce, 2.16 h *8* for 893ce, 2.18 h *8* for 999ce, 2.19 h *10* for 1222ce, 2.11 h *5* for 1459ce, 2.18 h *10* for 1122ce, 2.18 h *10* for 1209ce, 2.10 h *12* for 1624ce (1961Ar05); 2.13 h *6* for 182.3γ (1966Li05), 2.19 h *4* for 1459γ, 2.09 h *7* for 1623γ (1972Ta02); 2.16 h *2* for 182γ, 2.15 h *3* for 1459γ (1973Is04); ce stands for conversion line. All γ rays listed are from the decay of only the isomer. Others (for composite g.s.+isomer activities): 2.28 h *6*, 2.47 h *7*, 2.53 h *7* for $\gamma^{\pm}$ (1973Is04), 2.20 h *15* (1966Li05), 2.20 h *5* (1963Ya05), 2.61 h *2* (1961Ar05) for total positrons, 2.45 h *5* (1959He45), 2.0 h *1* (1950Fi11), 1.8 h *2* (1950Th08).

[&] Weighted average of 2.20 h *+17−12* for 1164.6γ and 2.25 h *+15−11* for 1947γ+1954γ (1972Ta02); all three γ rays are emitted only by the decay of g.s. of ^{129}Ba. Others (composite for g.s.+isomer activities): 2.28 h *6*, 2.47 h *7*, 2.53 h *7* (1973Is04), 2.20 h *15* (1966Li05), 2.20 h *5* (1963Ya05), 2.61 h *2* (1961Ar05) for total positrons, 2.45 h *5* (1959He45), 2.0 h *1* (1950Fi11), 1.8 h *2* (1950Th08).

[a] Band(A): ν9/2[514],α=−1/2.

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Adopted Levels, Gammas (continued)

^{129}Ba Levels (continued)

[b] Band(B): $\nu 9/2[514],\alpha=+1/2$.
[c] Band(c): $\nu 9/2[514]\otimes\pi h^2_{11/2},\alpha=-1/2$.
[d] Band(b): $\nu 9/2[514]\otimes\pi h^2_{11/2},\alpha=+1/2$.
[e] Band(C): Yrare $\nu h_{11/2}$ band,$\alpha=-1/2$.
[f] Band(D): Yrare $\nu h_{11/2}$ band,$\alpha=+1/2$.
[g] Band(E): $\nu 7/2[404]\otimes\nu 9/2[514]\otimes\nu 7/2[523],\alpha=-1/2$.
[h] Band(F): $\nu 7/2[404]\otimes\nu 9/2[514]\otimes\nu 7/2[523],\alpha=+1/2$.
[i] Band(G): $\nu 7/2[404],\alpha=-1/2$.
[j] Band(H): $\nu 7/2[404],\alpha=+1/2$.
[k] Band(g): $\nu 7/2[404]\otimes\pi h^2_{11/2},\alpha=-1/2$.
[l] Band(h): $\nu 7/2[404]\otimes\pi h^2_{11/2},\alpha=+1/2$.
[m] Band(I): $\nu(1/2[411]+1/2[400]),\alpha=-1/2$. Admixture of 1/2[411] and 1/2[400] neutron configurations.
[n] Band(J): $\nu(1/2[411]+1/2[400]),\alpha=+1/2$. Admixture of 1/2[411] and 1/2[400] neutron configurations.

Adopted Levels, Gammas (continued)

γ(^{129}Ba)

Eγ and Iγ data are from (HI,xnγ) (1992By03) for high-spin states and from ^{129}La ε decay (1979Br05) for low-spin states, unless otherwise noted.

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[†]	δ	α[‡]	Comments
8.42	7/2$^+$	(8.4 *2*)		0.0	1/2$^+$	[M3]		1.05×10^8 *19*	B(M3)(W.u.)<0.041 *7* α(L)=7.8×10^7 *14*; α(M)=2.2×10^7 *4*; α(N)=4.6×10^6 *8*; α(O)=5.9×10^5 *11*; α(P)=6.5×10^3 *11* E_γ: deduced from energy difference of γ rays to 7/2$^+$ and 1/2$^+$ levels (1979Br05).
110.57	3/2$^+$	102.3 *3*	≤0.15	8.42	7/2$^+$	[E2]		1.78 *4*	α(K)=1.133 *19*; α(L)=0.507 *10*; α(M)=0.1108 *22* α(N)=0.0230 *5*; α(O)=0.00305 *6*; α(P)=5.24×10^{-5} *9*
		110.5 *1*	100 *5*	0.0	1/2$^+$	M1		0.743	α(K)=0.636 *9*; α(L)=0.0853 *13*; α(M)=0.0176 *3* α(N)=0.00380 *6*; α(O)=0.000580 *9*; α(P)=4.19×10^{-5} *6* Mult.: from α(exp) and γ(θ).
182.04	9/2$^-$	173.6 *1*	100	8.42	7/2$^+$	E1		0.0493	B(E1)(W.u.)=3.2×10^{-6} *2* α(K)=0.0424 *6*; α(L)=0.00555 *8*; α(M)=0.001137 *16* α(N)=0.000243 *4*; α(O)=3.63×10^{-5} *6*; α(P)=2.35×10^{-6} *4* Mult.: from A_2, A_4, linear pol (1978Gi04).
253.76	3/2$^+$	143.3 *1*	15.7 *6*	110.57	3/2$^+$	E2(+M1)[#]	>1.7	0.519 *25*	α(K)=0.381 *13*; α(L)=0.109 *10*; α(M)=0.0234 *23* α(N)=0.0049 *5*; α(O)=0.00067 *6*; α(P)=1.95×10^{-5} *3*
		253.8 *1*	100 *4*	0.0	1/2$^+$	E2[#]		0.0777	α(K)=0.0621 *9*; α(L)=0.01227 *18*; α(M)=0.00260 *4* α(N)=0.000549 *8*; α(O)=7.80×10^{-5} *11*; α(P)=3.43×10^{-6} *5*
263.1	9/2$^+$	254.7 *1*	100	8.42	7/2$^+$	M1+E2		0.0757 *15*	α(K)=0.0628 *16*; α(L)=0.0103 *19*; α(M)=0.0022 *5* α(N)=0.00046 *9*; α(O)=6.7×10^{-5} *10*; α(P)=3.8×10^{-6} *4*
278.57	1/2$^+$	168.1 *1*	5.2 *2*	110.57	3/2$^+$	E2,M1[#]		0.27 *5*	α(K)=0.216 *19*; α(L)=0.044 *18*; α(M)=0.009 *4* α(N)=0.0020 *8*; α(O)=0.00028 *10*; α(P)=1.25×10^{-5} *5*
		278.6 *1*	100	0.0	1/2$^+$	M1[#]		0.0589	α(K)=0.0505 *7*; α(L)=0.0066 *1*; α(M)=0.00137 *2* α(N)=0.000295 *5*; α(O)=4.52×10^{-5} *7*; α(P)=3.30×10^{-6} *5*
278.81	11/2$^-$	96.8 *1*	100	182.04	9/2$^-$	M1+E2		1.6 *6*	α(K)=1.13 *21*; α(L)=0.4 *3*; α(M)=0.08 *6* α(N)=0.017 *12*; α(O)=0.0024 *16*; α(P)=6.12×10^{-5} *9*
318.38	1/2$^-$,3/2$^-$	64.6 *1*	11 *1*	253.76	3/2$^+$	E1[#]		0.756	α(K)=0.641 *10*; α(L)=0.0920 *14*; α(M)=0.0189 *3* α(N)=0.00398 *6*; α(O)=0.000572 *9*; α(P)=3.14×10^{-5} *5*
		207.9 *1*	23 *5*	110.57	3/2$^+$	[E1]		0.0302	α(K)=0.0259 *4*; α(L)=0.00337 *5*; α(M)=0.000690 *10* α(N)=0.0001476 *21*; α(O)=2.21×10^{-5} *4*; α(P)=1.467×10^{-6} *21*
		318.4 *1*	100 *6*	0.0	1/2$^+$	E1[#]		0.00979	α(K)=0.00843 *12*; α(L)=0.001078 *16*; α(M)=0.000221 *3* α(N)=4.74×10^{-5} *7*; α(O)=7.16×10^{-6} *10*; α(P)=4.93×10^{-7} *7*
318.4	5/2$^+$	207.5 *3*	12 *6*	110.57	3/2$^+$	[M1+E2]		0.141 *12*	α(K)=0.115 *5*; α(L)=0.021 *6*; α(M)=0.0043 *14* α(N)=0.0009 *3*; α(O)=0.00013 *4*; α(P)=6.8×10^{-6} *5*
		318.3 *2*	100 *14*	0.0	1/2$^+$	[E2]		0.0375	α(K)=0.0306 *5*; α(L)=0.00542 *8*; α(M)=0.001141 *17* α(N)=0.000242 *4*; α(O)=3.49×10^{-5} *5*; α(P)=1.753×10^{-6} *25*

From ENSDF

$^{129}_{56}Ba_{73}$-6

Adopted Levels, Gammas (continued)

γ(^{129}Ba) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[†]	δ	α[‡]	Comments
457.02	3/2$^+$	138.7 *1*	4.9 *6*	318.38	1/2$^-$,3/2$^-$	[E1]		0.0917	α(K)=0.0786 *12*; α(L)=0.01042 *15*; α(M)=0.00214 *3* α(N)=0.000455 *7*; α(O)=6.75×10^{-5} *10*; α(P)=4.26×10^{-6} *6*
		178.3 *3*	1.5 *3*	278.57	1/2$^+$	[M1+E2]		0.23 *3*	α(K)=0.181 *14*; α(L)=0.035 *13*; α(M)=0.007 *3* α(N)=0.0016 *6*; α(O)=0.00023 *8*; α(P)=1.05×10^{-5} *6*
		202.9 *3*	2.5 *9*	253.76	3/2$^+$	[M1+E2]		0.151 *14*	α(K)=0.123 *6*; α(L)=0.022 *7*; α(M)=0.0047 *15* α(N)=0.0010 *3*; α(O)=0.00014 *4*; α(P)=7.3×10^{-6} *5*
		346.5 *1*	64 *3*	110.57	3/2$^+$	M1(+E2)[#]	<0.4	0.0330 *6*	α(K)=0.0283 *6*; α(L)=0.00375 *6*; α(M)=0.000773 *13* α(N)=0.000167 *3*; α(O)=2.55×10^{-5} *4*; α(P)=1.83×10^{-6} *5*
		448.6 *1*	65 *4*	8.42	7/2$^+$	(E2)[#]		0.01336	α(K)=0.01117 *16*; α(L)=0.001738 *25*; α(M)=0.000363 *5* α(N)=7.74×10^{-5} *11*; α(O)=1.140×10^{-5} *16*; α(P)=6.65×10^{-7} *10*
		457.0 *1*	100 *8*	0.0	1/2$^+$	M1,E2[#]		0.0146 *20*	α(K)=0.0124 *18*; α(L)=0.00173 *10*; α(M)=0.000359 *18* α(N)=7.7×10^{-5} *5*; α(O)=1.16×10^{-5} *9*; α(P)=7.8×10^{-7} *15*
459.29	5/2$^+$	205.6 *2*	17 *3*	253.76	3/2$^+$	[M1+E2]		0.145 *13*	α(K)=0.118 *5*; α(L)=0.021 *7*; α(M)=0.0045 *14* α(N)=0.0010 *3*; α(O)=0.00014 *4*; α(P)=7.0×10^{-6} *5*
		348.7 *1*	100 *9*	110.57	3/2$^+$	M1(+E2)[#]	<0.6	0.0322 *8*	α(K)=0.0275 *8*; α(L)=0.00371 *7*; α(M)=0.000765 *15* α(N)=0.000165 *3*; α(O)=2.51×10^{-5} *4*; α(P)=1.77×10^{-6} *7*
467.3	7/2$^+$	149.0 *2*	9.8 *23*	318.4	5/2$^+$	[M1+E2]		0.40 *8*	α(K)=0.31 *4*; α(L)=0.07 *4*; α(M)=0.015 *7* α(N)=0.0031 *15*; α(O)=0.00043 *19*; α(P)=1.77×10^{-5} *5*
		356.7 *1*	100 *15*	110.57	3/2$^+$	(E2)		0.0263	α(K)=0.0217 *3*; α(L)=0.00366 *6*; α(M)=0.000769 *11* α(N)=0.0001633 *23*; α(O)=2.37×10^{-5} *4*; α(P)=1.261×10^{-6} *18*
542.27	5/2$^+$	85.1[&] *2*	≤6	457.02	3/2$^+$	[M1+E2]		2.5 *10*	α(K)=1.6 *4*; α(L)=0.7 *5*; α(M)=0.15 *11* α(N)=0.030 *23*; α(O)=0.004 *3*; α(P)=8.79×10^{-5} *15*
		431.8 *2*	94 *12*	110.57	3/2$^+$				
		533.9 *1*	100 *12*	8.42	7/2$^+$				
544.74	11/2$^+$	281.7 *1*	28 *4*	263.1	9/2$^+$	(M1+E2)		0.0562 *13*	α(K)=0.0469 *23*; α(L)=0.0074 *10*; α(M)=0.00155 *23* α(N)=0.00033 *5*; α(O)=4.9×10^{-5} *5*; α(P)=2.9×10^{-6} *4*
		536.3 *1*	100 *3*	8.42	7/2$^+$	E2		0.00814	B(E2)(W.u.)=24.0 *14* α(K)=0.00686 *10*; α(L)=0.001014 *15*; α(M)=0.000211 *3* α(N)=4.51×10^{-5} *7*; α(O)=6.71×10^{-6} *10*; α(P)=4.15×10^{-7} *6*
617.81	(3/2$^+$,5/2$^+$)	339.1 *2*	21 *5*	278.57	1/2$^+$				
		507.3 *2*	93 *9*	110.57	3/2$^+$				
		609.3 *2*	21 *5*	8.42	7/2$^+$				
		617.8 *1*	100 *7*	0.0	1/2$^+$				
643.6	13/2$^-$	364.7 *1*	100 *4*	278.81	11/2$^-$	M1+E2		0.0269 *24*	α(K)=0.0227 *25*; α(L)=0.00333 *9*; α(M)=0.000692 *23* α(N)=0.000148 *4*; α(O)=2.22×10^{-5} *4*; α(P)=1.41×10^{-6} *23*
		461.6 *1*	25.4 *12*	182.04	9/2$^-$	E2		0.01232	α(K)=0.01032 *15*; α(L)=0.001591 *23*; α(M)=0.000332 *5* α(N)=7.08×10^{-5} *10*; α(O)=1.045×10^{-5} *15*; α(P)=6.16×10^{-7} *9*
659.97	5/2$^+$	341.5 *2*	55 *9*	318.38	1/2$^-$,3/2$^-$				
		381.5 *2*	18 *5*	278.57	1/2$^+$				

From ENSDF

$^{129}_{56}Ba_{73}$-7

Adopted Levels, Gammas (continued)

γ(^{129}Ba) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[†]	α[‡]	Comments
659.97	5/2$^+$	406.2 *1*	91 *9*	253.76	3/2$^+$	M1,E2[#]	0.0200 *22*	α(K)=0.0170 *22*; α(L)=0.00243 *6*; α(M)=0.000503 *9* α(N)=0.0001079 *24*; α(O)=1.62×10^{-5} *7*; α(P)=1.06×10^{-6} *19*
		549.5 *2*	100 *14*	110.57	3/2$^+$			
		651.5 *2*	55 *9*	8.42	7/2$^+$			
667.77	(1/2,3/2,5/2)	349.4 *2*	80 *40*	318.38	1/2$^-$,3/2$^-$			
		414.0 *1*	100 *40*	253.76	3/2$^+$			
711.92	(3/2,5/2)$^+$	254.9 *2*	15 *4*	457.02	3/2$^+$			
		393.5 *2*	5 *2*	318.38	1/2$^-$,3/2$^-$			
		433.3 *2*	12 *2*	278.57	1/2$^+$			
		458.2 *1*	100 *7*	253.76	3/2$^+$	M1,E2[#]	0.0145 *19*	α(K)=0.0123 *18*; α(L)=0.00172 *10*; α(M)=0.000357 *18* α(N)=7.7×10^{-5} *5*; α(O)=1.15×10^{-5} *9*; α(P)=7.7×10^{-7} *15*
		601.3 *2*	48 *4*	110.57	3/2$^+$			
		703.5 *1*	31 *2*	8.42	7/2$^+$			
		711.9 *1*	6 *1*	0.0	1/2$^+$			
787.07	(1/2,3/2,5/2)	244.8 *2*	100	542.27	5/2$^+$			
797.4	15/2$^-$	153.8 *1*	7.4 *4*	643.6	13/2$^-$	M1+E2	0.36 *7*	α(K)=0.28 *3*; α(L)=0.06 *3*; α(M)=0.013 *6* α(N)=0.0027 *13*; α(O)=0.00039 *16*; α(P)=1.61×10^{-5} *5*
		518.6 *1*	100 *2*	278.81	11/2$^-$	E2	0.00892	B(E2)(W.u.)=54.5 *23* α(K)=0.00751 *11*; α(L)=0.001119 *16*; α(M)=0.000233 *4* α(N)=4.98×10^{-5} *7*; α(O)=7.39×10^{-6} *11*; α(P)=4.53×10^{-7} *7*
806.84	9/2$^+$	340.0 *5*	3.9 *20*	467.3	7/2$^+$			
		488.7 *3*	100 *20*	318.4	5/2$^+$	(E2)	0.01050	α(K)=0.00881 *13*; α(L)=0.001336 *19*; α(M)=0.000278 *4* α(N)=5.94×10^{-5} *9*; α(O)=8.80×10^{-6} *13*; α(P)=5.29×10^{-7} *8*
849.44	5/2$^+$	307.2[&] *2*		542.27	5/2$^+$			
		531.2 *2*	45 *18*	318.38	1/2$^-$,3/2$^-$			
		738.8 *1*	100 *9*	110.57	3/2$^+$			
864.1	13/2$^+$	319.4 *1*	14 *4*	544.74	11/2$^+$	(M1+E2)	0.0391 *22*	α(K)=0.033 *3*; α(L)=0.0050 *4*; α(M)=0.00104 *9* α(N)=0.000222 *18*; α(O)=3.30×10^{-5} *16*; α(P)=2.0×10^{-6} *3*
		600.7 *2*	100 *5*	263.1	9/2$^+$	E2	0.00604	α(K)=0.00511 *8*; α(L)=0.000734 *11*; α(M)=0.0001523 *22* α(N)=3.26×10^{-5} *5*; α(O)=4.88×10^{-6} *7*; α(P)=3.11×10^{-7} *5*
883.43	13/2$^-$	604.7 *1*	61 *8*	278.81	11/2$^-$	(M1+E2)	0.0071 *12*	α(K)=0.0061 *11*; α(L)=0.00081 *10*; α(M)=0.000168 *19* α(N)=3.6×10^{-5} *5*; α(O)=5.5×10^{-6} *7*; α(P)=3.8×10^{-7} *8*
		701.3 *1*	100 *7*	182.04	9/2$^-$	E2		
888.65	(3/2$^+$,5/2$^+$)	270.7 *2*	12 *4*	617.81	(3/2$^+$,5/2$^+$)			
		346.4 *2*	≤12	542.27	5/2$^+$			
		570.2 *2*	27 *12*	318.38	1/2$^-$,3/2$^-$			
		610.1 *2*	19 *4*	278.57	1/2$^+$			
		778.1 *1*	100 *12*	110.57	3/2$^+$			
		880.2 *1*	62 *8*	8.42	7/2$^+$			
		888.7 *1*	77 *8*	0.0	1/2$^+$			
906.70	1/2$^-$,3/2$^-$	588.3 *1*	100 *25*	318.38	1/2$^-$,3/2$^-$			
		628.1 *2*	75 *25*	278.57	1/2$^+$			

From ENSDF

$^{129}_{56}Ba_{73}$-8

Adopted Levels, Gammas (continued)

γ(^{129}Ba) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[†]	α[‡]	Comments
906.70	1/2⁻,3/2⁻	653.0 *2*	50 *25*	253.76	3/2⁺			
911.38	(1/2,3/2,5/2)	632.8 *2*	100	278.57	1/2⁺			
928.59	1/2⁺	674.8 *2*	18 *9*	253.76	3/2⁺			
		928.6 *1*	100 *9*	0.0	1/2⁺			
999.1	11/2⁺	192.4 *3*	2.5 *9*	806.84	9/2⁺	[M1+E2]	0.178 *19*	α(K)=0.144 *8*; α(L)=0.027 *9*; α(M)=0.0057 *20* α(N)=0.0012 *4*; α(O)=0.00017 *5*; α(P)=8.4×10^{-6} *5*
		531.7 *1*	100 *19*	467.3	7/2⁺	(E2)	0.00833	α(K)=0.00702 *10*; α(L)=0.001040 *15*; α(M)=0.000216 *3* α(N)=4.62×10^{-5} *7*; α(O)=6.87×10^{-6} *10*; α(P)=4.24×10^{-7} *6*
1062.65	3/2⁺	744.2 *2*	50 *25*	318.38	1/2⁻,3/2⁻			
		808.9 *1*	100 *25*	253.76	3/2⁺			
1068.1	(1/2,3/2,5/2)	814.3 *3*	100	253.76	3/2⁺			
1094.96	(3/2⁺,5/2⁺)	776.6 *2*	≤20	318.38	1/2⁻,3/2⁻			
		816.4 *1*	60 *20*	278.57	1/2⁺			
		841.2 *2*	80 *20*	253.76	3/2⁺			
		984.3 *2*	60 *10*	110.57	3/2⁺			
		1086.5 *2*	100 *10*	8.42	7/2⁺			
		1095.0 *3*	30 *10*	0.0	1/2⁺			
1119.85	1/2⁺	841.3 *2*	100 *15*	278.57	1/2⁺			
		866.0 *2*	≤15	253.76	3/2⁺			
		1119.9 *2*	23 *8*	0.0	1/2⁺			
1210.0	15/2⁻	412.6 *1*	15 *3*	797.4	15/2⁻	D	0.0213	α(K)=0.0183 *3*; α(L)=0.00237 *4*; α(M)=0.000488 *7* α(N)=0.0001054 *15*; α(O)=1.618×10^{-5} *23*; α(P)=1.192×10^{-6} *17*
		566.4 *1*	100 *4*	643.6	13/2⁻	(M1+E2)	0.0084 *14*	α(K)=0.0071 *12*; α(L)=0.00097 *11*; α(M)=0.000200 *20* α(N)=4.3×10^{-5} *5*; α(O)=6.5×10^{-6} *8*; α(P)=4.5×10^{-7} *9*
1210.5	15/2⁺	346.5 *2*	10 *2*	864.1	13/2⁺	(M1+E2)	0.0311 *24*	α(K)=0.026 *3*; α(L)=0.00389 *17*; α(M)=0.00081 *5* α(N)=0.000173 *8*; α(O)=2.58×10^{-5} *6*; α(P)=1.62×10^{-6} *25*
		665.8 *1*	100 *5*	544.74	11/2⁺	E2		B(E2)(W.u.)=60 *5*
1219.73	3/2⁺,5/2⁺	901.3 *4*	60 *20*	318.38	1/2⁻,3/2⁻			
		966.0 *3*	100 *20*	253.76	3/2⁺			
1258.1	(1/2,3/2,5/2)	1004.3 *3*	100	253.76	3/2⁺			
1318.4	17/2⁻	521.0 *1*	100 *10*	797.4	15/2⁻	(M1+E2)	0.0103 *16*	α(K)=0.0088 *15*; α(L)=0.00121 *11*; α(M)=0.000250 *21* α(N)=5.4×10^{-5} *5*; α(O)=8.1×10^{-6} *9*; α(P)=5.5×10^{-7} *11*
		674.8 *1*	94 *5*	643.6	13/2⁻	E2		
1389.54	(1/2,3/2,5/2)	771.6 *2*	60 *20*	617.81	(3/2⁺,5/2⁺)			
		1071.2 *2*	≤60	318.38	1/2⁻,3/2⁻			
		1135.8 *1*	100 *20*	253.76	3/2⁺			
1438.4	(13/2⁺)	631.7 *3*	100	806.84	9/2⁺	(Q)		
1439.23	3/2⁺,5/2⁺	1160.8 *1*	86 *14*	278.57	1/2⁺			
		1185.6 *1*	71 *14*	253.76	3/2⁺			
		1328.4 *1*	100 *14*	110.57	3/2⁺			
		1439.2 *1*	43 *14*	0.0	1/2⁺			
1475.4	19/2⁻	157.0 *1*	6.7 *18*	1318.4	17/2⁻	(M1+E2)	0.34 *6*	α(K)=0.27 *3*; α(L)=0.056 *25*; α(M)=0.012 *6* α(N)=0.0025 *12*; α(O)=0.00036 *15*; α(P)=1.52×10^{-5} *5*

From ENSDF

$^{129}_{56}Ba_{73}$-9

Adopted Levels, Gammas (continued)

γ(^{129}Ba) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[†]	α[‡]	Comments
1475.4	19/2$^-$	678.0 *1*	100 *2*	797.4	15/2$^-$	E2		B(E2)(W.u.)=9.E+1 *4*
1545.3	17/2$^-$	335.7 *3*	7.3 *13*	1210.0	15/2$^-$	(M1+E2)	0.0340 *23*	α(K)=0.029 *3*; α(L)=0.00428 *24*; α(M)=0.00089 *6* α(N)=0.000190 *11*; α(O)=2.84×10^{-5} *9*; α(P)=1.8×10^{-6} *3*
		661.8 *1*	100 *10*	883.43	13/2$^-$	Q		
		747.8 *2*	20 *4*	797.4	15/2$^-$	D		
1590.2	17/2$^+$	379.8 *3*	13 *9*	1210.5	15/2$^+$	[M1+E2]	0.0241 *23*	α(K)=0.0203 *24*; α(L)=0.00295 *5*; α(M)=0.000613 *13* α(N)=0.0001314 *21*; α(O)=1.97×10^{-5} *5*; α(P)=1.26×10^{-6} *21*
		726.1 *2*	100 *5*	864.1	13/2$^+$	E2		
1610.20	(5/2$^-$)	760.6 *2*	≤19	849.44	5/2$^+$			
		1068.0 *1*	63 *6*	542.27	5/2$^+$			
		1150.9 *2*	13 *6*	459.29	5/2$^+$			
		1291.8 *1*	100 *13*	318.38	1/2$^-$,3/2$^-$			
		1356.4 *2*	31 *6*	253.76	3/2$^+$			
		1610.2 *2*	19 *6*	0.0	1/2$^+$	[M2]		
1635.40	1/2$^+$	1017.6 *1*	100 *11*	617.81	(3/2$^+$,5/2$^+$)			
		1356.6 *2*	56 *11*	278.57	1/2$^+$			
		1381.8 *2*	11 *6*	253.76	3/2$^+$			
1654.6	(15/2$^+$)	216.5 *3*	1.8 *9*	1438.4	(13/2$^+$)	[M1+E2]	0.124 *9*	α(K)=0.101 *3*; α(L)=0.018 *5*; α(M)=0.0037 *11* α(N)=0.00079 *22*; α(O)=0.00012 *3*; α(P)=6.0×10^{-6} *5*
		655.6 *2*	100 *26*	999.1	11/2$^+$	(Q)		
1778.28	(1/2,3/2,5/2$^+$)	1321.3 *2*	60 *20*	457.02	3/2$^+$			
		1459.7 *2*	100 *20*	318.38	1/2$^-$,3/2$^-$			
		1499.8 *2*	80 *20*	278.57	1/2$^+$			
		1524.5 *3*	80 *20*	253.76	3/2$^+$			
		1778.3 *2*	80 *20*	0.0	1/2$^+$			
1804.80	3/2$^+$,5/2$^+$	1486.7 *3*	≤40	318.38	1/2$^-$,3/2$^-$			
		1550.9 *2*	100 *20*	253.76	3/2$^+$			
1845.0	19/2$^-$	526.6 *1*	93 *9*	1318.4	17/2$^-$	(M1+E2)	0.0101 *16*	α(K)=0.0086 *14*; α(L)=0.00117 *11*; α(M)=0.000243 *21* α(N)=5.2×10^{-5} *5*; α(O)=7.9×10^{-6} *9*; α(P)=5.4×10^{-7} *11*
		634.9 *1*	100 *5*	1210.0	15/2$^-$	E2	0.00524	α(K)=0.00445 *7*; α(L)=0.000631 *9*; α(M)=0.0001307 *19* α(N)=2.80×10^{-5} *4*; α(O)=4.20×10^{-6} *6*; α(P)=2.72×10^{-7} *4*
1866.33	3/2$^+$,5/2$^+$	1409.3 *1*	100 *20*	457.02	3/2$^+$			
		1547.9 *3*	20 *10*	318.38	1/2$^-$,3/2$^-$			
		1587.8 *2*	60 *20*	278.57	1/2$^+$			
		1755.6[&] *2*	20 *10*	110.57	3/2$^+$			
		1866.3 *2*	40 *20*	0.0	1/2$^+$			
1989.9	19/2$^+$	400.0 *3*	6.3 *14*	1590.2	17/2$^+$	[M1+E2]	0.0209 *23*	α(K)=0.0177 *22*; α(L)=0.00254 *5*; α(M)=0.000527 *8* α(N)=0.0001129 *21*; α(O)=1.69×10^{-5} *7*; α(P)=1.10×10^{-6} *19*
		779.3 *1*	100 *5*	1210.5	15/2$^+$	E2		B(E2)(W.u.)=58 *9*
1990.50	1/2$^+$	1061.9 *2*	100 *25*	928.59	1/2$^+$			
		1533.5 *3*	25 *13*	457.02	3/2$^+$			
		1672.1 *3*	25 *13*	318.38	1/2$^-$,3/2$^-$			

From ENSDF

$^{129}_{56}Ba_{73}$-10

Adopted Levels, Gammas (continued)

γ(^{129}Ba) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[†]	α[‡]	Comments
1990.50	1/2$^+$	1712.0[&] *3*	50 *25*	278.57	1/2$^+$			
		1736.7 *2*	75 *25*	253.76	3/2$^+$			
		1990.5 *3*	50 *25*	0.0	1/2$^+$			
2071.60	(1/2,3/2,5/2$^+$)	1793.0 *2*	100 *20*	278.57	1/2$^+$			
		2071.6 *3*	≤40	0.0	1/2$^+$			
2146.3	(21/2$^-$)	670.8 *2*	47 *5*	1475.4	19/2$^-$	D+Q		
		827.9 *2*	100 *16*	1318.4	17/2$^-$	(Q)		
2171.4	(17/2$^+$)	733.0 *3*	100	1438.4	(13/2$^+$)			
2281.2	(23/2$^-$)	805.8 *1*	100	1475.4	19/2$^-$	Q		
2285.31	(1/2,3/2,5/2)	1966.9 *2*	≤50	318.38	1/2$^-$,3/2$^-$			
		2285.3 *3*	≤100	0.0	1/2$^+$			
2336.7	(21/2$^-$)	492.3 *3*	49 *8*	1845.0	19/2$^-$			
		791.5 *1*	100 *8*	1545.3	17/2$^-$	(Q)		
		861.3 *2*	6 *4*	1475.4	19/2$^-$			
2340.2	(19/2$^+$)	685.6 *2*	100	1654.6	(15/2$^+$)	Q		
2369.40	(1/2,3/2,5/2)	1910.1 *2*	100 *10*	459.29	5/2$^+$			
2387.4	(13/2$^-$ to 21/2$^-$)	1069.7 *7*	100	1318.4	17/2$^-$			
2412.9	21/2$^+$	423.2 *2*	9 *4*	1989.9	19/2$^+$	D		
		822.7 *1*	100 *8*	1590.2	17/2$^+$	E2		
2429.7	(19/2$^+$)	258.0 *5*	33 *13*	2171.4	(17/2$^+$)			
		775.2 *3*	100 *47*	1654.6	(15/2$^+$)	(Q)		
2462.6	(23/2$^+$)	126.0 *1*	33 *5*	2336.7	(21/2$^-$)	(E1)	0.1196	B(E1)(W.u.)=6.2×10^{-7} *11* α(K)=0.1025 *15*; α(L)=0.01368 *20*; α(M)=0.00280 *4* α(N)=0.000597 *9*; α(O)=8.83×10^{-5} *13*; α(P)=5.49×10^{-6} *8* Mult.: 1992By03 deduced α(t)=0.1 *2* from intensity balance.
		316.3 *1*	11 *3*	2146.3	(21/2$^-$)	[E1]	0.00995	B(E1)(W.u.)=1.3×10^{-8} *4* α(K)=0.00858 *12*; α(L)=0.001096 *16*; α(M)=0.000225 *4* α(N)=4.82×10^{-5} *7*; α(O)=7.28×10^{-6} *11*; α(P)=5.02×10^{-7} *7*
		472.8 *1*	100 *7*	1989.9	19/2$^+$	(E2)	0.01151	B(E2)(W.u.)=0.0088 *7* α(K)=0.00965 *14*; α(L)=0.001478 *21*; α(M)=0.000308 *5* α(N)=6.58×10^{-5} *10*; α(O)=9.72×10^{-6} *14*; α(P)=5.78×10^{-7} *8*
2509.9	(19/2$^+$)	855.4 *3*	100	1654.6	(15/2$^+$)			
2599.6	(23/2$^-$)	453.6 *2*	21 *4*	2146.3	(21/2$^-$)	(M1+E2)	0.0149 *20*	α(K)=0.0126 *19*; α(L)=0.00177 *10*; α(M)=0.000367 *18* α(N)=7.9×10^{-5} *5*; α(O)=1.19×10^{-5} *9*; α(P)=7.9×10^{-7} *15*
		754.5 *1*	100 *4*	1845.0	19/2$^-$	Q		
		1124.3 *3*	18 *2*	1475.4	19/2$^-$	(Q)		
2653.7	(21/2$^+$)	1063.5 *2*	100	1590.2	17/2$^+$	Q		
2674.7	(21/2$^+$)	164.9 *3*	52 *3*	2509.9	(19/2$^+$)	(M1+E2)	0.29 *5*	α(K)=0.229 *22*; α(L)=0.047 *20*; α(M)=0.010 *5* α(N)=0.0021 *9*; α(O)=0.00030 *11*; α(P)=1.32×10^{-5} *5*
		245.1 *3*	100 *23*	2429.7	(19/2$^+$)	(M1+E2)	0.085 *3*	α(K)=0.0702 *13*; α(L)=0.0117 *24*; α(M)=0.0024 *6* α(N)=0.00052 *11*; α(O)=7.6×10^{-5} *13*; α(P)=4.2×10^{-6} *5*
		334.5 *3*	29 *13*	2340.2	(19/2$^+$)	(M1+E2)	0.0343 *23*	α(K)=0.029 *3*; α(L)=0.00432 *25*; α(M)=0.00090 *6* α(N)=0.000193 *12*; α(O)=2.87×10^{-5} *9*; α(P)=1.8×10^{-6} *3*

From ENSDF

$^{129}_{56}Ba_{73}$-11

Adopted Levels, Gammas (continued)

γ(^{129}Ba) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[†]	α[‡]	Comments
2674.7	(21/2$^+$)	1084.5 *2*	58 *16*	1590.2	17/2$^+$	(Q)		
2742.6	(17/2 to 21/2$^-$)	1424.2 *5*	100	1318.4	17/2$^-$			
2815.5	23/2$^+$	402.7 *3*	10 *2*	2412.9	21/2$^+$	(M1+E2)	0.0205 *23*	α(K)=0.0174 *22*; α(L)=0.00249 *6*; α(M)=0.000516 *9* α(N)=0.0001107 *22*; α(O)=1.66×10^{-5} *7*; α(P)=1.08×10^{-6} *19*
		825.6 *1*	100 *6*	1989.9	19/2$^+$	E2		
2874.0	(23/2$^+$)	199.3 *1*	24 *4*	2674.7	(21/2$^+$)	(M1+E2)	0.159 *16*	α(K)=0.129 *6*; α(L)=0.024 *8*; α(M)=0.0050 *17* α(N)=0.0011 *4*; α(O)=0.00015 *5*; α(P)=7.6×10^{-6} *5*
		884.1 *1*	100 *5*	1989.9	19/2$^+$	Q		
2903.1	(23/2$^+$)	562.9 *3*	100	2340.2	(19/2$^+$)	(Q)		
2913.7	(25/2$^+$)	451.0 *2*	100	2462.6	(23/2$^+$)	(M1+E2)	0.0151 *20*	α(K)=0.0128 *19*; α(L)=0.00180 *10*; α(M)=0.000373 *17* α(N)=8.0×10^{-5} *4*; α(O)=1.21×10^{-5} *9*; α(P)=8.0×10^{-7} *15*
3044.2		301.6 *2*	100 *33*	2742.6	(17/2 to 21/2$^-$)	D		
		656.9 *3*	100 *50*	2387.4	(13/2$^-$ to 21/2$^-$)			
3079.1	25/2$^+$	205.1 *1*	78 *9*	2874.0	(23/2$^+$)	(M1+E2)	0.146 *13*	α(K)=0.119 *5*; α(L)=0.021 *7*; α(M)=0.0045 *14* α(N)=0.0010 *3*; α(O)=0.00014 *4*; α(P)=7.0×10^{-6} *5*
		263.5 *1*	100 *10*	2815.5	23/2$^+$	(M1+E2)	0.0685	α(K)=0.0569 *19*; α(L)=0.0092 *15*; α(M)=0.0019 *4* α(N)=0.00041 *7*; α(O)=6.0×10^{-5} *8*; α(P)=3.4×10^{-6} *4*
		425.4 *3*	13 *3*	2653.7	(21/2$^+$)	E2	0.01557	B(E2)(W.u.)=45 *16* α(K)=0.01298 *19*; α(L)=0.00205 *3*; α(M)=0.000429 *6* α(N)=9.15×10^{-5} *13*; α(O)=1.344×10^{-5} *19*; α(P)=7.69×10^{-7} *11*
		666.4 *3*	44 *7*	2412.9	21/2$^+$	E2		B(E2)(W.u.)=16 *5*
3094.2	(25/2$^-$)	812.9 *3*	48 *8*	2281.2	(23/2$^-$)	D+Q		
		948.1 *2*	100 *8*	2146.3	(21/2$^-$)	(Q)		
3179.4	(27/2$^-$)	898.2 *1*	100	2281.2	(23/2$^-$)	Q		
3368.2	(27/2$^+$)	289.1 *1*	100 *6*	3079.1	25/2$^+$	(M1+E2)	0.0521 *15*	α(K)=0.0436 *24*; α(L)=0.0068 *9*; α(M)=0.00142 *19* α(N)=0.00030 *4*; α(O)=4.5×10^{-5} *4*; α(P)=2.7×10^{-6} *4*
		454.4 *1*	6.3 *10*	2913.7	(25/2$^+$)	(M1+E2)	0.0148 *20*	α(K)=0.0126 *19*; α(L)=0.00176 *10*; α(M)=0.000365 *18* α(N)=7.8×10^{-5} *5*; α(O)=1.18×10^{-5} *9*; α(P)=7.9×10^{-7} *15*
		552.6 *1*	2.8 *10*	2815.5	23/2$^+$			
		905.5 *1*	4.3 *5*	2462.6	(23/2$^+$)	(Q)		
3378.9	(27/2$^+$)	465.5 *3*	100 *12*	2913.7	(25/2$^+$)	(M1+E2)	0.0139 *19*	α(K)=0.0118 *18*; α(L)=0.00165 *10*; α(M)=0.000341 *19* α(N)=7.3×10^{-5} *5*; α(O)=1.10×10^{-5} *9*; α(P)=7.4×10^{-7} *14*
		916.3 *1*	35 *8*	2462.6	(23/2$^+$)	(Q)		
3430.6	(27/2$^-$)	830.9 *1*	100 *13*	2599.6	(23/2$^-$)	(Q)		
		1149.4 *3*	29 *4*	2281.2	(23/2$^-$)	(Q)		
3525.3	(27/2 to 31/2$^-$)	345.9 *3*	100	3179.4	(27/2$^-$)			
3687.5	(27/2$^-$)	508.2[@] *2*	100[@] *15*	3179.4	(27/2$^-$)	(D)		
		643.4 *3*	24 *13*	3044.2				
		1406.7 *3*	47 *11*	2281.2	(23/2$^-$)	(Q)		
3704.5	(31/2$^-$)	525.1 *2*	100 *21*	3179.4	(27/2$^-$)	(Q)		

From ENSDF

$^{129}_{56}Ba_{73}$-12

Adopted Levels, Gammas (continued)

γ(^{129}Ba) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[†]	α[‡]	Comments
3704.5	(31/2$^-$)	660.3 *4*	63 *42*	3044.2				
3741.8	(29/2$^+$)	362.9 *1*	5 *1*	3378.9	(27/2$^+$)	(M1+E2)	0.0273 *24*	α(K)=0.0230 *25*; α(L)=0.00338 *9*; α(M)=0.000703 *25* α(N)=0.000150 *5*; α(O)=2.25×10^{-5} *4*; α(P)=1.43×10^{-6} *23*
		373.6 *1*	100 *15*	3368.2	(27/2$^+$)	(M1+E2)	0.0252 *24*	α(K)=0.0213 *24*; α(L)=0.00310 *6*; α(M)=0.000644 *16* α(N)=0.000138 *3*; α(O)=2.06×10^{-5} *4*; α(P)=1.32×10^{-6} *22*
		662.8 *2*	50 *7*	3079.1	25/2$^+$	(Q)		
3848.5	(27/2 to 31/2$^+$)	480.3 *3*	100	3368.2	(27/2$^+$)			
3852.8		327.5 *3*	100	3525.3	(27/2 to 31/2$^-$)			
3895.9	(29/2$^+$)	517.0 *1*	100 *19*	3378.9	(27/2$^+$)	D		
		982.2 *1*	62 *10*	2913.7	(25/2$^+$)	Q		
3948.1	(29/2$^-$)	243.5 *2*	58 *3*	3704.5	(31/2$^-$)	(M1+E2)	0.087 *3*	α(K)=0.0716 *12*; α(L)=0.0119 *25*; α(M)=0.0025 *6* α(N)=0.00053 *11*; α(O)=7.8×10^{-5} *13*; α(P)=4.3×10^{-6} *5*
		260.6 *1*	100 *5*	3687.5	(27/2$^-$)	(M1+E2)	0.0707 *11*	α(K)=0.0587 *18*; α(L)=0.0095 *16*; α(M)=0.0020 *4* α(N)=0.00043 *8*; α(O)=6.2×10^{-5} *9*; α(P)=3.6×10^{-6} *4*
		768.7 *1*	36 *5*	3179.4	(27/2$^-$)	D		
		854.0 *4*	37 *6*	3094.2	(25/2$^-$)	(Q)		
4054.4	(31/2$^+$)	312.6 *1*	100 *13*	3741.8	(29/2$^+$)	(M1+E2)	0.0416 *21*	α(K)=0.035 *3*; α(L)=0.0053 *5*; α(M)=0.00111 *11* α(N)=0.000237 *21*; α(O)=3.52×10^{-5} *20*; α(P)=2.1×10^{-6} *3*
		675.5 *2*	4 *2*	3378.9	(27/2$^+$)			
		686.2 *1*	83 *4*	3368.2	(27/2$^+$)	(Q)		
4137.6	(31/2$^-$)	958.2 *1*	100	3179.4	(27/2$^-$)	Q		
4286.1	(31/2$^-$)	338.1 *1*	100 *4*	3948.1	(29/2$^-$)	(M1+E2)	0.0333 *23*	α(K)=0.028 *3*; α(L)=0.00419 *22*; α(M)=0.00087 *6* α(N)=0.000186 *10*; α(O)=2.78×10^{-5} *8*; α(P)=1.7×10^{-6} *3*
		598.9 *3*	12 *2*	3687.5	(27/2$^-$)			
		855.5 *1*	27 *4*	3430.6	(27/2$^-$)	Q		
4320.2	(31/2$^+$)	424.4 *2*	32 *16*	3895.9	(29/2$^+$)			
		471.5 *3*	100 *53*	3848.5	(27/2 to 31/2$^+$)			
		941.2 *2*	53 *16*	3378.9	(27/2$^+$)			
4333.6		485.1 *3*	100	3848.5	(27/2 to 31/2$^+$)			
4351.4	(31/2$^-$)	920.9 *2*	88 *15*	3430.6	(27/2$^-$)	Q		
		1171.7 *5*	100 *35*	3179.4	(27/2$^-$)			
4458.7	(31/2$^+$)	562.7 *2*	88 *25*	3895.9	(29/2$^+$)			
		1080.1 *3*	≤100	3378.9	(27/2$^+$)			
4502.8	(33/2$^+$)	448.4 *1*	100 *17*	4054.4	(31/2$^+$)	D		
		761.2 *3*	50 *7*	3741.8	(29/2$^+$)	(Q)		
4617.1	(33/2$^-$)	331.0 *1*	100 *6*	4286.1	(31/2$^-$)	(M1+E2)	0.0353 *23*	α(K)=0.030 *3*; α(L)=0.0045 *3*; α(M)=0.00093 *7* α(N)=0.000199 *13*; α(O)=2.96×10^{-5} *11*; α(P)=1.8×10^{-6} *3*
		669.0 *2*	27 *3*	3948.1	(29/2$^-$)	(Q)		
4663.9	(31/2 to 35/2$^+$)	330.4 *3*	12 *6*	4333.6				
		609.5 *3*	100 *29*	4054.4	(31/2$^+$)			
4871.5	(35/2$^+$)	368.6 *2*	46 *12*	4502.8	(33/2$^+$)	(M1+E2)	0.0261 *24*	α(K)=0.0221 *24*; α(L)=0.00323 *7*; α(M)=0.000671 *20* α(N)=0.000144 *4*; α(O)=2.15×10^{-5} *4*; α(P)=1.37×10^{-6} *23*
		817.1 *1*	100 *5*	4054.4	(31/2$^+$)	Q		

From ENSDF

$^{129}_{56}Ba_{73}$-13

Adopted Levels, Gammas (continued)

γ(^{129}Ba) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[†]	α[‡]	Comments
4951.1	(33/2$^+$)	1055.2 *5*	100	3895.9	(29/2$^+$)			
5047.4	(35/2$^-$)	430.2 *1*	100 *7*	4617.1	(33/2$^-$)	(M1+E2)	0.0171 *21*	α(K)=0.0145 *20*; α(L)=0.00206 *8*; α(M)=0.000427 *14* α(N)=9.2×10^{-5} *4*; α(O)=1.38×10^{-5} *8*; α(P)=9.1×10^{-7} *17*
		761.3 *3*	33 *4*	4286.1	(31/2$^-$)			
5152.0	(35/2$^-$)	1014.4 *3*	100	4137.6	(31/2$^-$)	(Q)		
5379.6	(37/2$^+$)	508.2[@] *2*	100[@] *14*	4871.5	(35/2$^+$)	D		
		876.4 *6*	65 *19*	4502.8	(33/2$^+$)			
5469.3	(37/2$^-$)	421.9 *1*	78 *8*	5047.4	(35/2$^-$)	(M1+E2)	0.0181 *22*	α(K)=0.0153 *21*; α(L)=0.00218 *8*; α(M)=0.000451 *12* α(N)=9.7×10^{-5} *4*; α(O)=1.45×10^{-5} *8*; α(P)=9.6×10^{-7} *17*
		852.2 *2*	100 *9*	4617.1	(33/2$^-$)	Q		
5807.6	(39/2$^+$)	428.0 *3*	36 *12*	5379.6	(37/2$^+$)	(M1+E2)	0.0174 *21*	α(K)=0.0147 *20*; α(L)=0.00209 *8*; α(M)=0.000433 *14* α(N)=9.3×10^{-5} *4*; α(O)=1.40×10^{-5} *8*; α(P)=9.2×10^{-7} *17*
		935.9 *3*	100 *10*	4871.5	(35/2$^+$)	(Q)		
5975.6	(39/2$^-$)	506.3 *2*	100 *34*	5469.3	(37/2$^-$)	D		
		928.1 *5*	50 *20*	5047.4	(35/2$^-$)	(Q)		
6223.8	(39/2$^-$)	1071.8 *4*	100	5152.0	(35/2$^-$)	(Q)		
6352.1	(41/2$^+$)	544.4 *3*	72 *44*	5807.6	(39/2$^+$)			
		972.7 *3*	100 *39*	5379.6	(37/2$^+$)	(Q)		
6450.7	(41/2$^-$)	475.1 *3*	33 *10*	5975.6	(39/2$^-$)			
		981.6 *3*	100 *16*	5469.3	(37/2$^-$)	(Q)		
6843.6	(43/2$^+$)	491.6 *3*	8 *4*	6352.1	(41/2$^+$)			
		1035.6 *7*	100 *20*	5807.6	(39/2$^+$)			
6975.3	(43/2$^-$)	524.6 *3*	100 *50*	6450.7	(41/2$^-$)			
		999.6 *3*	56 *25*	5975.6	(39/2$^-$)			
7434.0	(45/2$^+$)	590.3 *3*	18 *9*	6843.6	(43/2$^+$)			
		1082.1 *5*	100 *46*	6352.1	(41/2$^+$)			
7501.9	(45/2$^-$)	1051.1 *5*	100	6450.7	(41/2$^-$)			
7964.1	(47/2$^+$)	530.0 *3*	5 *3*	7434.0	(45/2$^+$)			
		1120.7 *5*	100 *37*	6843.6	(43/2$^+$)			
9144.2	(51/2$^+$)	1180.1 *5*	100	7964.1	(47/2$^+$)			
10388.3	(55/2$^+$)	1244.1 *10*	100	9144.2	(51/2$^+$)			

[†] Multipolarities are from ^{120}Sn(^{12}C,3nγ),^{116}Cd(^{18}O,5nγ), unless otherwise noted. The assignments are based on γ(θ), DCO data in general, and from linear polarization data for selected transitions. RUL is also used for levels of known half-lives, or assumed ≈10 ns resolving time in γγ coincident data in high-spin studies.

[‡] δ(E2/M1)=0.5 assumed for M1+E2 transitions from high-spin levels, when δ not given.

[#] From α(exp) in ^{129}La ε decay.

[@] Multiply placed with intensity suitably divided.

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

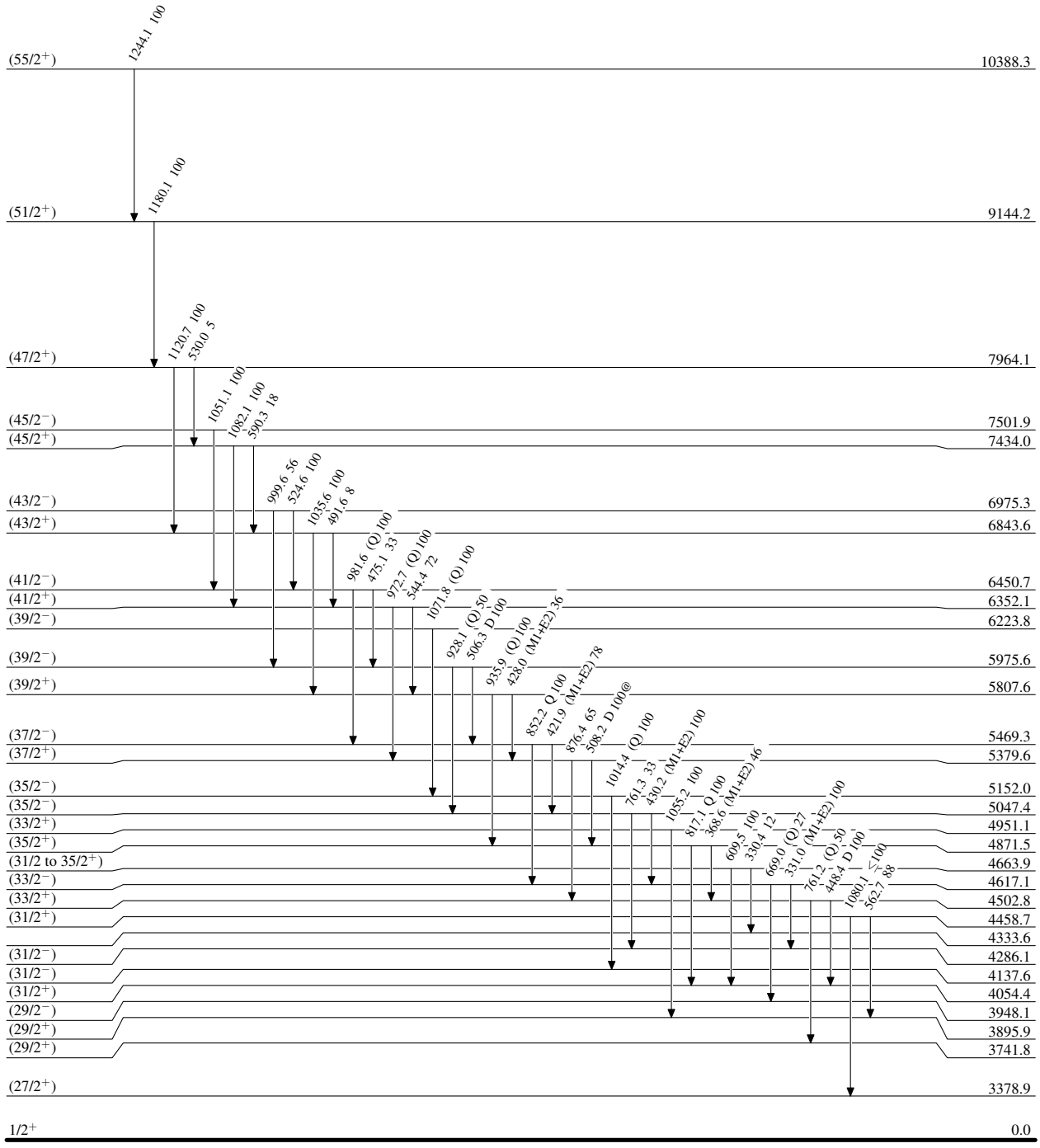
From ENSDF

$^{129}_{56}Ba_{73}$-14

Adopted Levels, Gammas

Level Scheme

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

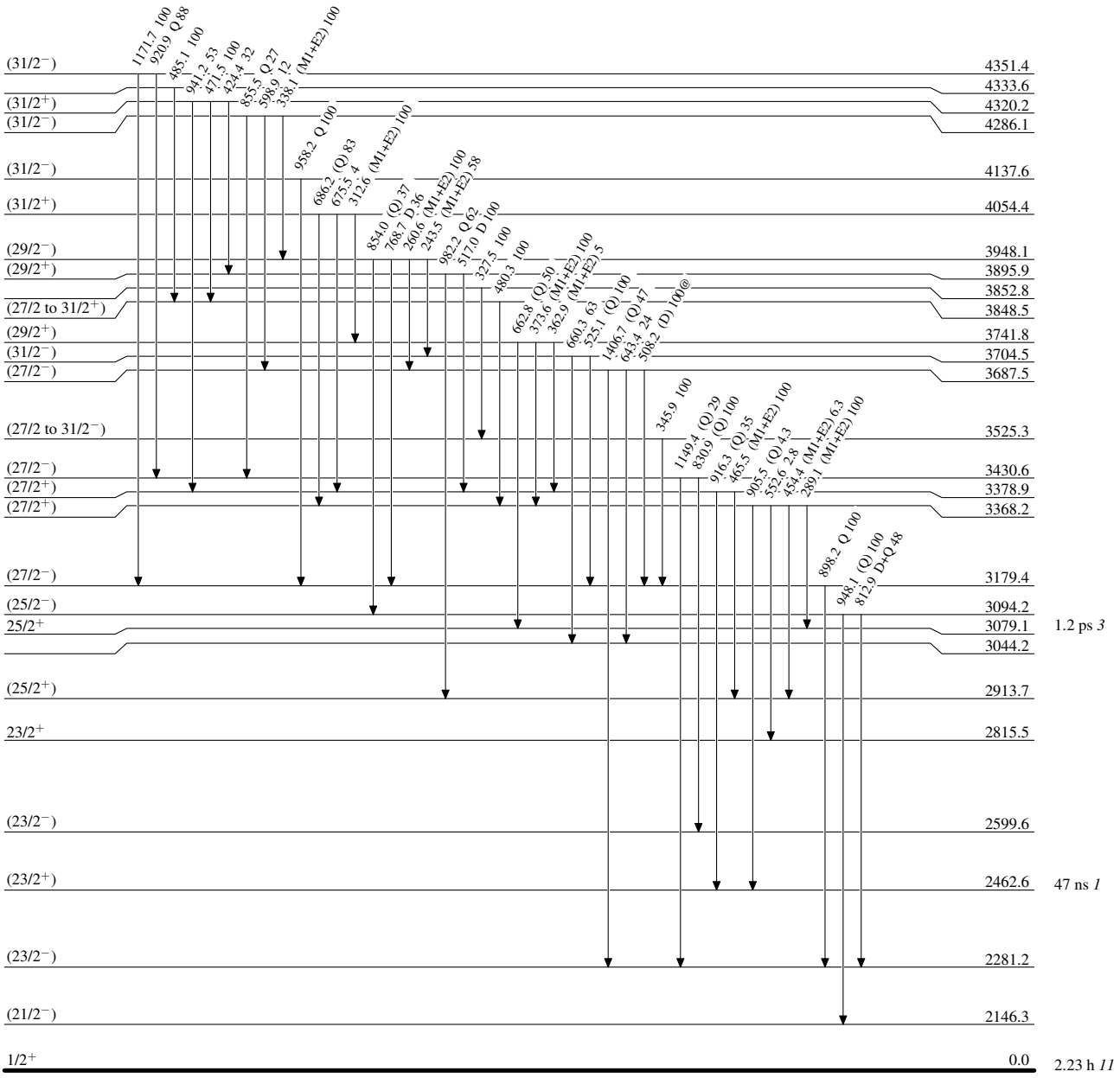


$^{129}_{56}Ba_{73}$

Adopted Levels, Gammas

Level Scheme (continued)

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

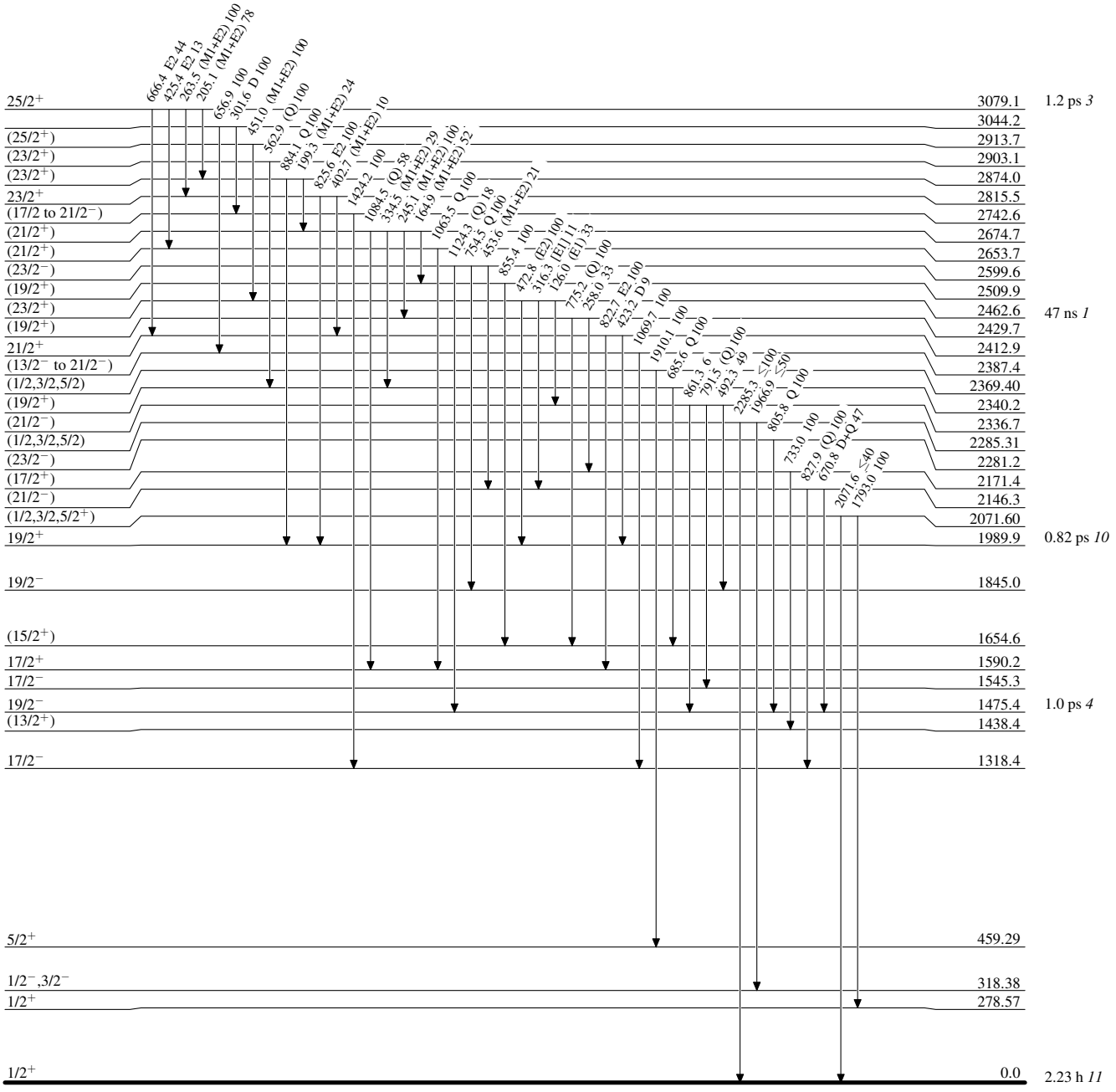


$^{129}_{56}Ba_{73}$

Adopted Levels, Gammas

Level Scheme (continued)

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



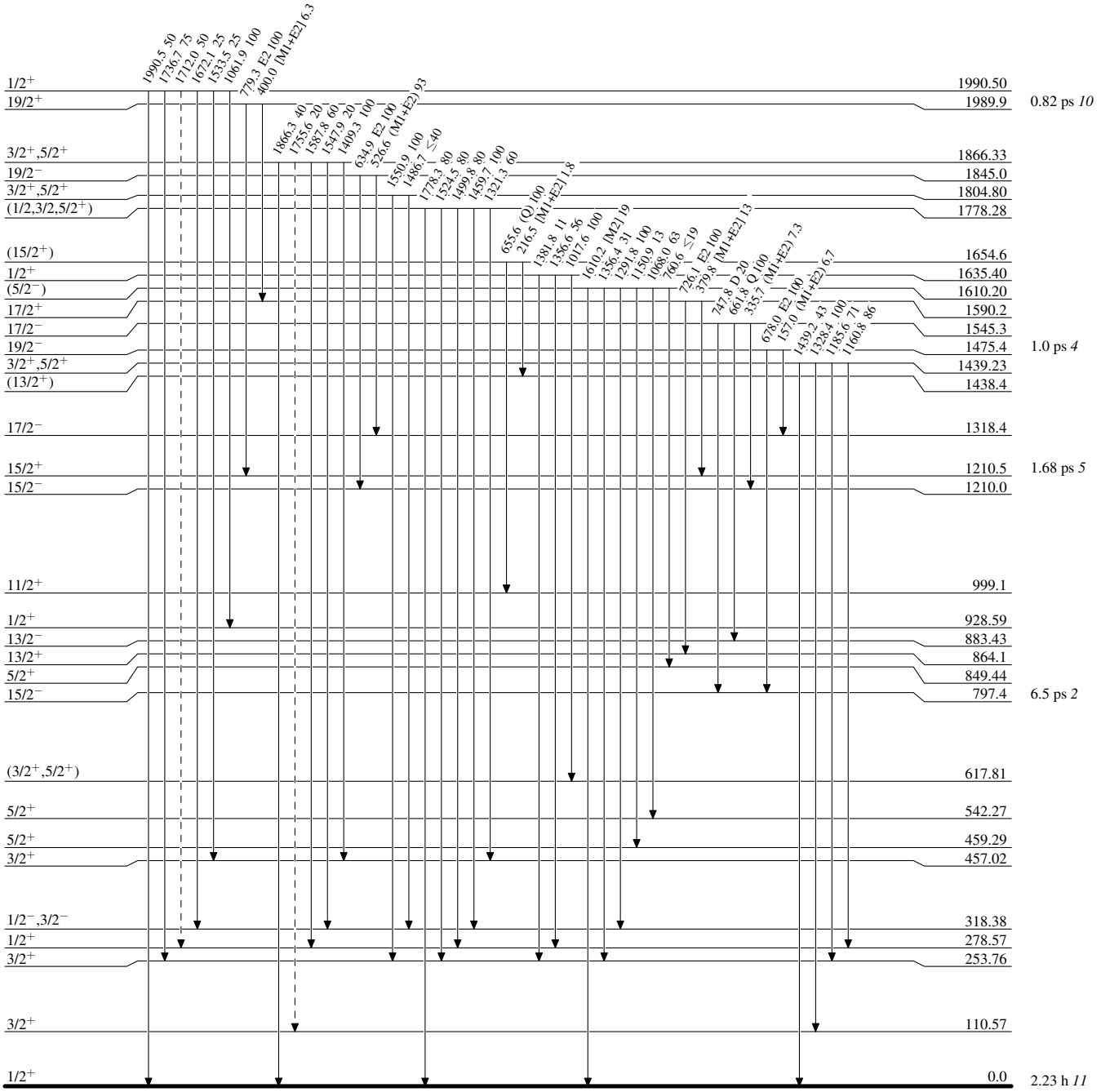
$^{129}_{56}Ba_{73}$

Adopted Levels, Gammas

Level Scheme (continued)

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

Legend
γ Decay (Uncertain)

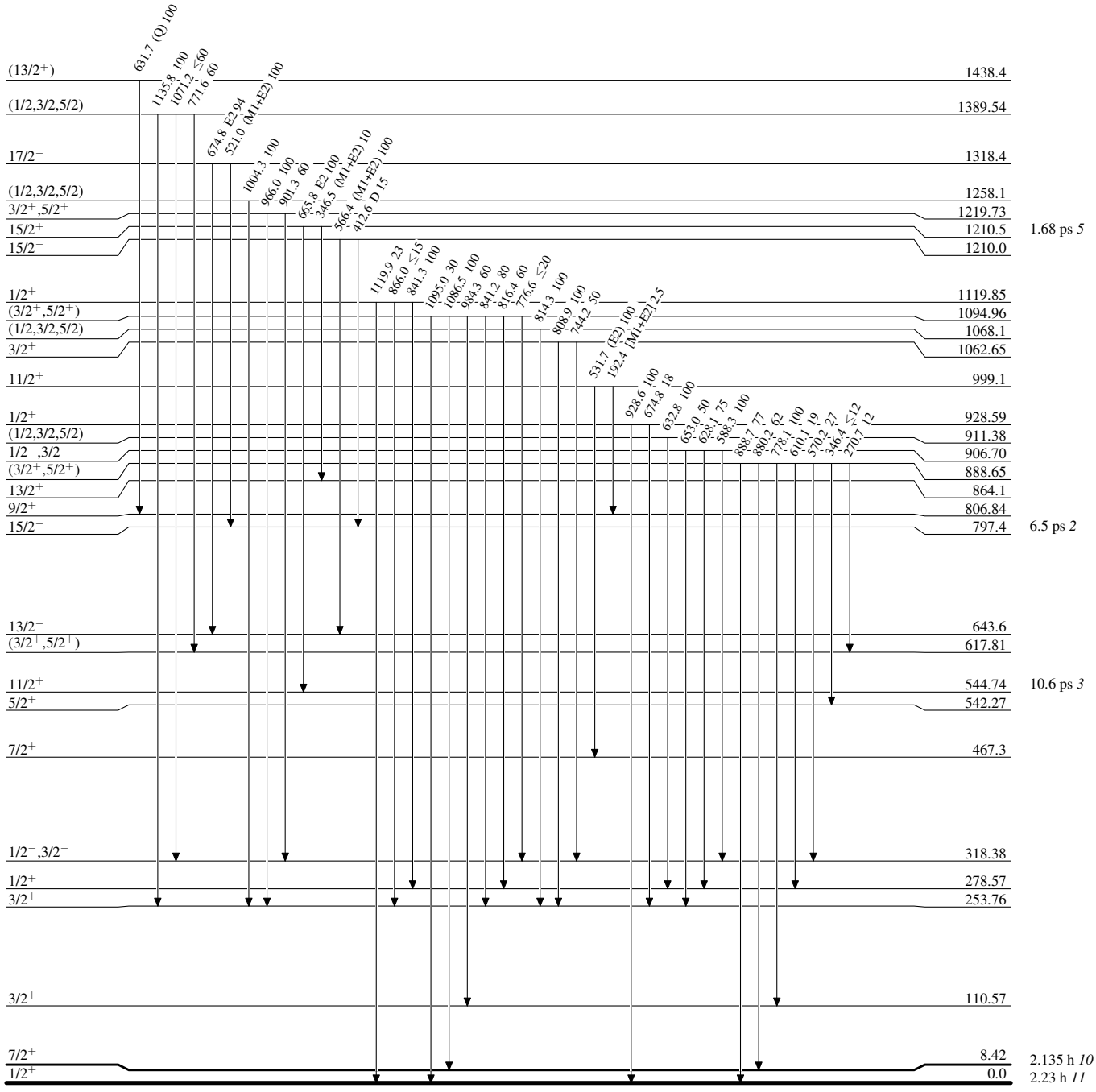


$^{129}_{56}Ba_{73}$

Adopted Levels, Gammas

Level Scheme (continued)

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



$^{129}_{56}Ba_{73}$

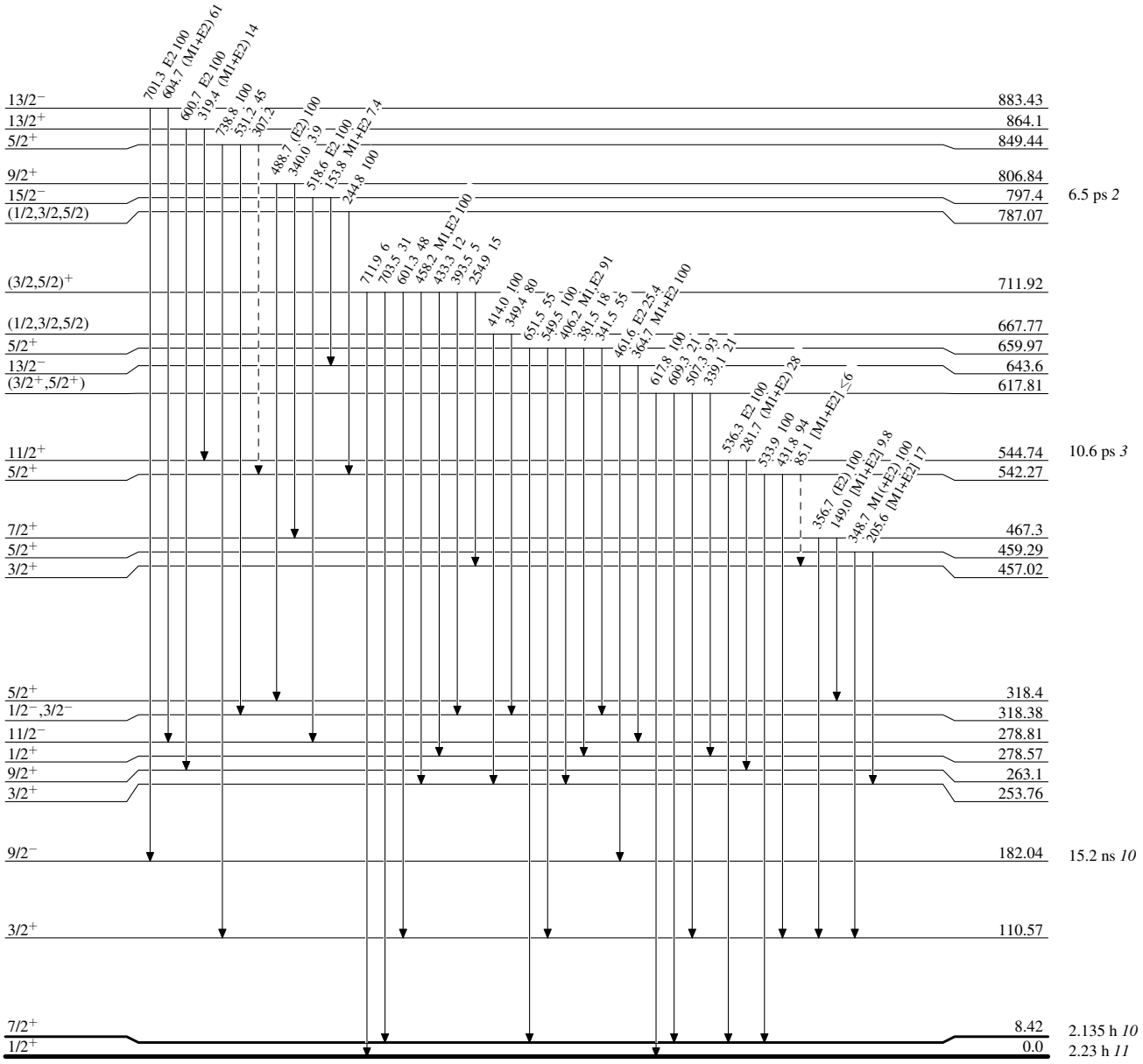
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

γ Decay (Uncertain)



$^{129}_{56}Ba_{73}$

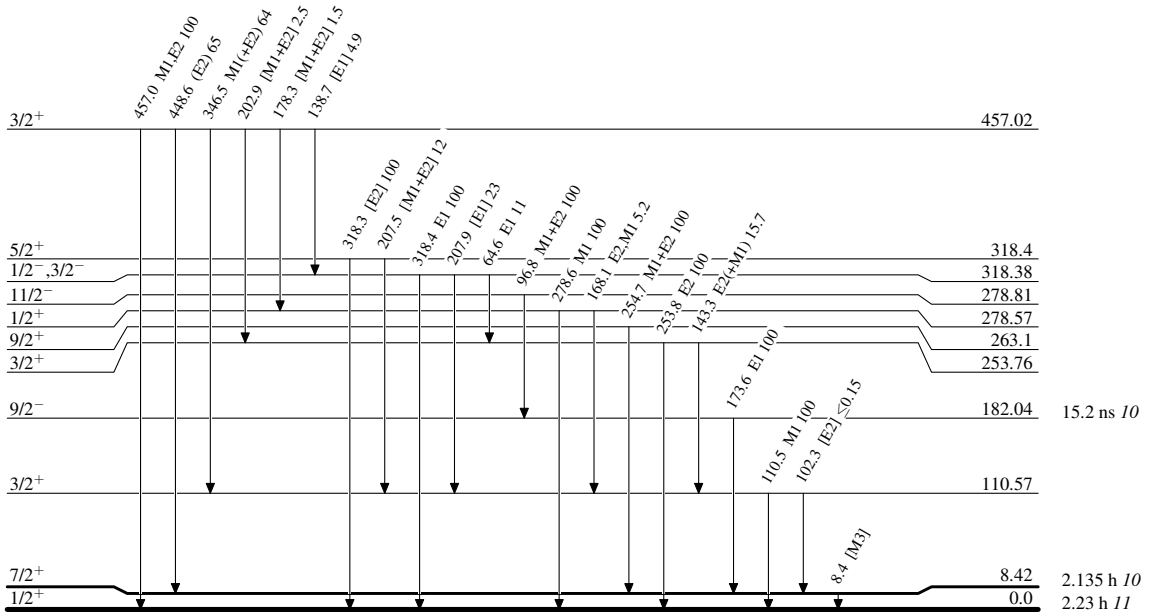
Adopted Levels, Gammas

Legend

Level Scheme (continued)

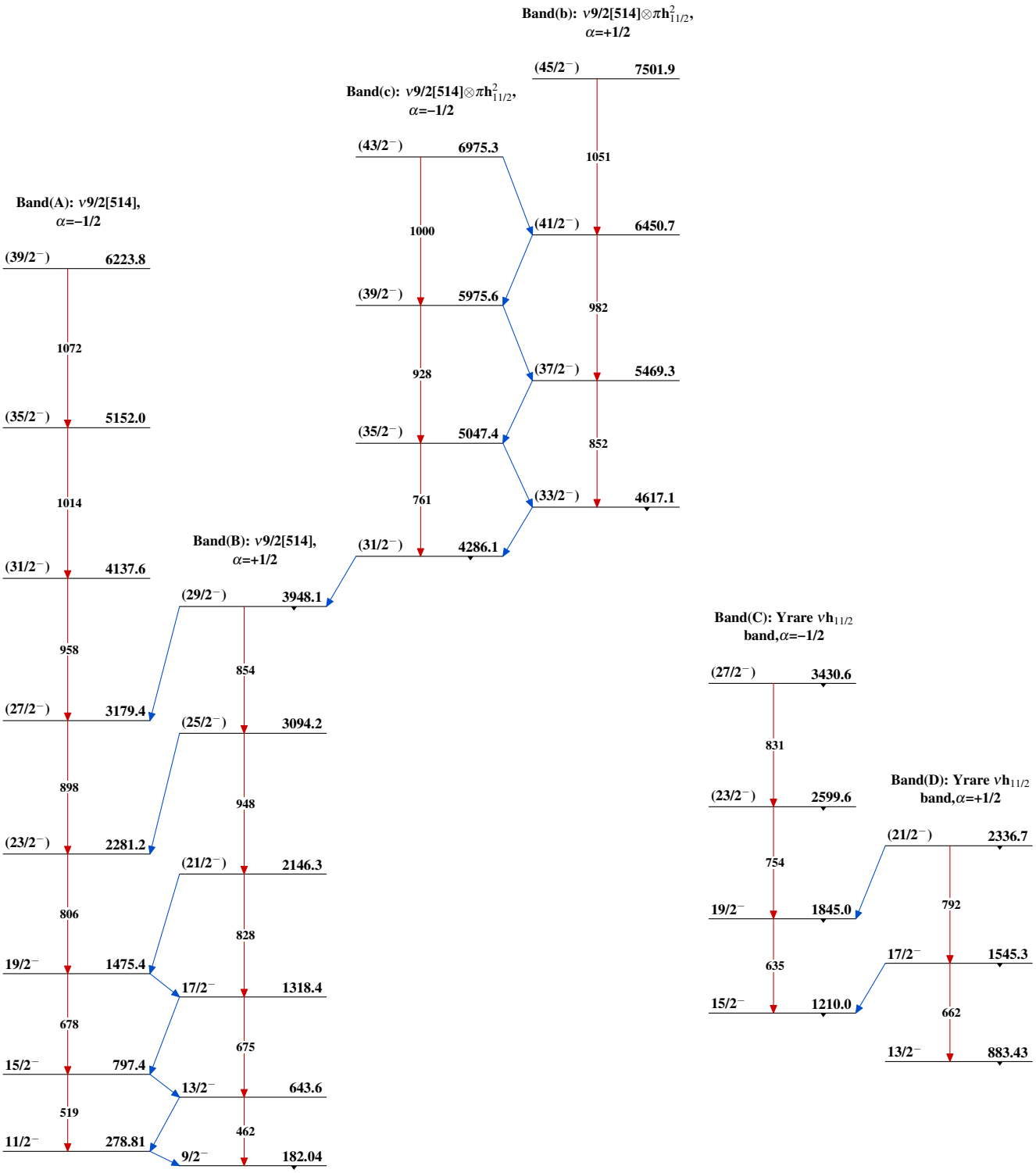
Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

γ Decay (Uncertain)

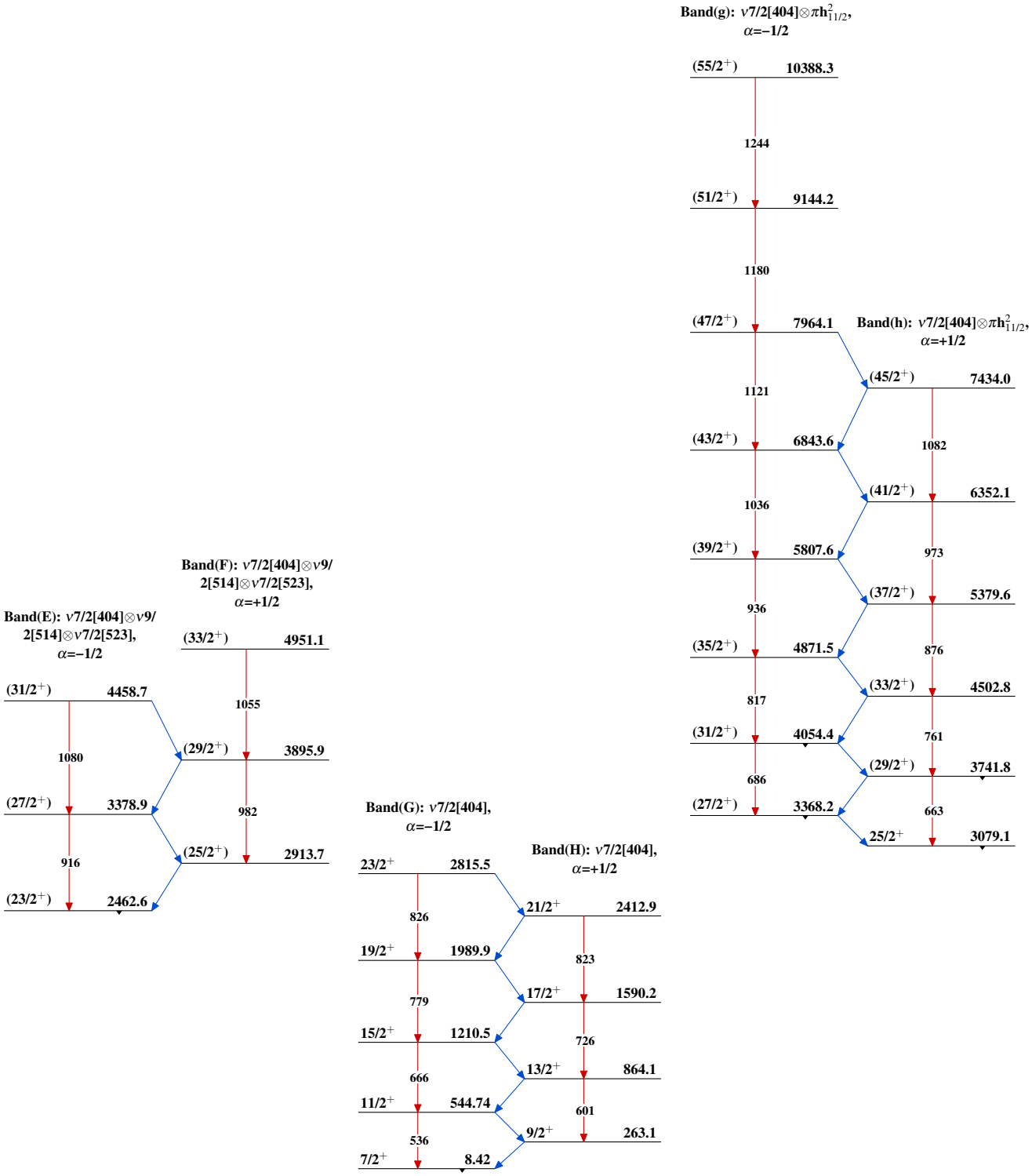


$^{129}_{56}Ba_{73}$

Adopted Levels, Gammas

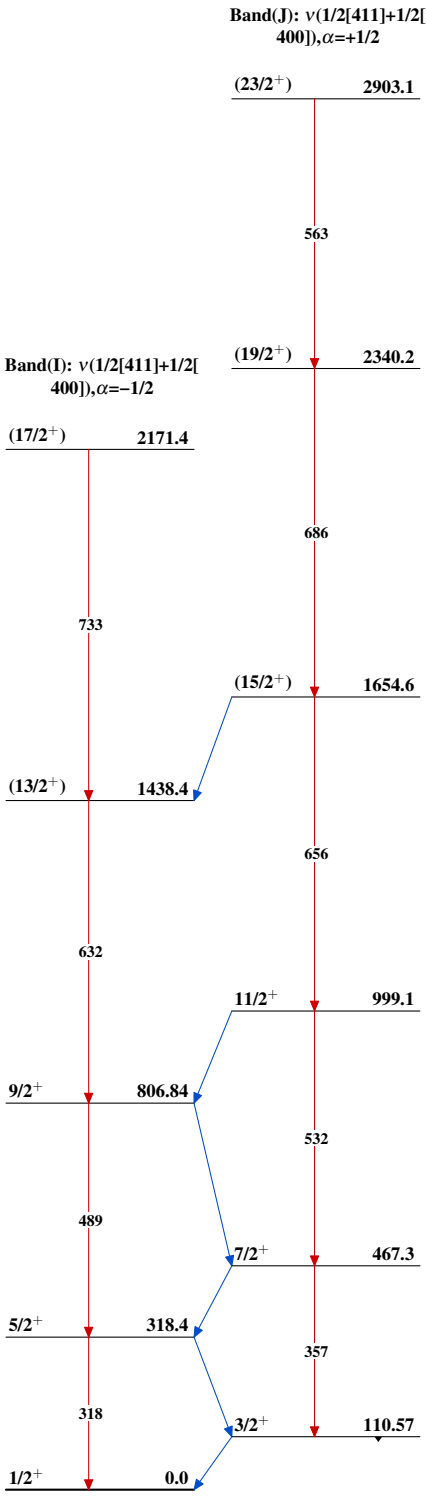


Adopted Levels, Gammas (continued)



$^{129}_{56}Ba_{73}$

Adopted Levels, Gammas (continued)



$^{129}_{56}Ba_{73}$