

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	A. Hashizume	NDS 112, 1647 (2011)	1-Oct-2009

$Q(\beta^-) = -4.92 \times 10^3$ 3; $S(n) = 8219$ 17; $S(p) = 5756$ 16; $Q(\alpha) = 6$ 15 2012Wa38

Note: Current evaluation has used the following Q record.

$Q(\beta^-) = -4920$ 28; $S(n) = 8217$ 17; $S(p) = 5760$ 17; $Q(\alpha) = 8$ 15 2003Au03

Assignment: $^{115}\text{In}(^{16}\text{O}, 4n)$ chem (1975Pa03); $\text{Ce}(p, \text{spallation})$ $E = 600$ MeV chem (1976Be11).

Nuclear structure calculations on the levels and their properties: 1996Gr03, 1993Ge06, 1992Bu11, 1992Zh10, 1991Bu03, 1990Hs01, 1987Al21, 1985Ha34, 1984Me02, 1982Cu03.

1968Da09 reported two isomers with half-life of 10 min and 18 min. However, the latter has not been confirmed by others.

Both level scheme and band assignments are from 1992Wa07 and 1998De48.

 ^{127}Ba LevelsCross Reference (XREF) Flags

- A ^{127}Ba IT decay
 B ^{127}La β^+ decay (3.7 min)
 C ^{127}La β^+ decay (5.1 min)
 D (HI,xn γ)

E(level) ^{<i>l</i>}	$J^{\pi m}$	$T_{1/2}$ ^{<i>n</i>}	XREF	Comments
0.0 ^d	1/2 ⁺	12.7 min 4	ABCD	$\% \varepsilon + \% \beta^+ = 100$ $\mu = +0.089$ 12 μ : collinear fast-beam LASER spectroscopy. Value relative to those of g.s. of ^{135}Ba and ^{137}Ba (1989Ra17). Other: 0.0834 10 (1992Da06). J^π : $J = 1/2$ from LASER spectroscopy, μ . $T_{1/2}$: from 1976Be11 in ^{127}Ba β^+ decay. Others: 10.0 min 5 (1962Pr09), 10 min 1 (1968Da09), 13.0 min 5 (1975Pa03). $\langle r^2 \rangle^{1/2}(\text{charge}) = 4.821$ 5 (2004An14). J^π : M1+E2 γ to 1/2 ⁺ .
56.17 ^c 9	3/2 ⁺		ABCD	$\% \text{IT} = 100$
80.32 [@] 11	7/2 ⁻	1.93 s 7	A CD	$\mu = -0.7227$ 5; $Q = 1.62$ 13 J^π : $J = 7/2$ from LASER spectroscopy, M2 γ to 3/2 ⁺ . μ, Q : collinear fast-beam LASER spectroscopy. Both values relative to those of g.s. of ^{135}Ba and ^{137}Ba (1992Da06). $T_{1/2}$: from γ -multiscaling in the ^{127}Ba IT decay (2002Sh01). J^π : M1 γ to 3/2 ⁺ , syst of the odd Ba isotopes. $T_{1/2}$: from $\gamma\gamma$ delayed coincidence (2002Sh01). J^π : M1+E2 γ to 7/2 ⁻ , syst of the band built on $h_{11/2}$ state in the odd-Ba isotopes. $T_{1/2}$: from centroid shift method of γ spectrum (2002Sh01). J^π : M1+E2 γ to (5/2) ⁺ , syst of the band built on $d_{5/2}$ state in the odd-Ba isotopes. J^π : M1+E2 γ to 3/2 ⁺ . J^π : M1+E2 γ to (9/2) ⁻ , syst of the band built on $h_{11/2}$ state in the odd-Ba isotopes. J^π : M1+E2 γ to (5/2) ⁺ and (7/2) ⁺ . J^π : M1+E2 γ to 3/2 ⁺ . J^π : M1+E2 γ to (7/2) ⁺ . J^π : M1+E2 γ to (11/2) ⁻ . J^π : M1+E2 γ to (9/2) ⁺ .
81.29 ^f 13	(5/2) ⁺	75 ns 4	BCD	
159.66 [#] 14	(9/2) ⁻	0.4 ns 2	CD	
195.56 ^g 14	(7/2) ⁺		CD	
269.6 ^d 3	(5/2) ⁺		CD	
293.91 [@] 14	(11/2) ⁻		CD	
324.26 ^e 23	(7/2) ⁺		CD	
375.17 ^c 23	(7/2) ⁺		CD	
415.89 ^f 16	(9/2) ⁺		CD	
579.52 [#] 17	(13/2) ⁻		CD	
599.36 ^e 25	(9/2) ⁺		CD	
669.11 ^g 17	(11/2) ⁺		CD	
715.3 6			C	

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Adopted Levels, Gammas (continued) ^{127}Ba Levels (continued)

E(level) ^{<i>l</i>}	J ^{<i>π</i>} ^{<i>m</i>}	XREF	Comments
728.5 ^{<i>d</i>} 4	(9/2 ⁺)	CD	
777.07 [@] 18	(15/2 ⁻)	CD	
805.1 6		C	
832.5 4		C	
868.2 ^{<i>c</i>} 3	(11/2 ⁺)	CD	
876.9 4		CD	
906.5 ^{<i>e</i>} 3	(11/2 ⁺)	CD	
963.85 ^{<i>f</i>} 18	(13/2 ⁺)	CD	
987.3 4		C	
991.2 4		C	
1194.77 [#] 20	(17/2 ⁻)	D	
1219.56 [‡] 23	(15/2 ⁻)	CD	
1230.5 ^{<i>e</i>} 6	(13/2 ⁺)	CD	
1291.42 ^{<i>g</i>} 19	(15/2 ⁺)	D	
1305.3 4		C	
1403.3 4		C	
1410.4 4		C	
1421.68 [@] 21	(19/2 ⁻)	D	
1519.9 ^{<i>c</i>} 3	(15/2 ⁺)	D	
1626 5		C	
1654.56 ^{<i>f</i>} 20	(17/2 ⁺)	D	
1674.0 4		C	
1764.72 14		C	
1777.6 [‡] 3	(19/2 ⁻)	D	
1790.6 3		C	
1881 5		C	
1961.2 4		C	
1966.81 [#] 24	(21/2 ⁻)	D	
2043.39 ^{<i>g</i>} 22	(19/2 ⁺)	D	
2196.1 [@] 3	(23/2 ⁻)	D	
2244.4 ^{<i>c</i>} 4	(19/2 ⁺)	D	
2305.2 ^{<i>c</i>} 4	(19/2 ⁺)	D	
2351.9 4		C	
2451.77 ^{<i>f</i>} 23	(21/2 ⁺)	D	
2463.6 [‡] 3	(23/2 ⁻)	D	
2497.54 ^{<i>h</i>} 24	(21/2 ⁺)	D	J ^π : γ to (17/2 ⁺), 1075γ to (19/2 ⁻).
2737.43 ^{<i>i</i>} 25	(23/2 ⁺)	D	J ^π : γ to (19/2 ⁺), 771γ to (21/2 ⁻).
2863.4 ^{<i>c</i>} 11	(23/2 ⁺)	D	
2869.1 [#] 3	(25/2 ⁻)	D	
2874.5 ^{<i>g</i>} 4	(23/2 ⁺)	D	J ^π : (E2) γ to (19/2 ⁺), γ to (21/2 ⁺).
2923.2 ^{<i>g</i>} 5	(23/2 ⁺)	D	
2998.2 ^{<i>h</i>} 3	(25/2 ⁺)	D	
3059.2 [@] 4	(27/2 ⁻)	D	
3137.9 ^{<i>k</i>} 4	(25/2 ⁺)	D	J ^π : ΔJ=1 γ to (23/2 ⁺), γ to (21/2 ⁺).
3273.8 [‡] 6	(27/2 ⁻)	D	
3287.0 ^{<i>i</i>} 3	(27/2 ⁺)	D	
3401.0 5		D	
3482.0 ^{<i>j</i>} 4	(27/2 ⁺)	D	
3518.4 ^{<i>a</i>} 4	(27/2 ⁻)	D	J ^π : γ to (23/2 ⁻) and ΔJ=1 γ from (29/2 ⁻).
3622.2 ^{<i>h</i>} 3	(29/2 ⁺)	D	

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Adopted Levels, Gammas (continued) ^{127}Ba Levels (continued)

E(level) ^{<i>l</i>}	J ^{π} ^{<i>m</i>}	XREF	Comments
3755.9 ^{&} 4	(29/2 ⁻)	D	J ^{π} : (M1+E2) γ to (27/2 ⁻), (E2) γ to (25/2 ⁻).
3791.0 ^k 4	(29/2 ⁺)	D	
3949.7 ⁱ 3	(31/2 ⁺)	D	
3957.0 ^b 4	(31/2 ⁻)	D	
4102.5 ^a 4	(31/2 ⁻)	D	
4217.1 [‡] 8	(31/2 ⁻)	D	
4226.4 ^j 5	(31/2 ⁺)	D	
4365.2 ^h 4	(33/2 ⁺)	D	
4408.2 ^{&} 5	(33/2 ⁻)	D	
4578.5 ^k 4	(33/2 ⁺)	D	
4746.0 ⁱ 5	(35/2 ⁺)	D	
4816.7 ^a 5	(35/2 ⁻)	D	
4904.0 ^b 6	(35/2 ⁻)	D	
5131.3 ^j 5	(35/2 ⁺)	D	
5213.5 ^{&} 6	(37/2 ⁻)	D	
5228.1 [‡] 13	(35/2 ⁻)	D	
5228.1 ^h 5	(37/2 ⁺)	D	
5256.1 [†] 13	(35/2 ⁻)	D	
5512.4 ^k 10	(37/2 ⁺)	D	
5675.5 ⁱ 7	(39/2 ⁺)	D	
5741.7 ^a 6	(39/2 ⁻)	D	
5920.9 ^b 10	(39/2 ⁻)	D	
6203.0 ^h 8	(41/2 ⁺)	D	
6222.1 ^{&} 8	(41/2 ⁻)	D	
6320.1 [‡] 17	(39/2 ⁻)	D	
6379.1 [†] 17	(39/2 ⁻)	D	
6552.4 ^k 11	(41/2 ⁺)	D	
6726.1 ⁱ 9	(43/2 ⁺)	D	
6762.7 ^a 9	(43/2 ⁻)	D	
7002.8 ^b 9	(43/2 ⁻)	D	
7277.4 ^h 10	(45/2 ⁺)	D	
7309.4 ^{&} 10	(45/2 ⁻)	D	
7465.1 [‡] 19	(43/2 ⁻)	D	
7590.1 [†] 19	(43/2 ⁻)	D	
7632.4 ^k 15	(45/2 ⁺)	D	
7865.8 ^a 10	(47/2 ⁻)	D	
7881.7 ⁱ 11	(47/2 ⁺)	D	
8193.8 ^b 14	(47/2 ⁻)	D	
8429.6 ^h 12	(49/2 ⁺)	D	
8459.1 ^{&} 11	(49/2 ⁻)	D	
8756.4 ^k 18	(49/2 ⁺)	D	
8886.1 [†] 22	(47/2 ⁻)	D	
9034.9 ^a 12	(51/2 ⁻)	D	
9120.6 ⁱ 13	(51/2 ⁺)	D	
9440.8 ^b 17	(51/2 ⁻)	D	
9617.6 ^h 14	(53/2 ⁺)	D	

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Adopted Levels, Gammas (continued) ^{127}Ba Levels (continued)

E(level) ^{<i>l</i>}	$J^{\pi m}$	XREF	E(level) ^{<i>l</i>}	$J^{\pi m}$	XREF	E(level) ^{<i>l</i>}	$J^{\pi m}$	XREF
9677.2 ^{&} 13	(53/2 ⁻)	D	10776.8 ^b 20	(55/2 ⁻)	D	12086.6 ^h 20	(61/2 ⁺)	D
9967.4 ^k 21	(53/2 ⁺)	D	10822.6 ^h 17	(57/2 ⁺)	D	12273.3 ^{&} 18	(61/2 ⁻)	D
10192.1 [†] 24	(51/2 ⁻)	D	10952.3 ^{&} 15	(57/2 ⁻)	D	12817.5 ^a 20	(63/2 ⁻)	D
10257.5 ^a 14	(55/2 ⁻)	D	11266.4 ^k 23	(57/2 ⁺)	D	13476.6 ^h 22	(65/2 ⁺)	D
10440.6 ⁱ 16	(55/2 ⁺)	D	11499.5 ^a 17	(59/2 ⁻)	D			

[†] Band(A): Band built on the (35/2⁻) state.

[‡] Band(B): $\nu h_{11/2}$, $\Omega=5/2$ favored, $\alpha=-1/2$. (Ω : The projection of particle angular momentum to the nuclear symmetry axis).

Band(C): $\nu h_{11/2}$, $\Omega=7/2$, $\alpha=+1/2$.

@ Band(D): $\nu h_{11/2}$, $\Omega=7/2$, $\alpha=-1/2$.

& Band(E): $\nu h_{11/2} \pi h_{11/2}^2$, $\alpha=+1/2$.

^a Band(F): $\nu h_{11/2} \pi h_{11/2}^2$, $\alpha=-1/2$.

^b Band(G): Band built on the 27/2⁻ state, $\alpha=-1/2$.

^c Band(H): $\nu d_{3/2}$, $\Omega=1/2$, $\alpha=-1/2$.

^d Band(I): $\nu d_{3/2}$, $\Omega=1/2$, $\alpha=+1/2$.

^e Band(J): $\nu g_{7/2}$, $\Omega=7/2$.

^f Band(K): $(\nu d_{5/2})$, $\Omega=5/2$, $\alpha=+1/2$.

^g Band(L): $(\nu d_{5/2})$, $\Omega=5/2$, $\alpha=-1/2$.

^h Band(M): $(\nu d_{5/2}) \nu 1 h_{11/2}^2 \pi 1 h_{11/2}^2$, $\alpha=+1/2$.

ⁱ Band(N): $(\nu d_{5/2}) \nu 1 h_{11/2}^2 \pi 1 h_{11/2}^2$, $\alpha=-1/2$.

^j Band(O): Band built on the 27/2⁺ state, $\alpha=-1/2$.

^k Band(P): Band built on the 25/2⁺ state, $\alpha=+1/2$.

^l From a least-squares fit to adopted E γ 's.

^m From γ multiplicities determined by 1992Wa07 and 1998De48: proposed band structures are based on the cranking model analysis and γ cascade relations.

ⁿ From ^{127}Ba β^+ decay and ^{127}Ba IT decay.

Adopted Levels, Gammas (continued)

γ(¹²⁷Ba)

E(X),M(X) From ¹²⁷Ba IT decay.

E _i (level)	J ^π _i	E _γ [†]	I _γ [†]	E _f	J ^π _f	Mult. [‡]	δ	α [#]	Comments
56.17	3/2 ⁺	56.2 1	100	0.0	1/2 ⁺	M1(+E2)		10 6	α(K)exp=5.0 4 α(K)=5.0 6; α(L)=4 4; α(M)=0.9 9; α(N+..)=0.22 19 α(N)=0.20 17; α(O)=0.025 22; α(P)=0.000271 23
80.32	7/2 ⁻	24.2 1	100 20	56.17	3/2 ⁺	M2		995 24	B(M2)(W.u.)=7.0×10 ⁻⁵ 6 α(L)=775 19; α(M)=176 5; α(N+..)=43.9 11 α(N)=38.0 9; α(O)=5.53 14; α(P)=0.301 7 α(exp)=600 to 1600.
		80.2 2	58 7	0.0	1/2 ⁺	E3		74.8 15	B(E3)(W.u.)=0.017 4 α(K)=11.75 19; α(L)=49.1 10; α(M)=11.34 23; α(N+..)=2.64 6 α(N)=2.35 5; α(O)=0.297 6; α(P)=0.000471 8 Additional information 1. Mult.: From γ-X and γ-e coincidence in IT decay (1981Li08,1981LiZK).
81.29	(5/2) ⁺	25.1 2	100	56.17	3/2 ⁺	M1		8.19 23	B(M1)(W.u.)=0.00195 15 α(L)=6.51 19; α(M)=1.34 4; α(N+..)=0.337 10 α(N)=0.289 8; α(O)=0.0441 13; α(P)=0.00315 9 α(exp)=6.9 to 20.2.
159.66	(9/2) ⁻	81.3 2 79.4 2	3.7 100	0.0 80.32	1/2 ⁺ 7/2 ⁻	M1+E2	-0.16 5	1.97 6	α(K)exp=2.0 1 α(K)=1.65 3; α(L)=0.255 24; α(M)=0.053 6; α(N+..)=0.0132 13 α(N)=0.0114 11; α(O)=0.00170 14; α(P)=0.0001078 17
195.56	(7/2) ⁺	114.28 9	100	81.29	(5/2) ⁺	M1+E2	-0.09 5	0.680 12	α(K)exp=1.0 5 α(K)=0.580 9; α(L)=0.079 3; α(M)=0.0164 7; α(N+..)=0.00411 15 α(N)=0.00354 13; α(O)=0.000538 17; α(P)=3.81×10 ⁻⁵ 6
269.6	(5/2) ⁺	213.3 5	12	56.17	3/2 ⁺	M1+E2		0.129 10	α(K)=0.106 4; α(L)=0.019 5; α(M)=0.0039 12; α(N+..)=0.0010 3 α(N)=0.00084 23; α(O)=0.00012 3; α(P)=6.3×10 ⁻⁶ 5 α(K)exp=0.10 3 for 213.3+213.7.
		269.6 5	100	0.0	1/2 ⁺	(E2)		0.0637	α(K)exp=0.062 28 α(K)=0.0513 8; α(L)=0.00982 16; α(M)=0.00208 4; α(N+..)=0.000505 8 α(N)=0.000439 7; α(O)=6.26×10 ⁻⁵ 10; α(P)=2.87×10 ⁻⁶ 5
293.91	(11/2) ⁻	134.28 9	100 6	159.66	(9/2) ⁻	M1+E2	-0.18 3	0.437	α(K)exp=0.45 18 α(K)=0.371 6; α(L)=0.0525 14; α(M)=0.0109 3; α(N+..)=0.00272 7 α(N)=0.00234 7; α(O)=0.000354 9; α(P)=2.42×10 ⁻⁵ 4 Mult.: from DCO, α(K)exp and K/L in (HI,xny).
		213.5 2	15.1 16	80.32	7/2 ⁻	(E2)		0.1380	α(K)=0.1081 16; α(L)=0.0237 4; α(M)=0.00505 8; α(N+..)=0.001217 18 α(N)=0.001062 16; α(O)=0.0001489 22; α(P)=5.80×10 ⁻⁶ 9

Adopted Levels, Gammas (continued)

$\gamma(^{127}\text{Ba})$ (continued)									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	δ	$\alpha^\#$	Comments
324.26	(7/2) ⁺	128.7 5	9.3	195.56	(7/2) ⁺	M1+E2		0.64 16	$\alpha(\text{K})_{\text{exp}}=0.10$ 3 for 213.3+213.7. I_γ : The relative intensities for 134.28 and 213.5 γ from $^{127}\text{La } \beta^+$ decay (5.1 min) are 100 and 11.4 (2002Sh01).
		243.0 5	100	81.29	(5/2) ⁺	M1+E2		0.087 3	$\alpha(\text{K})_{\text{exp}}=1.2$ 5 $\alpha(\text{K})=0.48$ 7; $\alpha(\text{L})=0.12$ 7; $\alpha(\text{M})=0.026$ 15; $\alpha(\text{N}+..)=0.006$ 4 $\alpha(\text{N})=0.005$ 3; $\alpha(\text{O})=0.0008$ 4; $\alpha(\text{P})=2.70\times 10^{-5}$ 6 $\alpha(\text{K})_{\text{exp}}=0.078$ 25 $\alpha(\text{K})=0.0720$ 13; $\alpha(\text{L})=0.0120$ 25; $\alpha(\text{M})=0.0025$ 6; $\alpha(\text{N}+..)=0.00062$ 13 $\alpha(\text{N})=0.00054$ 12; $\alpha(\text{O})=7.8\times 10^{-5}$ 14; $\alpha(\text{P})=4.3\times 10^{-6}$ 5
375.17	(7/2) ⁺	105.4 5	9.9	269.6	(5/2) ⁺	(E2)		0.0373	$\alpha(\text{K})_{\text{exp}}=0.035$ 10 $\alpha(\text{K})=0.0305$ 5; $\alpha(\text{L})=0.00539$ 9; $\alpha(\text{M})=0.001136$ 18; $\alpha(\text{N}+..)=0.000277$ 5 $\alpha(\text{N})=0.000241$ 4; $\alpha(\text{O})=3.47\times 10^{-5}$ 6; $\alpha(\text{P})=1.75\times 10^{-6}$ 3
		293.7 5	3.8	81.29	(5/2) ⁺				
		318.7 5	100	56.17	3/2 ⁺				
415.89	(9/2) ⁺	91.6 5	2.3 5	324.26	(7/2) ⁺	M1+E2	−0.34 5	0.1115 17	$\alpha(\text{K})_{\text{exp}}=0.097$ 30 $\alpha(\text{K})=0.0947$ 14; $\alpha(\text{L})=0.0133$ 3; $\alpha(\text{M})=0.00276$ 7; $\alpha(\text{N}+..)=0.000690$ 16 $\alpha(\text{N})=0.000594$ 14; $\alpha(\text{O})=8.98\times 10^{-5}$ 19; $\alpha(\text{P})=6.09\times 10^{-6}$ 9 Mult.: from DCO and $\alpha(\text{K})_{\text{exp}}$ in (HI,xny). I_γ : The relative intensities for 91.6, 220.35 and 334.4 γ from $^{127}\text{La } \beta^+$ decay (5.1 min) are 5.7, 100 and 36 respectively (2002Sh01).
		220.35 14	100 5	195.56	(7/2) ⁺				
579.52	(13/2) [−]	334.4 3	24.4 25	81.29	(5/2) ⁺	(E2)		0.01619	$\alpha(\text{K})_{\text{exp}}=0.047$ 15 $\alpha(\text{K})=0.0473$ 7; $\alpha(\text{L})=0.00622$ 9; $\alpha(\text{M})=0.001280$ 19; $\alpha(\text{N}+..)=0.000322$ 5 $\alpha(\text{N})=0.000276$ 4; $\alpha(\text{O})=4.23\times 10^{-5}$ 6; $\alpha(\text{P})=3.09\times 10^{-6}$ 5 $\alpha(\text{K})=0.01348$ 19; $\alpha(\text{L})=0.00214$ 3; $\alpha(\text{M})=0.000448$ 7; $\alpha(\text{N}+..)=0.0001103$ 16 $\alpha(\text{N})=9.55\times 10^{-5}$ 14; $\alpha(\text{O})=1.402\times 10^{-5}$ 20; $\alpha(\text{P})=7.98\times 10^{-7}$ 12
		285.57 17	100 6	293.91	(11/2) [−]				
599.36	(9/2 ⁺)	275.2 5		324.26	(7/2) ⁺	M1+E2	−0.33 8	0.0761	$\alpha(\text{K})_{\text{exp}}=0.087$ 30 $\alpha(\text{K})=0.0648$ 10; $\alpha(\text{L})=0.00894$ 22; $\alpha(\text{M})=0.00185$ 5; $\alpha(\text{N}+..)=0.000462$ 11 $\alpha(\text{N})=0.000398$ 10; $\alpha(\text{O})=6.03\times 10^{-5}$ 13; $\alpha(\text{P})=4.18\times 10^{-6}$ 7 Mult.: from DCO and $\alpha(\text{K})_{\text{exp}}$ in (HI,xny). $\alpha(\text{K})=0.00960$ 14; $\alpha(\text{L})=0.001469$ 21; $\alpha(\text{M})=0.000306$ 5; $\alpha(\text{N}+..)=7.56\times 10^{-5}$ 11 $\alpha(\text{N})=6.54\times 10^{-5}$ 10; $\alpha(\text{O})=9.66\times 10^{-6}$ 14; $\alpha(\text{P})=5.75\times 10^{-7}$ 8
669.11	(11/2) ⁺	403.8 5		195.56	(7/2) ⁺				
		518.2 5		81.29	(5/2) ⁺				
		253.20 17	67 7	415.89	(9/2) ⁺	(E2)		0.01145	
		473.70 19	100 11	195.56	(7/2) ⁺				

Adopted Levels, Gammas (continued)

$\gamma(^{127}\text{Ba})$ (continued)									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	δ	$\alpha^\#$	Comments
669.11	(11/2) ⁺	509.4 5	16 4	159.66	(9/2) ⁻				E_γ : not observed in β^+ decay (5.1 min).
715.3		555.6 5	100	159.66	(9/2) ⁻				
728.5	(9/2 ⁺)	353.4 5		375.17	(7/2) ⁺				
		458.9 5		269.6	(5/2) ⁺				
777.07	(15/2 ⁻)	197.45 14	44.7 23	579.52	(13/2) ⁻	(M1+E2)	-0.19 5	0.1491 22	$\alpha(\text{K})=0.1273$ 19; $\alpha(\text{L})=0.0173$ 4; $\alpha(\text{M})=0.00358$ 9; $\alpha(\text{N}+..)=0.000898$ 20
		483.26 19	100 6	293.91	(11/2) ⁻	E2		0.01083	$\alpha(\text{N})=0.000772$ 18; $\alpha(\text{O})=0.0001175$ 24; $\alpha(\text{P})=8.30\times 10^{-6}$ 12 $\alpha(\text{K})=0.00909$ 13; $\alpha(\text{L})=0.001382$ 20; $\alpha(\text{M})=0.000288$ 4; $\alpha(\text{N}+..)=7.11\times 10^{-5}$ 10
									$\alpha(\text{N})=6.15\times 10^{-5}$ 9; $\alpha(\text{O})=9.10\times 10^{-6}$ 13; $\alpha(\text{P})=5.45\times 10^{-7}$ 8 Mult.: from DCO and $\alpha(\text{K})\text{exp}$ in (HI,xn γ).
805.1		645.4 5	100	159.66	(9/2) ⁻				
832.5		672.5 5		159.66	(9/2) ⁻				
		752.6 5		80.32	7/2 ⁻				
868.2	(11/2 ⁺)	452.2 5	50 10	415.89	(9/2) ⁺				
		492.9 5	100 10	375.17	(7/2) ⁺				
		543.9 5	42 9	324.26	(7/2) ⁺				
876.9		583.0 6	100 6	293.91	(11/2) ⁻				
		717.5 7	22.6 23	159.66	(9/2) ⁻				
		795.9 5		80.32	7/2 ⁻				
906.5	(11/2 ⁺)	307.0 5		599.36	(9/2 ⁺)				
		490.3 5		415.89	(9/2) ⁺				
		531.4 5		375.17	(7/2) ⁺				
		582.3 5		324.26	(7/2) ⁺				
963.85	(13/2 ⁺)	294.74 17	78 9	669.11	(11/2) ⁺	M1+E2	-0.33 4	0.0505 8	$\alpha(\text{K})=0.0431$ 7; $\alpha(\text{L})=0.00585$ 9; $\alpha(\text{M})=0.001207$ 19; $\alpha(\text{N}+..)=0.000302$ 5
									$\alpha(\text{N})=0.000260$ 4; $\alpha(\text{O})=3.95\times 10^{-5}$ 6; $\alpha(\text{P})=2.78\times 10^{-6}$ 5
		548.00 19	100 11	415.89	(9/2) ⁺	(E2)		0.00768 11	Mult.: from DCO and $\alpha(\text{K})\text{exp}$ in (HI,xn γ). $\alpha=0.00768$ 11; $\alpha(\text{K})=0.00648$ 9; $\alpha(\text{L})=0.000953$ 14; $\alpha(\text{M})=0.000198$ 3; $\alpha(\text{N}+..)=4.90\times 10^{-5}$ 7
									$\alpha(\text{N})=4.23\times 10^{-5}$ 6; $\alpha(\text{O})=6.30\times 10^{-6}$ 9; $\alpha(\text{P})=3.93\times 10^{-7}$ 6
987.3		669.8 5	12.2 25	293.91	(11/2) ⁻				E_γ : not observed in β^+ decay (5.1 min).
		693.3 5		293.91	(11/2) ⁻				
		827.7 5		159.66	(9/2) ⁻				
991.2		697.4 5		293.91	(11/2) ⁻				
		831.4 5		159.66	(9/2) ⁻				
		911.0 5		80.32	7/2 ⁻				
1194.77	(17/2 ⁻)	417.76 18	77 9	777.07	(15/2) ⁻	(M1+E2)	-0.18 7	0.0205 4	$\alpha(\text{K})=0.0176$ 3; $\alpha(\text{L})=0.00230$ 4; $\alpha(\text{M})=0.000472$ 7; $\alpha(\text{N}+..)=0.0001187$ 17
									$\alpha(\text{N})=0.0001020$ 15; $\alpha(\text{O})=1.563\times 10^{-5}$ 23; $\alpha(\text{P})=1.144\times 10^{-6}$ 19
		615.22 19	100 11	579.52	(13/2) ⁻	(E2)		0.00568 8	$\alpha=0.00568$ 8; $\alpha(\text{K})=0.00481$ 7; $\alpha(\text{L})=0.000687$ 10; $\alpha(\text{M})=0.0001425$ 20; $\alpha(\text{N}+..)=3.54\times 10^{-5}$ 5
									$\alpha(\text{N})=3.05\times 10^{-5}$ 5; $\alpha(\text{O})=4.57\times 10^{-6}$ 7; $\alpha(\text{P})=2.93\times 10^{-7}$ 5

Adopted Levels, Gammas (continued)

$\gamma(^{127}\text{Ba})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	δ	$\alpha^\#$	Comments
1219.56	(15/2 ⁻)	442.6 5 640.2 2	19 4 100 12	777.07 579.52	(15/2 ⁻) (13/2) ⁻	(M1+E2)	-0.34 4	0.00696 11	$\alpha=0.00696$ 11; $\alpha(\text{K})=0.00599$ 10; $\alpha(\text{L})=0.000771$ 12; $\alpha(\text{M})=0.0001584$ 24; $\alpha(\text{N}+..)=3.98\times 10^{-5}$ $\alpha(\text{N})=3.42\times 10^{-5}$ 5; $\alpha(\text{O})=5.24\times 10^{-6}$ 8; $\alpha(\text{P})=3.85\times 10^{-7}$ 7
1230.5	(13/2 ⁺)	1059.1 5 324.0 5		159.66 906.5	(9/2) ⁻ (11/2 ⁺)				
1291.42	(15/2 ⁺)	327.50 17 622.31 19	69 8 100 11	963.85 669.11	(13/2 ⁺) (11/2) ⁺	(E2)		0.00551 8	$\alpha=0.00551$ 8; $\alpha(\text{K})=0.00467$ 7; $\alpha(\text{L})=0.000666$ 10; $\alpha(\text{M})=0.0001381$ 20; $\alpha(\text{N}+..)=3.43\times 10^{-5}$ 5 $\alpha(\text{N})=2.96\times 10^{-5}$ 5; $\alpha(\text{O})=4.43\times 10^{-6}$ 7; $\alpha(\text{P})=2.85\times 10^{-7}$ 4
1305.3		711.9 5 428.8 5 725.4 5	13 3	579.52 876.9 579.52	(13/2) ⁻ (13/2) ⁻				
1403.3		1109.4 5 1243.7 5		293.91 159.66	(11/2) ⁻ (9/2) ⁻				
1410.4		1116.4 5 1250.8 5		293.91 159.66	(11/2) ⁻ (9/2) ⁻				
1421.68	(19/2 ⁻)	226.80 19	13.6 14	1194.77	(17/2 ⁻)	(M1+E2)	-0.19 7	0.1022	$\alpha(\text{K})=0.0874$ 13; $\alpha(\text{L})=0.0118$ 3; $\alpha(\text{M})=0.00243$ 6; $\alpha(\text{N}+..)=0.000609$ 14 $\alpha(\text{N})=0.000524$ 12; $\alpha(\text{O})=7.99\times 10^{-5}$ 16; $\alpha(\text{P})=5.69\times 10^{-6}$ 9 $\alpha=0.00505$ 7; $\alpha(\text{K})=0.00428$ 6; $\alpha(\text{L})=0.000606$ 9; $\alpha(\text{M})=0.0001255$ 18; $\alpha(\text{N}+..)=3.12\times 10^{-5}$ 5 $\alpha(\text{N})=2.69\times 10^{-5}$ 4; $\alpha(\text{O})=4.03\times 10^{-6}$ 6; $\alpha(\text{P})=2.62\times 10^{-7}$ 4
		644.45 19	100 5	777.07	(15/2 ⁻)	(E2)		0.00505 7	
1519.9	(15/2 ⁺)	555.7 5 651.8 2	18 4 100 9	963.85 868.2	(13/2 ⁺) (11/2 ⁺)	(E2)		0.00490 7	$\alpha=0.00490$ 7; $\alpha(\text{K})=0.00416$ 6; $\alpha(\text{L})=0.000587$ 9; $\alpha(\text{M})=0.0001217$ 17; $\alpha(\text{N}+..)=3.02\times 10^{-5}$ 5 $\alpha(\text{N})=2.61\times 10^{-5}$ 4; $\alpha(\text{O})=3.91\times 10^{-6}$ 6; $\alpha(\text{P})=2.55\times 10^{-7}$ 4
1626		1332 5	100	293.91	(11/2) ⁻				
1654.56	(17/2 ⁺)	363.10 18	36 4	1291.42	(15/2 ⁺)	(M1+E2)	-0.25 6	0.0293 5	$\alpha(\text{K})=0.0251$ 4; $\alpha(\text{L})=0.00331$ 5; $\alpha(\text{M})=0.000682$ 10; $\alpha(\text{N}+..)=0.0001712$ 25 $\alpha(\text{N})=0.0001471$ 21; $\alpha(\text{O})=2.25\times 10^{-5}$ 4; $\alpha(\text{P})=1.63\times 10^{-6}$ 3 $\alpha=0.00424$ 6; $\alpha(\text{K})=0.00361$ 5; $\alpha(\text{L})=0.000503$ 7; $\alpha(\text{M})=0.0001041$ 15; $\alpha(\text{N}+..)=2.59\times 10^{-5}$ 4 $\alpha(\text{N})=2.23\times 10^{-5}$ 4; $\alpha(\text{O})=3.36\times 10^{-6}$ 5; $\alpha(\text{P})=2.22\times 10^{-7}$ 4
		690.9 2	100 6	963.85	(13/2 ⁺)	(E2)		0.00424 6	
1674.0		877.5 5 805.4 5 1005.8 5	15.7 15	777.07 868.2 669.11	(15/2 ⁻) (11/2 ⁺) (11/2) ⁺				
1764.72		1298.4 5 858.1 5 1036.4 5 1095.6 5 1165.5 5		375.17 906.5 728.5 669.11 599.36	(7/2) ⁺ (11/2 ⁺) (9/2 ⁺) (11/2) ⁺ (9/2 ⁺)				

Adopted Levels, Gammas (continued)

$\gamma(^{127}\text{Ba})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	δ	$\alpha^\#$	Comments
1764.72		1348.9 5 1389.2 5 1440.4 5 1470.8 1 1569.1 1 1605.1 1		415.89 (9/2) ⁺ 375.17 (7/2) ⁺ 324.26 (7/2) ⁺ 293.91 (11/2) ⁻ 195.56 (7/2) ⁺ 159.66 (9/2) ⁻					
1777.6	(19/2 ⁻)	558.10 19	100 10	1219.56 (15/2 ⁻)	(E2)			0.00732 11	$\alpha=0.00732$ 11; $\alpha(\text{K})=0.00618$ 9; $\alpha(\text{L})=0.000904$ 13; $\alpha(\text{M})=0.000188$ 3; $\alpha(\text{N}+..)=4.65\times 10^{-5}$ 7 $\alpha(\text{N})=4.02\times 10^{-5}$ 6; $\alpha(\text{O})=5.99\times 10^{-6}$ 9; $\alpha(\text{P})=3.75\times 10^{-7}$ 6 $\alpha=0.00860$ 20; $\alpha(\text{K})=0.00739$ 18; $\alpha(\text{L})=0.000962$ 19; $\alpha(\text{M})=0.000198$ 4; $\alpha(\text{N}+..)=4.97\times 10^{-5}$ 10 $\alpha(\text{N})=4.27\times 10^{-5}$ 9; $\alpha(\text{O})=6.53\times 10^{-6}$ 14; $\alpha(\text{P})=4.74\times 10^{-7}$ 13
1790.6		1121.5 5 1191.4 5 1374.6 5 1466.2 5 1595.0 5		669.11 (11/2) ⁺ 599.36 (9/2) ⁺ 415.89 (9/2) ⁺ 324.26 (7/2) ⁺ 195.56 (7/2) ⁺					
1881		890 5	100	991.2					
1961.2		1667.6 5 1801.0 5 1881.0 5		293.91 (11/2) ⁻ 159.66 (9/2) ⁻ 80.32 7/2 ⁻					
1966.81	(21/2 ⁻)	544.8 5	36 4	1421.68 (19/2 ⁻)	(M1+E2)	-0.16 9		0.01057 18	$\alpha(\text{K})=0.00910$ 16; $\alpha(\text{L})=0.001170$ 18; $\alpha(\text{M})=0.000240$ 4; $\alpha(\text{N}+..)=6.05\times 10^{-5}$ 10 $\alpha(\text{N})=5.19\times 10^{-5}$ 8; $\alpha(\text{O})=7.97\times 10^{-6}$ 13; $\alpha(\text{P})=5.88\times 10^{-7}$ 11 $\alpha=0.00325$ 5; $\alpha(\text{K})=0.00277$ 4; $\alpha(\text{L})=0.000378$ 6; $\alpha(\text{M})=7.81\times 10^{-5}$ 11; $\alpha(\text{N}+..)=1.95\times 10^{-5}$ 3 $\alpha(\text{N})=1.676\times 10^{-5}$ 24; $\alpha(\text{O})=2.53\times 10^{-6}$ 4; $\alpha(\text{P})=1.707\times 10^{-7}$ 24
2043.39	(19/2 ⁺)	388.8 2	25 3	1654.56 (17/2 ⁺)	(M1+E2)	-0.40 9		0.0242 5	$\alpha(\text{K})=0.0207$ 4; $\alpha(\text{L})=0.00276$ 4; $\alpha(\text{M})=0.000570$ 8; $\alpha(\text{N}+..)=0.0001429$ 21 $\alpha(\text{N})=0.0001228$ 18; $\alpha(\text{O})=1.87\times 10^{-5}$ 3; $\alpha(\text{P})=1.33\times 10^{-6}$ 3 $\alpha=0.00346$ 5; $\alpha(\text{K})=0.00295$ 5; $\alpha(\text{L})=0.000404$ 6; $\alpha(\text{M})=8.35\times 10^{-5}$ 12; $\alpha(\text{N}+..)=2.08\times 10^{-5}$ 3 $\alpha(\text{N})=1.79\times 10^{-5}$ 3; $\alpha(\text{O})=2.70\times 10^{-6}$ 4; $\alpha(\text{P})=1.82\times 10^{-7}$ 3
2196.1	(23/2 ⁻)	848.7 5 229.4 5 774.3 2	6.8 14 5.2 11 100 6	1194.77 (17/2 ⁻) 1966.81 (21/2 ⁻) 1421.68 (19/2 ⁻)	(E2)			0.00323 5	$\alpha=0.00323$ 5; $\alpha(\text{K})=0.00275$ 4; $\alpha(\text{L})=0.000375$ 6; $\alpha(\text{M})=7.75\times 10^{-5}$ 11; $\alpha(\text{N}+..)=1.93\times 10^{-5}$ 3 $\alpha(\text{N})=1.664\times 10^{-5}$ 24; $\alpha(\text{O})=2.51\times 10^{-6}$ 4; $\alpha(\text{P})=1.697\times 10^{-7}$ 24
2244.4	(19/2 ⁺)	589.9 5 724.6 5	31 7 100 10	1654.56 (17/2 ⁺) 1519.9 (15/2 ⁺)	(E2)			0.00378 6	$\alpha=0.00378$ 6; $\alpha(\text{K})=0.00322$ 5; $\alpha(\text{L})=0.000444$ 7;

Adopted Levels, Gammas (continued)

$\gamma(^{127}\text{Ba})$ (continued)									Comments
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	δ	$\alpha^\#$	
									$\alpha(\text{M})=9.19\times 10^{-5}$ 13; $\alpha(\text{N}+..)=2.29\times 10^{-5}$ 4 $\alpha(\text{N})=1.97\times 10^{-5}$ 3; $\alpha(\text{O})=2.97\times 10^{-6}$ 5; $\alpha(\text{P})=1.98\times 10^{-7}$ 3
2305.2	(19/2 ⁺)	785.1 5	100	1519.9	(15/2 ⁺)				
2351.9		2057.9 5		293.91	(11/2) ⁻				
		2271.6 5		80.32	7/2 ⁻				
2451.77	(21/2 ⁺)	408.4 3	34 4	2043.39	(19/2 ⁺)	(M1+E2)	-0.14 7	0.0218 4	$\alpha(\text{K})=0.0187$ 3; $\alpha(\text{L})=0.00244$ 4; $\alpha(\text{M})=0.000501$ 7; $\alpha(\text{N}+..)=0.0001260$ 18 $\alpha(\text{N})=0.0001082$ 16; $\alpha(\text{O})=1.658\times 10^{-5}$ 24; $\alpha(\text{P})=1.216\times 10^{-6}$ 19
		797.20 19	100 6	1654.56	(17/2 ⁺)	(E2)		0.00301 5	$\alpha=0.00301$ 5; $\alpha(\text{K})=0.00257$ 4; $\alpha(\text{L})=0.000349$ 5; $\alpha(\text{M})=7.21\times 10^{-5}$ 10; $\alpha(\text{N}+..)=1.80\times 10^{-5}$ 3 $\alpha(\text{N})=1.547\times 10^{-5}$ 22; $\alpha(\text{O})=2.34\times 10^{-6}$ 4; $\alpha(\text{P})=1.587\times 10^{-7}$ 23
2463.6	(23/2 ⁻)	496.5 5	14 3	1966.81	(21/2 ⁻)				
		686.0 2	100 10	1777.6	(19/2 ⁻)	(E2)		0.00432 6	$\alpha=0.00432$ 6; $\alpha(\text{K})=0.00367$ 6; $\alpha(\text{L})=0.000513$ 8; $\alpha(\text{M})=0.0001061$ 15; $\alpha(\text{N}+..)=2.64\times 10^{-5}$ 4 $\alpha(\text{N})=2.27\times 10^{-5}$ 4; $\alpha(\text{O})=3.42\times 10^{-6}$ 5; $\alpha(\text{P})=2.25\times 10^{-7}$ 4
2497.54	(21/2 ⁺)	192.0 5	7.4 18	2305.2	(19/2 ⁺)				
		253.0 5	13 3	2244.4	(19/2 ⁺)				
		843.11 19	100 10	1654.56	(17/2 ⁺)	(E2)		0.00265 4	$\alpha=0.00265$ 4; $\alpha(\text{K})=0.00226$ 4; $\alpha(\text{L})=0.000304$ 5; $\alpha(\text{M})=6.27\times 10^{-5}$ 9; $\alpha(\text{N}+..)=1.566\times 10^{-5}$ 22 $\alpha(\text{N})=1.348\times 10^{-5}$ 19; $\alpha(\text{O})=2.04\times 10^{-6}$ 3; $\alpha(\text{P})=1.399\times 10^{-7}$ 20
2737.43	(23/2 ⁺)	1075.2 5	43 5	1421.68	(19/2 ⁻)				
		239.9 5	53 6	2497.54	(21/2 ⁺)	(M1+E2)	-0.16 5	0.0877 14	$\alpha(\text{K})=0.0751$ 12; $\alpha(\text{L})=0.01003$ 18; $\alpha(\text{M})=0.00207$ 4; $\alpha(\text{N}+..)=0.000519$ 10 $\alpha(\text{N})=0.000446$ 8; $\alpha(\text{O})=6.81\times 10^{-5}$ 12; $\alpha(\text{P})=4.90\times 10^{-6}$ 8
		285.6 2	100 10	2451.77	(21/2 ⁺)	(M1+E2)	-0.18 5	0.0551	$\alpha(\text{K})=0.0472$ 7; $\alpha(\text{L})=0.00626$ 10; $\alpha(\text{M})=0.001291$ 20; $\alpha(\text{N}+..)=0.000324$ 5 $\alpha(\text{N})=0.000278$ 5; $\alpha(\text{O})=4.25\times 10^{-5}$ 7; $\alpha(\text{P})=3.07\times 10^{-6}$ 5
		432.4 5	13 3	2305.2	(19/2 ⁺)				
		493.5 5	43 5	2244.4	(19/2 ⁺)				
		693.7 5	47 5	2043.39	(19/2 ⁺)				
		770.7 5	10.0 20	1966.81	(21/2 ⁻)				
2863.4	(23/2 ⁺)	619 1	100	2244.4	(19/2 ⁺)				
2869.1	(25/2 ⁻)	672.8 5	26 5	2196.1	(23/2 ⁻)				
		902.4 2	100 10	1966.81	(21/2 ⁻)				
2874.5	(23/2 ⁺)	423.1 5	18 4	2451.77	(21/2 ⁺)				
		831.1 4	100 10	2043.39	(19/2 ⁺)	(E2)		0.00274 4	$\alpha=0.00274$ 4; $\alpha(\text{K})=0.00234$ 4; $\alpha(\text{L})=0.000315$ 5; $\alpha(\text{M})=6.50\times 10^{-5}$ 10; $\alpha(\text{N}+..)=1.622\times 10^{-5}$ 23 $\alpha(\text{N})=1.396\times 10^{-5}$ 20; $\alpha(\text{O})=2.11\times 10^{-6}$ 3; $\alpha(\text{P})=1.445\times 10^{-7}$ 21
2923.2	(23/2 ⁺)	879.8 5	100	2043.39	(19/2 ⁺)				
2998.2	(25/2 ⁺)	260.8 2	100 10	2737.43	(23/2 ⁺)	(M1+E2)	-0.11 4	0.0701	$\alpha(\text{K})=0.0601$ 9; $\alpha(\text{L})=0.00795$ 12; $\alpha(\text{M})=0.001638$ 25; $\alpha(\text{N}+..)=0.000411$ 6 $\alpha(\text{N})=0.000353$ 6; $\alpha(\text{O})=5.41\times 10^{-5}$ 8; $\alpha(\text{P})=3.93\times 10^{-6}$ 6

Adopted Levels, Gammas (continued)

$\gamma(^{127}\text{Ba})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	δ	$\alpha^\#$	Comments
2998.2	(25/2 ⁺)	500.5 5	33 4	2497.54	(21/2 ⁺)	(E2)		0.00983 14	$\alpha=0.00983$ 14; $\alpha(\text{K})=0.00826$ 12; $\alpha(\text{L})=0.001244$ 18; $\alpha(\text{M})=0.000259$ 4; $\alpha(\text{N}+..)=6.40\times 10^{-5}$ 10 $\alpha(\text{N})=5.53\times 10^{-5}$ 8; $\alpha(\text{O})=8.20\times 10^{-6}$ 12; $\alpha(\text{P})=4.97\times 10^{-7}$ 7
3059.2	(27/2 ⁻)	546.6 5 862.9 3	38 4 100	2451.77 (21/2 ⁺) 2196.1 (23/2 ⁻)	(23/2 ⁻)	(E2)		0.00251 4	$\alpha=0.00251$ 4; $\alpha(\text{K})=0.00215$ 3; $\alpha(\text{L})=0.000288$ 4; $\alpha(\text{M})=5.93\times 10^{-5}$ 9; $\alpha(\text{N}+..)=1.481\times 10^{-5}$ 21 $\alpha(\text{N})=1.274\times 10^{-5}$ 18; $\alpha(\text{O})=1.93\times 10^{-6}$ 3; $\alpha(\text{P})=1.328\times 10^{-7}$ 19
3137.9	(25/2 ⁺)	214.6 5 263.5 5	19 5 100 10	2923.2 (23/2 ⁺) 2874.5 (23/2 ⁺)	(23/2 ⁺)	(M1+E2)	-0.11 6	0.0682 11	$\alpha(\text{K})=0.0585$ 9; $\alpha(\text{L})=0.00773$ 13; $\alpha(\text{M})=0.00159$ 3; $\alpha(\text{N}+..)=0.000400$ 7 $\alpha(\text{N})=0.000344$ 6; $\alpha(\text{O})=5.26\times 10^{-5}$ 9; $\alpha(\text{P})=3.82\times 10^{-6}$ 6
3273.8	(27/2 ⁻)	400.5 5 686.0 5 810.2 5	29 6 24 5 100	2737.43 (23/2 ⁺) 2451.77 (21/2 ⁺) 2463.6 (23/2 ⁻)	(23/2 ⁺) (21/2 ⁺) (23/2 ⁻)				
3287.0	(27/2 ⁺)	288.8 2	100 5	2998.2 (25/2 ⁺)	(25/2 ⁺)	(M1+E2)	-0.14 4	0.0535	$\alpha(\text{K})=0.0459$ 7; $\alpha(\text{L})=0.00606$ 9; $\alpha(\text{M})=0.001248$ 19; $\alpha(\text{N}+..)=0.000313$ 5 $\alpha(\text{N})=0.000269$ 4; $\alpha(\text{O})=4.12\times 10^{-5}$ 6; $\alpha(\text{P})=2.99\times 10^{-6}$ 5
3401.0		549.6 2 531.6 5	38 4 100	2737.43 (23/2 ⁺) 2869.1 (25/2 ⁻)	(23/2 ⁺) (25/2 ⁻)				
3482.0	(27/2 ⁺)	344.4 5 607.6 5	100 10 40 8	3137.9 (25/2 ⁺) 2874.5 (23/2 ⁺)	(25/2 ⁺) (23/2 ⁺)				Mult.: (M1) or (M1+E2) from D(+Q) with $\delta=-0.05$ 5.
3518.4	(27/2 ⁻)	117.2 5 459.1 2	5.7 15 100 10	3401.0 3059.2 (27/2 ⁻)	(27/2 ⁻)	(M1,E2)		0.0144 19	$\alpha(\text{K})=0.0122$ 18; $\alpha(\text{L})=0.00171$ 10; $\alpha(\text{M})=0.000355$ 18; $\alpha(\text{N}+..)=8.8\times 10^{-5}$ 6 $\alpha(\text{N})=7.6\times 10^{-5}$ 5; $\alpha(\text{O})=1.15\times 10^{-5}$ 9; $\alpha(\text{P})=7.7\times 10^{-7}$ 15
3622.2	(29/2 ⁺)	650.0 5 1322 1 335.2 2	14 3 9.5 24 100 10	2869.1 (25/2 ⁻) 2196.1 (23/2 ⁻) 3287.0 (27/2 ⁺)	(25/2 ⁻) (23/2 ⁻) (27/2 ⁺)				
3755.9	(29/2 ⁻)	623.9 2 237.5 5	60 6 100 10	2998.2 (25/2 ⁺) 3518.4 (27/2 ⁻)	(25/2 ⁺) (27/2 ⁻)	(M1+E2)	-0.10 4	0.0900 14	$\alpha(\text{K})=0.0772$ 12; $\alpha(\text{L})=0.01023$ 17; $\alpha(\text{M})=0.00211$ 4; $\alpha(\text{N}+..)=0.000529$ 9 $\alpha(\text{N})=0.000455$ 8; $\alpha(\text{O})=6.96\times 10^{-5}$ 11; $\alpha(\text{P})=5.05\times 10^{-6}$ 8 $\alpha=0.00572$ 11; $\alpha(\text{K})=0.00493$ 9; $\alpha(\text{L})=0.000631$ 11; $\alpha(\text{M})=0.0001295$ 22; $\alpha(\text{N}+..)=3.26\times 10^{-5}$ 6 $\alpha(\text{N})=2.80\times 10^{-5}$ 5; $\alpha(\text{O})=4.29\times 10^{-6}$ 8; $\alpha(\text{P})=3.17\times 10^{-7}$ 6
		696.4 5	76 8	3059.2 (27/2 ⁻)	(27/2 ⁻)	(M1+E2)	-0.29 7	0.00572 11	$\alpha=0.00236$ 4; $\alpha(\text{K})=0.00202$ 3; $\alpha(\text{L})=0.000269$ 4; $\alpha(\text{M})=5.55\times 10^{-5}$ 8; $\alpha(\text{N}+..)=1.386\times 10^{-5}$ 20 $\alpha(\text{N})=1.193\times 10^{-5}$ 17; $\alpha(\text{O})=1.81\times 10^{-6}$ 3; $\alpha(\text{P})=1.250\times 10^{-7}$ 18
		887.0 5	88 9	2869.1 (25/2 ⁻)	(25/2 ⁻)	(E2)		0.00236 4	
3791.0	(29/2 ⁺)	309.2 5 504.2 5 652.8 5	100 20 88 18 75 15	3482.0 (27/2 ⁺) 3287.0 (27/2 ⁺) 3137.9 (25/2 ⁺)	(27/2 ⁺) (27/2 ⁺) (25/2 ⁺)	(E2)		0.00488 7	$\alpha=0.00488$ 7; $\alpha(\text{K})=0.00415$ 6; $\alpha(\text{L})=0.000585$ 9; $\alpha(\text{M})=0.0001212$ 18; $\alpha(\text{N}+..)=3.01\times 10^{-5}$ 5 $\alpha(\text{N})=2.60\times 10^{-5}$ 4; $\alpha(\text{O})=3.90\times 10^{-6}$ 6; $\alpha(\text{P})=2.54\times 10^{-7}$ 4

Adopted Levels, Gammas (continued)

$\gamma(^{127}\text{Ba})$ (continued)									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	δ	$\alpha^\#$	Comments
3949.7	(31/2 ⁺)	327.5 2 662.6 2	100 11 70 7	3622.2 3287.0	(29/2 ⁺) (27/2 ⁺)	(E2)		0.00471 7	$\alpha=0.00471$ 7; $\alpha(\text{K})=0.00400$ 6; $\alpha(\text{L})=0.000562$ 8; $\alpha(\text{M})=0.0001164$ 17; $\alpha(\text{N}+..)=2.89\times 10^{-5}$ 4 $\alpha(\text{N})=2.49\times 10^{-5}$ 4; $\alpha(\text{O})=3.74\times 10^{-6}$ 6; $\alpha(\text{P})=2.45\times 10^{-7}$ 4 $\alpha=0.00230$ 4; $\alpha(\text{K})=0.00197$ 3; $\alpha(\text{L})=0.000262$ 4; $\alpha(\text{M})=5.39\times 10^{-5}$ 8; $\alpha(\text{N}+..)=1.347\times 10^{-5}$ 19 $\alpha(\text{N})=1.159\times 10^{-5}$ 17; $\alpha(\text{O})=1.757\times 10^{-6}$ 25; $\alpha(\text{P})=1.217\times 10^{-7}$ 17
3957.0	(31/2 ⁻)	897.9 2	100	3059.2	(27/2 ⁻)	(E2)		0.00230 4	
4102.5	(31/2 ⁻)	145.7 5 346.6 2	8.2 19 100 10	3957.0 3755.9	(31/2 ⁻) (29/2 ⁻)	(M1+E2)	-0.13 5	0.0332	$\alpha(\text{K})=0.0285$ 4; $\alpha(\text{L})=0.00373$ 6; $\alpha(\text{M})=0.000769$ 11; $\alpha(\text{N}+..)=0.000193$ 3 $\alpha(\text{N})=0.0001658$ 24; $\alpha(\text{O})=2.54\times 10^{-5}$ 4; $\alpha(\text{P})=1.86\times 10^{-6}$ 3
4217.1	(31/2 ⁻)	583.7 5 1043.3 5	11.4 23 32 7	3518.4 3059.2	(27/2 ⁻) (27/2 ⁻)				
4226.4	(31/2 ⁺)	943.3 5 435.4 5	100	3273.8 3791.0	(27/2 ⁻) (29/2 ⁺)				
4365.2	(33/2 ⁺)	744.5 5 415.7 5 574 1 742.9 5	44 9 100 10 69 7	3482.0 3949.7 3791.0 3622.2	(27/2 ⁺) (31/2 ⁺) (29/2 ⁺) (29/2 ⁺)	(E2)		0.00356 5	Mult.: (M1) or (M1+E2) from (D+Q) with $\delta=0.07$ 7. $\alpha=0.00356$ 5; $\alpha(\text{K})=0.00303$ 5; $\alpha(\text{L})=0.000417$ 6; $\alpha(\text{M})=8.61\times 10^{-5}$ 13; $\alpha(\text{N}+..)=2.15\times 10^{-5}$ 3 $\alpha(\text{N})=1.85\times 10^{-5}$ 3; $\alpha(\text{O})=2.79\times 10^{-6}$ 4; $\alpha(\text{P})=1.87\times 10^{-7}$ 3 $\alpha(\text{K})=0.0398$ 6; $\alpha(\text{L})=0.00523$ 8; $\alpha(\text{M})=0.001077$ 17; $\alpha(\text{N}+..)=0.000271$ 4 $\alpha(\text{N})=0.000232$ 4; $\alpha(\text{O})=3.56\times 10^{-5}$ 6; $\alpha(\text{P})=2.59\times 10^{-6}$ 4 $\alpha(\text{K})=0.01447$ 23; $\alpha(\text{L})=0.00188$ 3; $\alpha(\text{M})=0.000386$ 6; $\alpha(\text{N}+..)=9.70\times 10^{-5}$ 15 $\alpha(\text{N})=8.33\times 10^{-5}$ 12; $\alpha(\text{O})=1.277\times 10^{-5}$ 19; $\alpha(\text{P})=9.37\times 10^{-7}$ 16 $\alpha=0.00489$ 7; $\alpha(\text{K})=0.00415$ 6; $\alpha(\text{L})=0.000585$ 9; $\alpha(\text{M})=0.0001213$ 18; $\alpha(\text{N}+..)=3.01\times 10^{-5}$ 5 $\alpha(\text{N})=2.60\times 10^{-5}$ 4; $\alpha(\text{O})=3.90\times 10^{-6}$ 6; $\alpha(\text{P})=2.54\times 10^{-7}$ 4
4408.2	(33/2 ⁻)	305.0 5	100 10	4102.5	(31/2 ⁻)	(M1+E2)	-0.12 5	0.0464	
		451.9 5	57 12	3957.0	(31/2 ⁻)	(M1+E2)	-0.18 7	0.0168 3	
		652.6 5	64 13	3755.9	(29/2 ⁻)	(E2)		0.00489 7	
4578.5	(33/2 ⁺)	351.9 5 628.7 5 787.7 5	57 12 57 12 100 20	4226.4 3949.7 3791.0	(31/2 ⁺) (31/2 ⁺) (29/2 ⁺)				
4746.0	(35/2 ⁺)	380.7 5	47 10	4365.2	(33/2 ⁺)	(M1+E2)	-0.39 12	0.0256 5	$\alpha(\text{K})=0.0219$ 5; $\alpha(\text{L})=0.00292$ 5; $\alpha(\text{M})=0.000603$ 9; $\alpha(\text{N}+..)=0.0001512$ 22 $\alpha(\text{N})=0.0001299$ 19; $\alpha(\text{O})=1.98\times 10^{-5}$ 3; $\alpha(\text{P})=1.41\times 10^{-6}$ 4
4816.7	(35/2 ⁻)	795.9 5 408.6 5	100 10 100 10	3949.7 4408.2	(31/2 ⁺) (33/2 ⁻)	(M1+E2)	-0.21 7	0.0217 4	$\alpha(\text{K})=0.0186$ 3; $\alpha(\text{L})=0.00243$ 4; $\alpha(\text{M})=0.000500$ 8; $\alpha(\text{N}+..)=0.0001257$ 19 $\alpha(\text{N})=0.0001079$ 16; $\alpha(\text{O})=1.653\times 10^{-5}$ 24; $\alpha(\text{P})=1.206\times 10^{-6}$ 21
		714.3 5 859.1 5	40 8 90 18	4102.5 3957.0	(31/2 ⁻) (31/2 ⁻)				

Adopted Levels, Gammas (continued)

$\gamma(^{127}\text{Ba})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult. ‡	δ	$\alpha^\#$	Comments
4904.0	(35/2 ⁻)	947.0 5	100	3957.0	(31/2 ⁻)				
5131.3	(35/2 ⁺)	552.6 5	67 14	4578.5	(33/2 ⁺)				
		905.4 5	100 20	4226.4	(31/2 ⁺)				
5213.5	(37/2 ⁻)	396.4 5	73 8	4816.7	(35/2 ⁻)	(M1+E2)	-0.18 6	0.0235	$\alpha(\text{K})=0.0202$ 3; $\alpha(\text{L})=0.00263$ 4; $\alpha(\text{M})=0.000541$ 8; $\alpha(\text{N}+..)=0.0001360$ 20 $\alpha(\text{N})=0.0001168$ 17; $\alpha(\text{O})=1.79\times 10^{-5}$ 3; $\alpha(\text{P})=1.308\times 10^{-6}$ 21
		805.6 5	100 10	4408.2	(33/2 ⁻)				
5228.1	(35/2 ⁻)	1011 1	100	4217.1	(31/2 ⁻)				
5228.1	(37/2 ⁺)	481.7 5	80 16	4746.0	(35/2 ⁺)				
		650 1		4578.5	(33/2 ⁺)				
		863.2 5	100 20	4365.2	(33/2 ⁺)				
5256.1	(35/2 ⁻)	1039 1	100	4217.1	(31/2 ⁻)				
5512.4	(37/2 ⁺)	934 1		4578.5	(33/2 ⁺)				
5675.5	(39/2 ⁺)	448 1		5228.1	(35/2 ⁻)				
		545 1		5131.3	(35/2 ⁺)				
		929 1		4746.0	(35/2 ⁺)				
5741.7	(39/2 ⁻)	528.0 5		5213.5	(37/2 ⁻)	M1+E2	-0.27 9	0.01129 22	$\alpha(\text{K})=0.00971$ 19; $\alpha(\text{L})=0.001257$ 21; $\alpha(\text{M})=0.000258$ 5; $\alpha(\text{N}+..)=6.49\times 10^{-5}$ 11 $\alpha(\text{N})=5.58\times 10^{-5}$ 9; $\alpha(\text{O})=8.55\times 10^{-6}$ 15; $\alpha(\text{P})=6.27\times 10^{-7}$ 14
		838 1		4904.0	(35/2 ⁻)				
		925.0 5		4816.7	(35/2 ⁻)				
5920.9	(39/2 ⁻)	1017 1	100	4904.0	(35/2 ⁻)				
6203.0	(41/2 ⁺)	528 1		5675.5	(39/2 ⁺)				
		974 1		5228.1	(35/2 ⁻)				
6222.1	(41/2 ⁻)	480 1		5741.7	(39/2 ⁻)				
		1009 1		5213.5	(37/2 ⁻)				
6320.1	(39/2 ⁻)	1092 1	100	5228.1	(35/2 ⁻)				
6379.1	(39/2 ⁻)	1123 1	100	5256.1	(35/2 ⁻)				
6552.4	(41/2 ⁺)	1040 1	100	5512.4	(37/2 ⁺)				
6726.1	(43/2 ⁺)	523 1		6203.0	(41/2 ⁺)				
		1051 1		5675.5	(39/2 ⁺)				
6762.7	(43/2 ⁻)	541 1		6222.1	(41/2 ⁻)				
		1021 1		5741.7	(39/2 ⁻)				
7002.8	(43/2 ⁻)	1082 1		5920.9	(39/2 ⁻)				
		1261 1		5741.7	(39/2 ⁻)				
7277.4	(45/2 ⁺)	551 1		6726.1	(43/2 ⁺)				
		725 1		6552.4	(41/2 ⁺)				
		1074 1		6203.0	(41/2 ⁺)				
7309.4	(45/2 ⁻)	547 1		6762.7	(43/2 ⁻)				
		1087 1		6222.1	(41/2 ⁻)				
7465.1	(43/2 ⁻)	1145 1	100	6320.1	(39/2 ⁻)				
7590.1	(43/2 ⁻)	1211 1	100	6379.1	(39/2 ⁻)				
7632.4	(45/2 ⁺)	1080 1	100	6552.4	(41/2 ⁺)				

Adopted Levels, Gammas (continued)

$\gamma(^{127}\text{Ba})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π
7865.8	(47/2 ⁻)	556 <i>I</i>		7309.4	(45/2 ⁻)	9617.6	(53/2 ⁺)	1188 <i>I</i>		8429.6	(49/2 ⁺)
		863 <i>I</i>		7002.8	(43/2 ⁻)	9677.2	(53/2 ⁻)	642 <i>I</i>		9034.9	(51/2 ⁻)
		1103 <i>I</i>		6762.7	(43/2 ⁻)			1218 <i>I</i>		8459.1	(49/2 ⁻)
7881.7	(47/2 ⁺)	604 <i>I</i>		7277.4	(45/2 ⁺)	9967.4	(53/2 ⁺)	1211 <i>I</i>	100	8756.4	(49/2 ⁺)
		1156 <i>I</i>		6726.1	(43/2 ⁺)	10192.1	(51/2 ⁻)	1306 <i>I</i>	100	8886.1	(47/2 ⁻)
8193.8	(47/2 ⁻)	1191 <i>I</i>	100	7002.8	(43/2 ⁻)	10257.5	(55/2 ⁻)	580 <i>I</i>		9677.2	(53/2 ⁻)
8429.6	(49/2 ⁺)	548 <i>I</i>		7881.7	(47/2 ⁺)			1223 <i>I</i>		9034.9	(51/2 ⁻)
		1152 <i>I</i>		7277.4	(45/2 ⁺)	10440.6	(55/2 ⁺)	1320 <i>I</i>	100	9120.6	(51/2 ⁺)
8459.1	(49/2 ⁻)	593 <i>I</i>		7865.8	(47/2 ⁻)	10776.8	(55/2 ⁻)	1336 <i>I</i>	100	9440.8	(51/2 ⁻)
		1150 <i>I</i>		7309.4	(45/2 ⁻)	10822.6	(57/2 ⁺)	1205 <i>I</i>	100	9617.6	(53/2 ⁺)
8756.4	(49/2 ⁺)	1124 <i>I</i>	100	7632.4	(45/2 ⁺)	10952.3	(57/2 ⁻)	695 <i>I</i>		10257.5	(55/2 ⁻)
8886.1	(47/2 ⁻)	1296 <i>I</i>	100	7590.1	(43/2 ⁻)			1275 <i>I</i>		9677.2	(53/2 ⁻)
9034.9	(51/2 ⁻)	576 <i>I</i>		8459.1	(49/2 ⁻)	11266.4	(57/2 ⁺)	1299 <i>I</i>	100	9967.4	(53/2 ⁺)
		1169 <i>I</i>		7865.8	(47/2 ⁻)	11499.5	(59/2 ⁻)	1242 <i>I</i>	100	10257.5	(55/2 ⁻)
9120.6	(51/2 ⁺)	691 <i>I</i>		8429.6	(49/2 ⁺)	12086.6	(61/2 ⁺)	1264 <i>I</i>	100	10822.6	(57/2 ⁺)
		1239 <i>I</i>		7881.7	(47/2 ⁺)	12273.3	(61/2 ⁻)	1321 <i>I</i>	100	10952.3	(57/2 ⁻)
9440.8	(51/2 ⁻)	1247 <i>I</i>	100	8193.8	(47/2 ⁻)	12817.5	(63/2 ⁻)	1318 <i>I</i>	100	11499.5	(59/2 ⁻)
9617.6	(53/2 ⁺)	497 <i>I</i>		9120.6	(51/2 ⁺)	13476.6	(65/2 ⁺)	1390 <i>I</i>	100	12086.6	(61/2 ⁺)

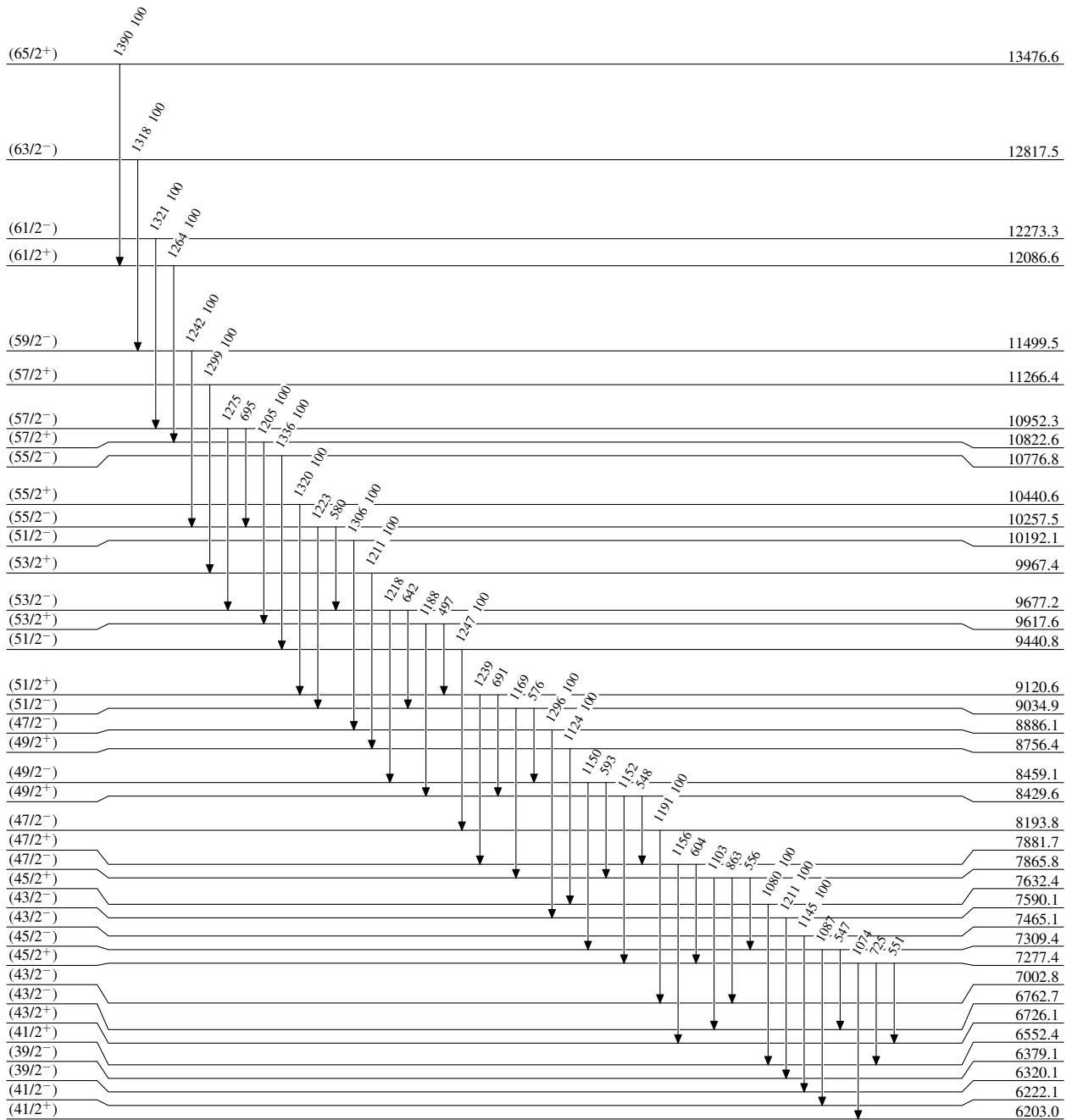
[†] From (HI,xn γ), except as noted.

[‡] From DCO ratio in (HI,xn γ) and placement in level scheme, unless otherwise noted.

[#] 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.

Adopted Levels, GammasLevel Scheme

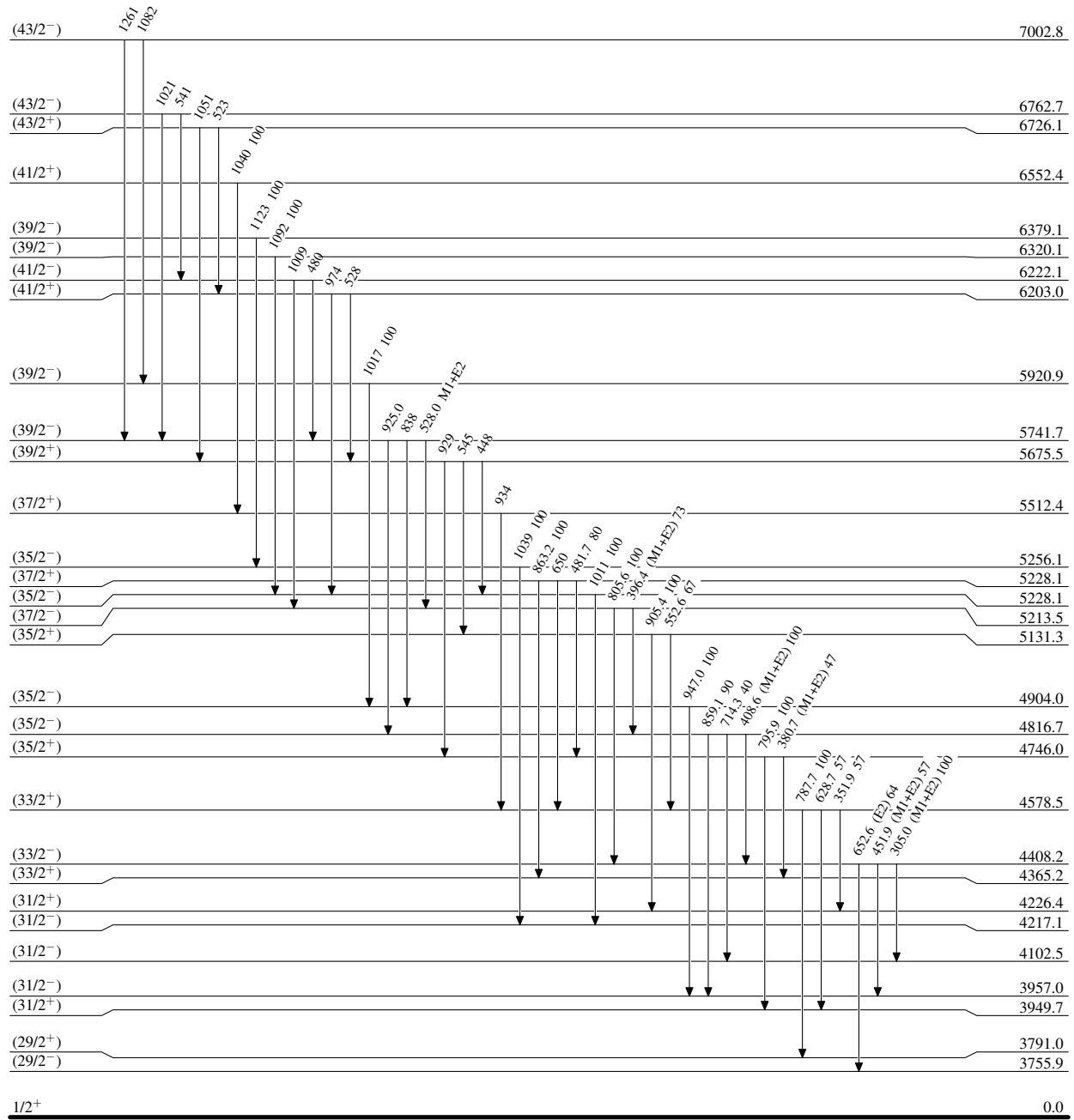
Intensities: Relative photon branching from each level



12.7 min 4

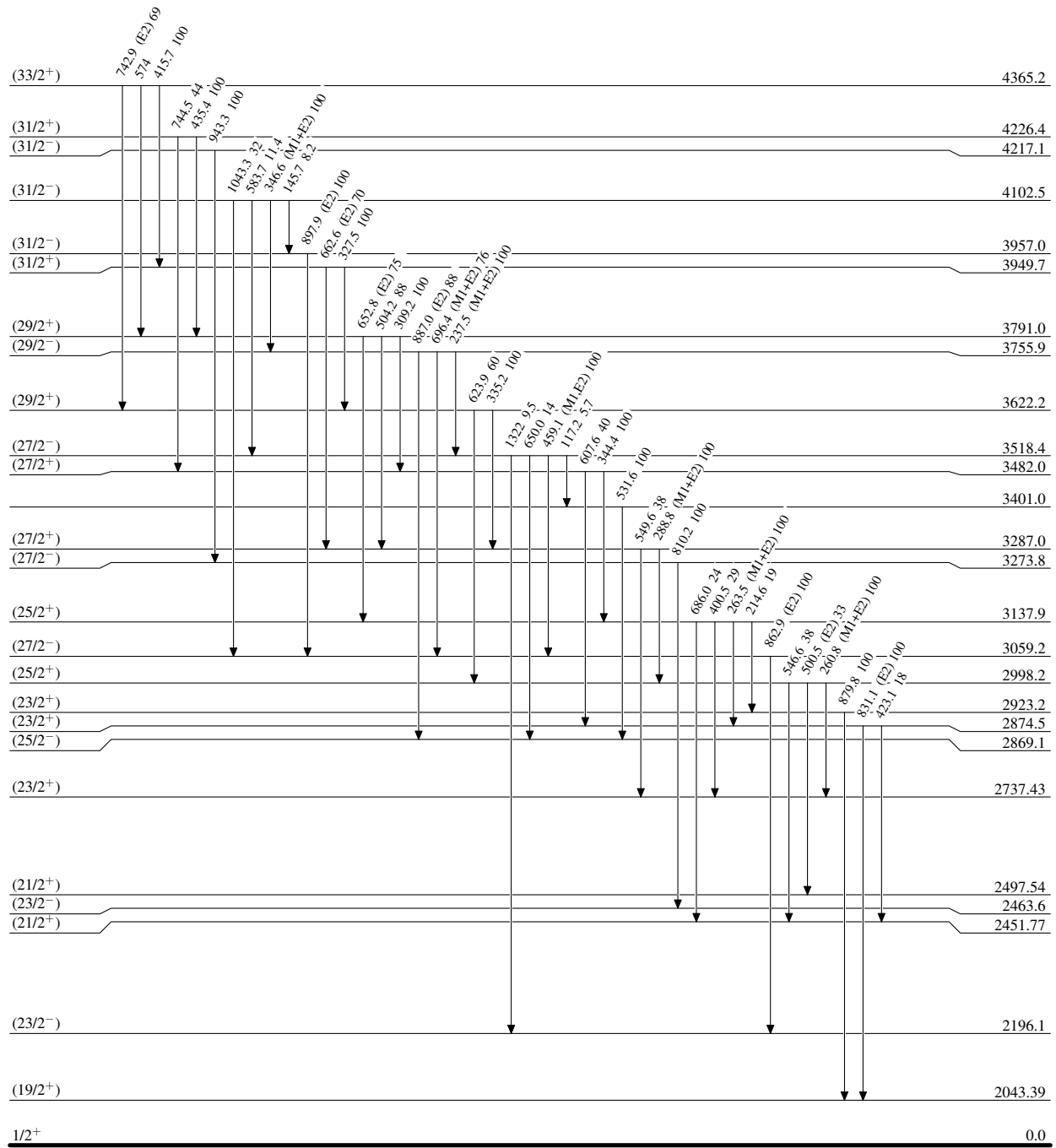
Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



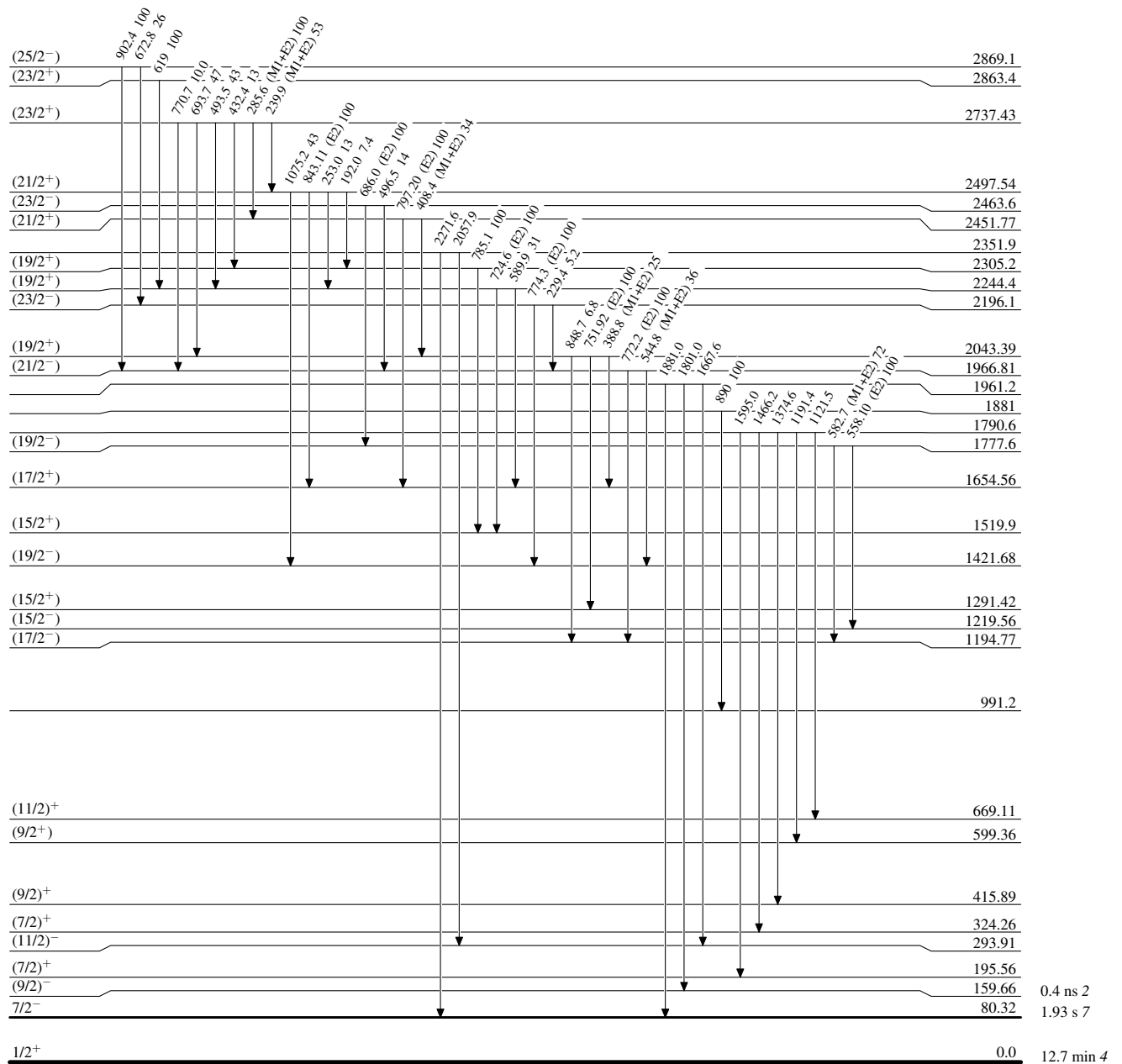
Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



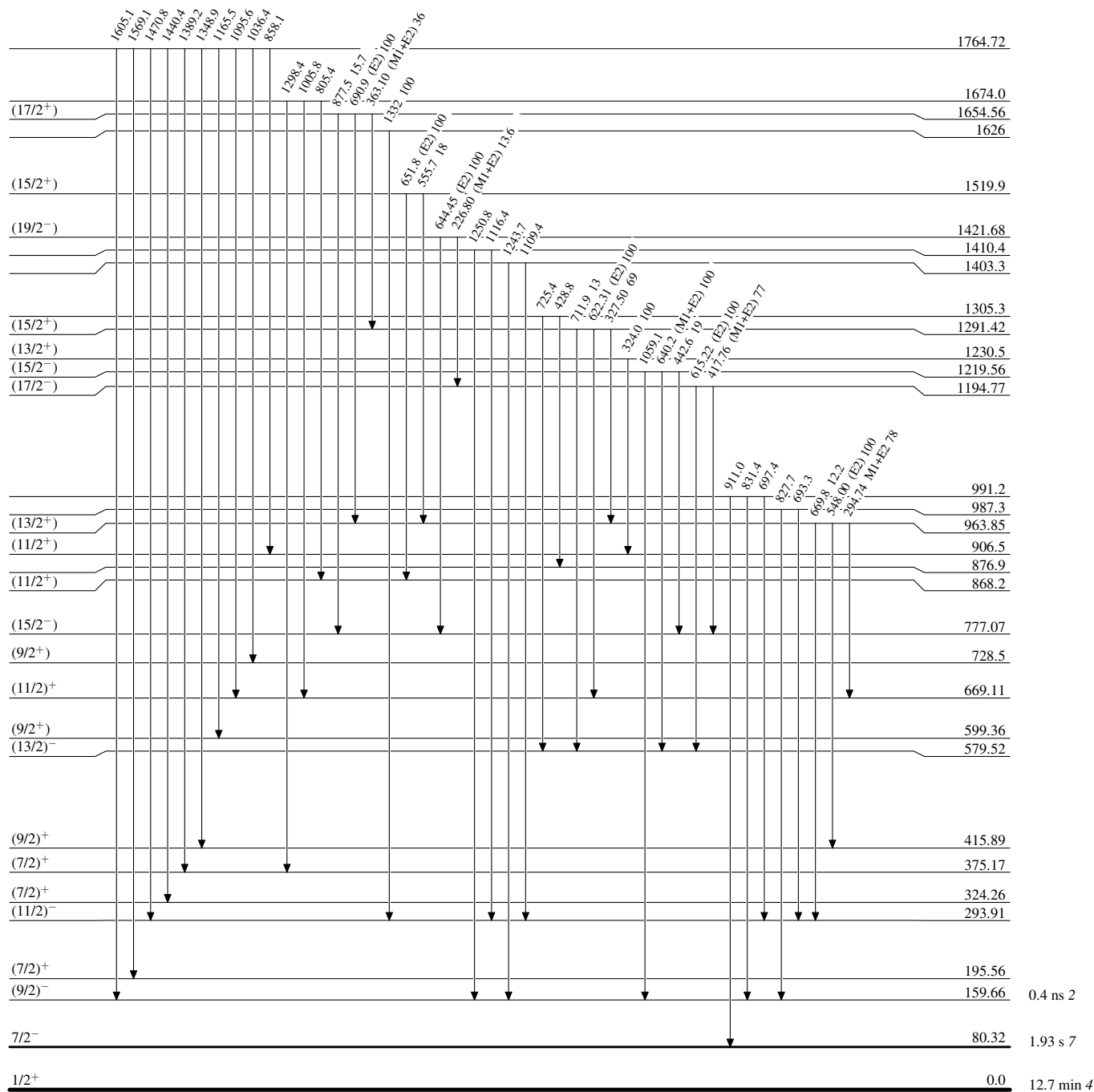
Adopted Levels, GammasLevel Scheme (continued)

Intensities: Relative photon branching from each level



Adopted Levels, Gammas**Level Scheme (continued)**

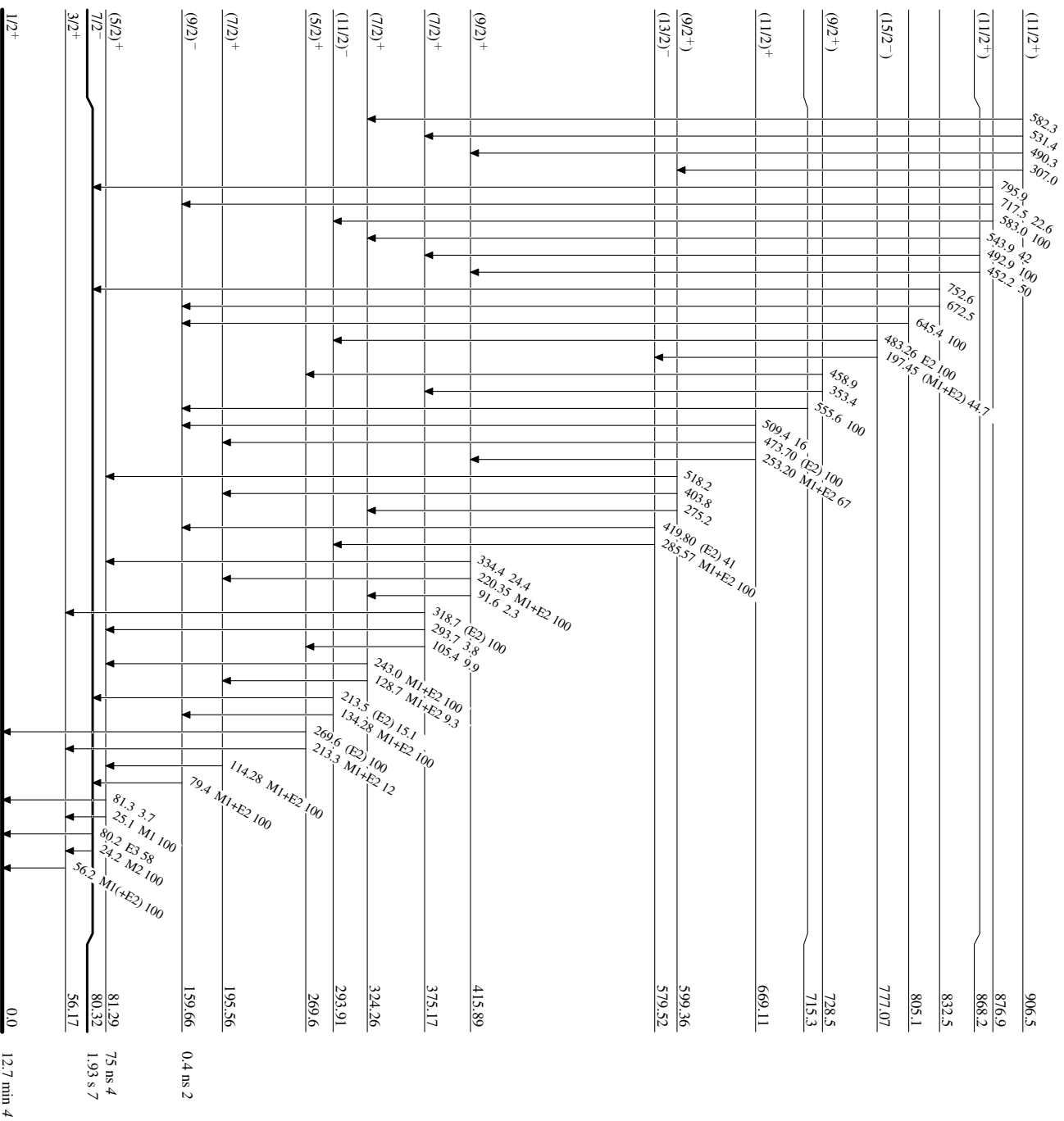
Intensities: Relative photon branching from each level



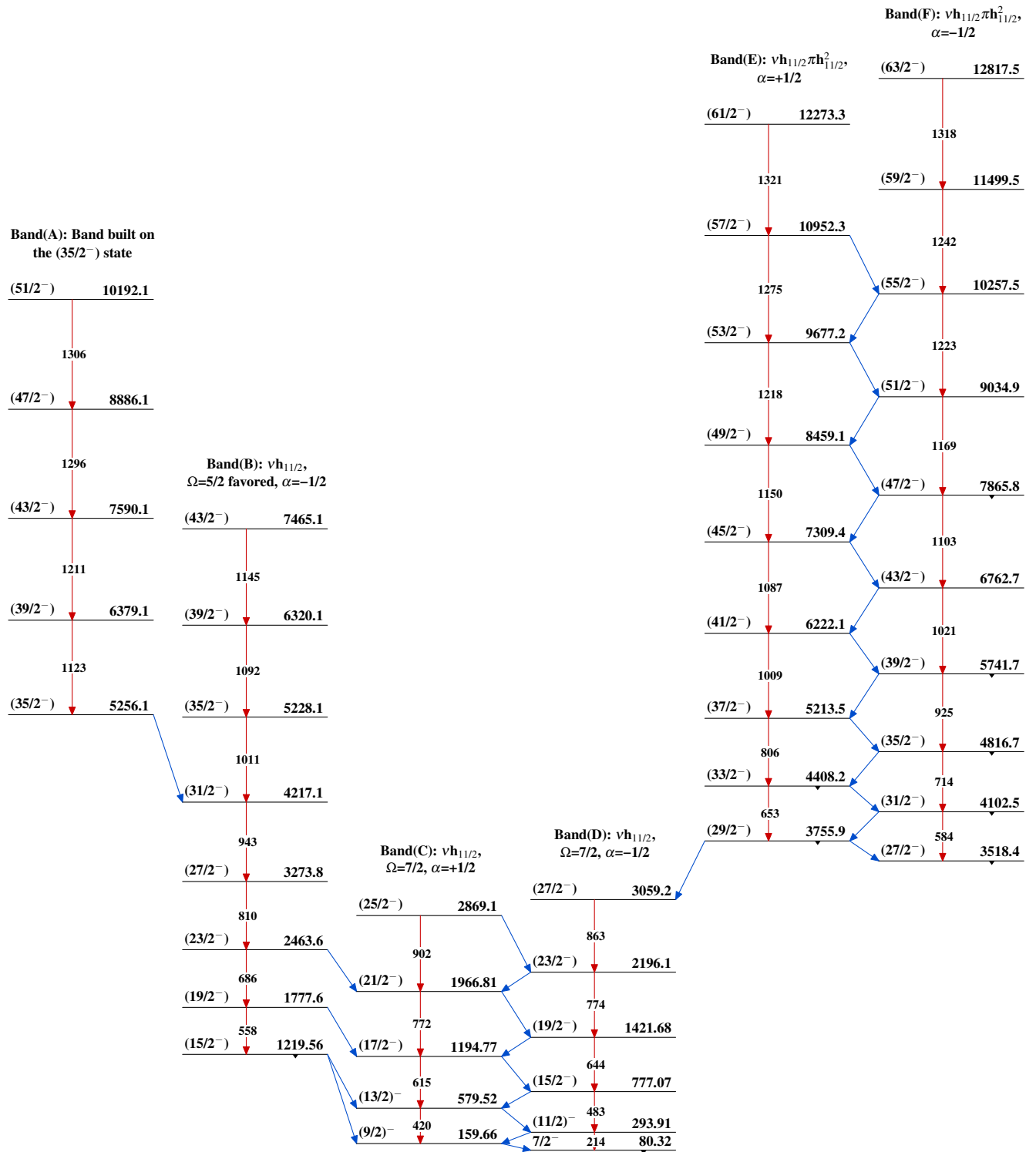
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

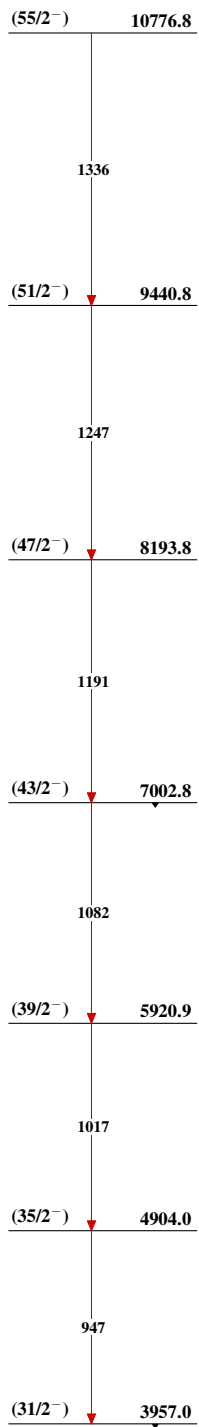


¹²⁷Ba₇₁

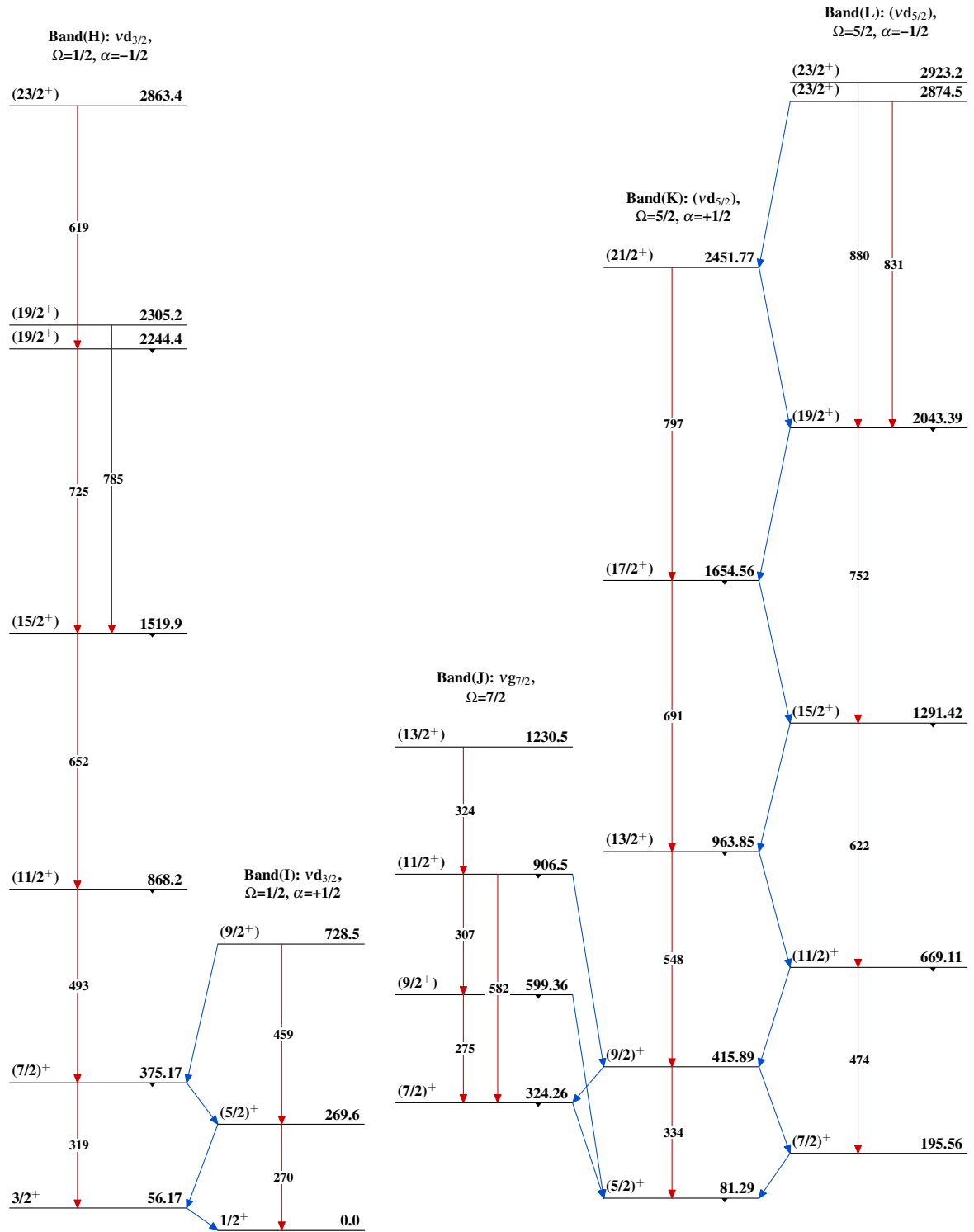
Adopted Levels, Gammas

Adopted Levels, Gammas (continued)

Band(G): Band built on
the $27/2^-$ state,
 $\alpha=-1/2$



$^{127}_{56}\text{Ba}_{71}$

Adopted Levels, Gammas (continued)

Adopted Levels, Gammas (continued)