

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Zoltan Elekes and Janos Timar		NDS 129, 191 (2015)	28-Feb-2015

$Q(\beta^-) = -6750$ 50; $S(n) = 10632$ 13; $S(p) = 6428$ 8; $Q(\alpha) = -143$ 6 [2012Wa38](#)

$S(2n) = 18852$ 14, $S(2p) = 10811$ 6 ([2012Wa38](#)).

α : [Additional information 1](#).

 ^{128}Ba LevelsCross Reference (XREF) Flags

- A** ^{128}La ε decay (<1.4 min)
B ^{128}La ε decay (5.18 min)
C (HI,xn γ)
D $^{130}\text{Ba}(p,t)$

E(level) [†]	J π [‡]	T _{1/2} [@]	XREF	Comments
0.0 ^d	0 ⁺	2.43 d 5	ABCD	% ε =100 J π : L=0 in (p,t). T _{1/2} : from $\gamma(t)$ (1963Ya05). Other: 2.4 d 1 (1950Fi11).
284.00 ^d 8	2 ⁺	105 ps 9	ABCD	J π : E2 γ to 0 ⁺ ; L=2 in (p,t).
763.32 ^d 11	4 ⁺	5.34 ps 24	ABCD	J π : L=4 in (p,t); consistent with E2 γ to 2 ⁺ .
884.50 ^a 12	2 ⁺	3.4 ps 4	ABCD	J π : E2 γ to 0 ⁺ ; L=2 in (p,t).
942.1 5	0 ⁺		AB D	J π : L=0 in (p,t); E2 γ to 2 ⁺ .
1321.0 4	2 ⁺		AB D	J π : L=2 in (p,t); γ 's to 0 ⁺ and 4 ⁺ .
1324.37 ^{&} 14	3 ⁺		BC	J π : M1+E2 γ 's to 2 ⁺ and 4 ⁺ .
1372.33 ^a 13	4 ⁺	3.3 ps 3	BCD	J π : L=4 in (p,t); E2 γ to 2 ⁺ , M1+E2 γ to 4 ⁺ .
1406.88 ^d 17	6 ⁺	1.33 ps 12	BC	J π : in-band E2 γ to 4 ⁺ .
1710.0 10	0 ⁺		AB D	J π : L=0 in (p,t); consistent with $\gamma\gamma(\theta)$.
1799.56 16	4 ⁺		B	J π : From $\gamma\gamma(\theta)$ of 2002Wo10 , γ to 2 ⁺ , β^- -feeding from (5 ⁺).
1833.75 18	4 ⁺		B D	J π : From $\gamma\gamma(\theta)$ of 2002Wo10 , γ to 2 ⁺ , β^- -feeding from (5 ⁺); contradiction with L=3 in (p,t).
1907.5 4	4 ⁺		B D	J π : L=4 in (p,t).
1931.34 ^{&} 22	5 ⁺		BC	J π : E2 γ to 3 ⁺ ; M1 γ to 4 ⁺ .
1939.34 ^a 18	6 ⁺	1.86 ps 22	BC	J π : E2 γ to 4 ⁺ in band, γ to 6 ⁺ .
1953.9 5			D	
2008.9 5			B	
2039.35 21	(1 ⁺ to 4 ⁺)		B	J π : γ 's to 2 ⁺ and 3 ⁺ .
2039.49 ^f 19	5 ⁻	1.12 ps 17	BC	J π : E2 γ from 7 ⁻ in band.
2054.6 7	2 ⁺		D	J π : L=2 in (p,t).
2175.6 3	(4 to 6)		B	J π : log ft =6.81 from (5 ⁺).
2188.51 ^d 19	8 ⁺	0.53 ps 7	C	J π : E2 γ to 6 ⁺ in band.
2192.5 6	(4 ⁺)		B	J π : from log ft =7.37 from (5 ⁺) and γ to 2 ⁺ .
2197.7 3	3 ⁻ , 4 ⁺		D	J π : L=4 in (p,t).
2203.4 3	(3 ⁻ , 4 ⁺)		B	J π : γ 's to 2 ⁺ , β^- -feeding from (5 ⁺).
2218.8 5	0 ⁺		AB D	J π : L=0 in (p,t); $\gamma\gamma(\theta)$.
2246.7 5	(4 to 6 ⁺)		B	J π : log ft =7.07 from (5 ⁺) and γ 's to 4 ⁺ and 5 ⁺ .
2250.6 9	4 ⁺		D	J π : L=4 in (p,t).
2347.2 5	2 ⁺		A D	J π : L=2 in (p,t).
2395.81 ^h 23	(7) ⁻	6.1 ns 2	BC	J π : E1 γ to 6 ⁺ , no γ to (3,4 ⁺). T _{1/2} : from beam- $\gamma(t)$ (1992Pe06).
2412.87 ^f 18	7 ⁻	3.6 ps 3	BC	J π : E1 γ 's to 6 ⁺ and 8 ⁺ .

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Adopted Levels, Gammas (continued) ^{128}Ba Levels (continued)

E(level) [†]	J ^π [‡]	T _{1/2} [@]	XREF	Comments
2425.45 15	(4 ⁻ ,5 ⁺)		B	J ^π : $\gamma\gamma(\theta)$ suggests J=4,5; γ to 3 ⁺ , no γ to 2 ⁺ .
2444.5 2	0 ⁺		D	J ^π : L=0 in (p,t).
2451.4 3	(3 ⁻ to 6 ⁺)		B	J ^π : γ 's to 4 ⁺ and 5 ⁻ .
2474.0 10	(2 ⁺ to 6 ⁺)		B	J ^π : γ to 4 ⁺ .
2486.2 10			D	
2511.2 7			D	
2531.5 4	(4 ⁺ to 7 ⁻)		B	J ^π : γ 's to 5 ⁻ and 6 ⁺ .
2551.5 7	4 ⁺		D	J ^π : L=4 in (p,t).
2571.4 4	(4 ⁺ to 7 ⁻)		B	J ^π : γ 's to 5 ⁻ and 6 ⁺ .
2589.7 7	2 ⁺		D	J ^π : L=2 in (p,t).
2600.27 ^a 19	8 ⁺	0.8 ps 3	C	J ^π : E2 γ to 6 ⁺ in band.
2612.83 ^h 25	(8) ⁻	119 ps 5	C	J ^π : M1+E2 γ to (7) ⁻ in band.
2627.0 3			B	This level is split up into two levels in 1997Ha30. However, evaluators do not see any published experimental fact that would contradict a one-level assumption.
2629.0 10	0 ⁺		A D	J ^π : L=0 in (p,t); $\gamma\gamma(\theta)$.
2631.3 ^{&} 5	7 ⁺		C	J ^π : Q γ to 5 ⁺ in band.
2659 1	(3 ⁻)		D	J ^π : L=(3) in (p,t).
2669.5 5			B	
2710 1	(2 ⁺)		D	J ^π : L=(2) in (p,t).
2721.1 3	(5,6 ⁺)		B	J ^π : γ 's to 4 ⁺ and 6 ⁺ ; no γ to 2 ⁺ .
2746.2 7			B	
2749 1			D	
2770 1	0 ⁺		D	J ^π : L=0 in (p,t).
2804 1			D	
2840 1	0 ⁺		D	J ^π : L=0 in (p,t).
2848.6 4			B	
2860.78 ^g 20	(8) ⁻	25 ps 3	C	J ^π : D(+Q) γ to 7 ⁻ , no γ to 5 ⁻ ; parity from configuration.
2870 1			D	
2878.41 24	(5 ⁻ ,6 ⁺)		B	J ^π : E2,D γ to 4 ⁺ , γ to (7) ⁻ .
2906.29 ^f 19	9 ⁻	3.8 ps 3	C	J ^π : E2 γ to 7 ⁻ in band, E1 γ to 8 ⁺ .
2923 1	0 ⁺		D	J ^π : L=0 in (p,t).
2927.0 ^h 3	(9) ⁻	11.8 ps 8	C	J ^π : M1+E2 γ to (8) ⁻ , E2 γ to (7) ⁻ .
2929.9 5			B	
2950 1			D	
2975.3 6			B	
2977.89 25	(4,5)		B	J ^π : $\gamma\gamma(\theta)$ for the 1605 γ 488 γ suggests J=4,5.
3039 1			D	
3082.31 ^d 21	10 ⁺	0.40 ps 6	C	J ^π : E2 γ to 8 ⁺ in band.
3086 1	(3 ⁻)		D	J ^π : L=(3) in (p,t).
3116.9 5			B	
3127 1			D	
3204 1			D	
3246 1			D	
3292.5 ^h 3	(10) ⁻	2.6 ps 6	C	J ^π : M1+E2 γ to (9) ⁻ , cross-over γ to (8) ⁻ in band.
3334.39 ^g 20	(10) ⁻	3.4 ps 3	C	J ^π : D(+Q) γ to 9 ⁻ , E2 γ to (8) ⁻ in band.
3341 3	(4 ⁺)		D	J ^π : L=(4) in (p,t).
3345.78 ^a 21	10 ⁺	0.63 ps 19	C	J ^π : E2 γ to 8 ⁺ in band.
3387.2 ^{&} 7	(9 ⁺)		C	J ^π : γ to 7 ⁺ in E2 band.
3474 3	(3 ⁻)		D	J ^π : L=(3) in (p,t).
3506.7 ^f 4	11 ⁻		C	J ^π : γ to 9 ⁻ in E2 band.
3521.71 ^c 24	10 ⁺	2.4 ps 3	C	J ^π : γ to 10 ⁺ , E2 γ to 8 ⁺ .
3536 3			D	
3611 3	(3 ⁻)		D	J ^π : L=(3) in (p,t).

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Adopted Levels, Gammas (continued) ^{128}Ba Levels (continued)

E(level) [†]	J $\pi^{\ddagger}$	T _{1/2} [@]	XREF	Comments
3683.2 ^h 4	(11 ⁻)	1.1 ps 4	C	J $^{\pi}$: γ 's to (10) ⁻ and (9) ⁻ in band.
3985.29 ^g 23	(12 ⁻)		C	J $^{\pi}$: Q γ to (10) ⁻ in band and γ to 11 ⁻ .
3988.19 ^e 22	12 ⁺	0.58 ps 19	C	J $^{\pi}$: E2 γ to 10 ⁺ ; no γ to lower-spin states.
4017.74 ^c 24	12 ⁺	0.70 ps 12	C	J $^{\pi}$: E2 γ to 10 ⁺ in band.
4112.2 ^d 3	12 ⁺		C	J $^{\pi}$: Q γ to 10 ⁺ in band.
4116.1 ^h 4	(12 ⁻)	0.7 ps 3	C	J $^{\pi}$: E2 γ to (10) ⁻ , γ to (11 ⁻).
4194.8 ^a 3	12 ⁺		C	J $^{\pi}$: Q γ to 10 ⁺ in band.
4218.2 ^f 4	13 ⁻		C	J $^{\pi}$: Q γ to (11 ⁻) in band.
4556.8 ^h 5	(13 ⁻)		C	J $^{\pi}$: Q γ to (11 ⁻), γ to (12 ⁻) in band.
4645.92 ^e 24	14 ⁺	0.89 ps 18	C	J $^{\pi}$: E2 γ to 12 ⁺ in band.
4650.7 ^b 6	12 ⁺		C	J $^{\pi}$: M1+E2 γ from 13 ⁺ , γ from 14 ⁺ in band.
4720.37 ^c 24	14 ⁺	0.44 ps 9	C	J $^{\pi}$: γ to 12 ⁺ in E2 band.
4815.7 ^g 4	(14 ⁻) [#]	0.23 ps 3	C	
4901.6 [?] 3	(13 ⁺)		C	J $^{\pi}$: γ to 12 ⁺ , γ from 14 ⁺ .
4956.07 ^b 25	13 ⁺	1.00 ps 9	C	J $^{\pi}$: $\gamma\gamma(\theta)$ suggests 13-12 spin sequence for the 843 γ and 968 γ . Parity from M1+E2 γ to 12 ⁺ .
5036.1 ^a 3	14 ⁺		C	J $^{\pi}$: γ to 12 ⁺ in E2 band.
5040.0 ^h 5	(14 ⁻)		C	J $^{\pi}$: γ 's to (12 ⁻), (13 ⁻) in band.
5052.2 ^f 6	15 ⁻		C	J $^{\pi}$: Q γ to 13 ⁻ in band.
5233.4 ^b 3	14 ⁺	1.6 ps 3	C	J $^{\pi}$: $\gamma\gamma(\theta)$ suggests 14-13 spin sequence for the 277 γ and M1+E2 γ to 13 ⁺ .
5384.0 ⁱ 8	(15 ⁺)		C	J $^{\pi}$: γ to 14 ⁺ , no γ to lower-spin states.
5495.9 ^e 4	16 ⁺	0.46 ps 4	C	J $^{\pi}$: γ to 14 ⁺ in E2 band.
5499.5 ^h 8	(15 ⁻) [#]		C	
5529.7 ^b 3	15 ⁺	1.06 ps 15	C	J $^{\pi}$: M1+E2 γ to 14 ⁺ , γ to 13 ⁺ in band.
5551.0 ^c 4	(16 ⁺)		C	J $^{\pi}$: γ to 14 ⁺ in E2 band.
5753.7 ^g 5	(16 ⁻)	0.27 ps 3	C	J $^{\pi}$: γ to (14 ⁻) in band, γ to 15 ⁻ .
5853.0 ^b 3	16 ⁺	0.68 ps 23	C	J $^{\pi}$: M1+E2 γ to 15 ⁺ , γ to 14 ⁺ in band.
5997.8 ^f 8	17 ⁻		C	J $^{\pi}$: Q γ to 15 ⁻ in band.
6011.0 ^h 11	(16 ⁻) [#]		C	
6214.8 ^b 3	17 ⁺	0.49 ps 6	C	J $^{\pi}$: M1+E2 γ to 16 ⁺ , γ to 15 ⁺ in band.
6240.0 ⁱ 8	(17 ⁺)		C	J $^{\pi}$: γ to 16 ⁺ , γ to (15 ⁺) in band.
6436.3 ^e 5	18 ⁺	0.19 ps 4	C	J $^{\pi}$: γ to 16 ⁺ in E2 band.
6493.0 ^c 11	(18 ⁺) [#]		C	
6608.4 ^b 3	18 ⁺	0.34 ps 5	C	J $^{\pi}$: M1+E2 γ to 17 ⁺ , γ to 16 ⁺ .
6732.7 ^g 11	(18 ⁻) [#]		C	
6993.8 ^f 13	(19 ⁻) [#]		C	
7036.1 ^b 3	19 ⁺	0.21 ps 3	C	J $^{\pi}$: M1+E2 γ to 18 ⁺ , γ to 17 ⁺ in band.
7178.2 ⁱ 8	(19 ⁺)		C	J $^{\pi}$: γ to 18 ⁺ , γ to (17 ⁺) in band.
7443.2 ^e 10	20 ⁺ [#]	0.16 ps 4	C	J $^{\pi}$: γ to 18 ⁺ in E2 band.
7493.9 ^b 3	20 ⁺		C	J $^{\pi}$: M1+E2 γ to 19 ⁺ , γ to 18 ⁺ in band.
7530.0 ^c 15	(20 ⁺) [#]		C	
7928.8 ^f 16	(21 ⁻) [#]		C	
7980.8 ^b 3	21 ⁺		C	J $^{\pi}$: M1+E2 γ to 20 ⁺ , γ to 19 ⁺ in band.
8163.4 ⁱ 10	(21 ⁺)		C	J $^{\pi}$: γ to 20 ⁺ , γ to (19 ⁺) in band.
8484.9 ^e 12	22 ⁺ [#]		C	J $^{\pi}$: γ to 20 ⁺ in E2 band.
8497.2 ^b 4	22 ⁺		C	J $^{\pi}$: γ to 20 ⁺ and γ to 21 ⁺ in band.
8659.0 ^c 18	(22 ⁺) [#]		C	

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Adopted Levels, Gammas (continued) ^{128}Ba Levels (continued)

E(level) [†]	J^π [‡]	XREF	Comments
8934.8 ^f 19	(23 ⁻) [#]	C	
9032.3 ^b 4	23 ⁺	C	J^π : γ 's to 21 ⁺ and 22 ⁺ in band.
9167.6 ⁱ 13	(23 ⁺)	C	J^π : γ to 22 ⁺ , γ to (21 ⁺) in band.
9563.9 ^e 16	(24 ⁺) [#]	C	
9601.1 ^b 7	24 ⁺	C	J^π : γ 's to 22 ⁺ and 23 ⁺ in band.
9814.0 ^c 20	(24 ⁺) [#]	C	
10023.8 ^f 21	(25 ⁻) [#]	C	
10167.7 ^b 9	25 ⁺	C	J^π : γ 's to 23 ⁺ and 24 ⁺ in band.
10237.6 ⁱ 16	(25 ⁺) [#]	C	
10649.9 ^e 19	(26 ⁺) [#]	C	
10785.1 ^b 12	(26 ⁺)	C	J^π : γ to 24 ⁺ in band.
11055.0 ^c 23	(26 ⁺) [#]	C	
11195.8 ^f 24	(27 ⁻) [#]	C	
11386.6 ⁱ 19	(27 ⁺) [#]	C	
11775.9 ^e 21	(28 ⁺) [#]	C	
12442 ^f 3	(29 ⁻) [#]	C	
12590.7 ⁱ 21	(29 ⁺) [#]	C	
12981.9 ^e 24	(30 ⁺) [#]	C	
13737 ^f 3	(31 ⁻) [#]	C	
14238 ^e 3	(32 ⁺) [#]	C	
15062 ^f 3	(33 ⁻) [#]	C	
15500 ^e 3	(34 ⁺) [#]	C	
16288 ^f 3	(35 ⁻) [#]	C	
16780 ^e 3	(36 ⁺) [#]	C	
17653 ^f 3	(37 ⁻) [#]	C	
18217 ^e 3	(38 ⁺) [#]	C	

[†] E(levels) are from a least-squares fit to adopted $E\gamma$'s, except for those excited in (p,t) alone.

[‡] J^π 's of band members are based on the J^π of the band head or other band member and on multipolarities of in-band transitions, unless otherwise noted.

[#] γ to $J=(I-2)$ in band.

@ From recoil-distance Doppler-shift (2000Pe20,2000Pe19) or DSA (1998Pe17) in (HI,xn γ), except as noted.

& Band(A): γ -vibrational band, odd spin.

^a Band(B): γ -vibrational band, even spin.

^b Band(C): magnetic-dipole band. Configuration= $\pi(h_{11/2}d_{5/2})\nu(h_{11/2}g_{7/2})$.

^c Band(D): g.s. S band-1. Configuration= $\pi(h_{11/2})^2$.

^d Band(E): g.s. band.

^e Band(F): g.s. S band-2. Configuration= $\pi(h_{11/2})^2\nu(h_{11/2})^4$.

^f Band(G): 2-quasiproton band $\alpha=0$. Configuration= $\pi(h_{11/2}d_{5/2})\nu(h_{11/2})^4$.

^g Band(H): 2-quasiproton band $\alpha=1$. Configuration= $\pi(h_{11/2}d_{5/2})\nu(h_{11/2})^4$.

^h Band(I): 2-quasineutron band. Configuration= $\nu(h_{11/2}g_{7/2})$.

ⁱ Band(J): Possibly γ - S band.

Adopted Levels, Gammas (continued)

$\gamma(^{128}\text{Ba})$

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. @	$\delta^{\text{@}\&}$	α	Comments
284.00	2 ⁺	284.10 8	100	0.0	0 ⁺	E2		0.0539	B(E2)(W.u.)=72 7 Mult.: from $\gamma(\theta)$ and RUL.
763.32	4 ⁺	479.31 10	100	284.00	2 ⁺	E2		0.01108	B(E2)(W.u.)=108 5 Mult.: from $\gamma(\theta)$, $\gamma\gamma(\theta)$ and $\alpha(\text{K})\text{exp.}$
884.50	2 ⁺	600.5 2	100.0 9	284.00	2 ⁺	M1+E2	+13 +16-4	0.00606	B(E2)(W.u.)=32 4; B(M1)(W.u.)=0.00010 +25-10 Mult.: from $\gamma\gamma(\theta)$ and $\alpha(\text{K})\text{exp.}$
		884.5 2	74 7	0.0	0 ⁺	E2		0.00237	B(E2)(W.u.)=3.4 6 I _γ : other: 64 2 in (HI,xny). Mult.: from $\gamma(\theta)$ and RUL.
942.1	0 ⁺	658.0 6	100	284.00	2 ⁺	E2		0.00479	Mult.: from $\gamma\gamma(\theta)$ and linear polarization.
1321.0	2 ⁺	378.5	100	942.1	0 ⁺				
		436.7	<0.74	884.50	2 ⁺				
		557.4	0.26 22	763.32	4 ⁺				
		1037.1	<3.24	284.00	2 ⁺				
		1321.6	0.9 3	0.0	0 ⁺				
1324.37	3 ⁺	439.9 3	21.1 4	884.50	2 ⁺	[M1+E2]		0.0181	Mult.: D+Q from $\gamma\gamma(\theta)$.
		561.0 3	9.6 3	763.32	4 ⁺	M1+E2	+3.7 +25-12	0.00740 22	Mult.,δ: D+Q from $\gamma\gamma(\theta)$, M1+E2 from large δ.
		1040.4 2	100.0 10	284.00	2 ⁺	M1+E2	+4 +2-1	0.001704	α=0.001704 Mult.,δ: D+Q from $\gamma\gamma(\theta)$, M1+E2 from large δ.
1372.33	4 ⁺	487.9 2	100.0 10	884.50	2 ⁺	E2		0.01055	B(E2)(W.u.)=62 6
		609.0 3	79.0 6	763.32	4 ⁺	M1+E2	-14 +8-16	0.00584 10	B(E2)(W.u.)=16.1 15; B(M1)(W.u.)=5.E-5 +6-5 Mult.,δ: D+Q from $\gamma\gamma(\theta)$, M1+E2 from large δ.
		1088.2 2	80.3 8	284.00	2 ⁺	E2		1.51×10 ⁻³	I _γ : other: 129 3 in (HI,xny). B(E2)(W.u.)=0.90 9 Mult.: from $\gamma\gamma(\theta)$ and RUL.
1406.88	6 ⁺	643.65 [#] 5	100	763.32	4 ⁺	E2		0.00506	I _γ : other: 91 3 in (HI,xny). B(E2)(W.u.)=100 9 Mult.: from $\gamma(\theta)$ and $\alpha(\text{K})\text{exp.}$
1710.0	0 ⁺	1426 1	100	284.00	2 ⁺	[E2]		9.26×10 ⁻⁴	Mult.: Q from $\gamma\gamma(\theta)$.
1799.56	4 ⁺	427.4 3	25.5 13	1372.33	4 ⁺				
		475.4 5	34.4 16	1324.37	3 ⁺	M1+E2	+2.0 +10-5	0.0121 5	Mult.,δ: D+Q from $\gamma\gamma(\theta)$, M1+E2 from large δ.
		479	8 3	1321.0	2 ⁺				
		915.0 3	100.0 16	884.50	2 ⁺				
		1036.3 3	53.8 16	763.32	4 ⁺	D			Mult.: from $\gamma\gamma(\theta)$.
		1515.3 7	21.7 13	284.00	2 ⁺				
1833.75	4 ⁺	1070.4 2	100.0 15	763.32	4 ⁺	M1+E2	+0.65 10	0.00197	Mult.,δ: D+Q from $\gamma\gamma(\theta)$, M1+E2 from large δ.
		1549.7 4	32.9 8	284.00	2 ⁺				
1907.5	4 ⁺	1144.2 4	100	763.32	4 ⁺				
1931.34	5 ⁺	606.9 4	100.0 18	1324.37	3 ⁺	E2		0.00588	Mult.: Q from $\gamma(\theta)$ in band.
		1168.0 3	73.3 23	763.32	4 ⁺	D			Mult.: from $\gamma(\theta)$.
1939.34	6 ⁺	531.3 5	<11.0	1406.88	6 ⁺				
		567.0 2	100.0 15	1372.33	4 ⁺	E2		0.00702	B(E2)(W.u.)=99 13 Mult.: from $\gamma(\theta)$ and RUL.

Adopted Levels, Gammas (continued)

γ(¹²⁸Ba) (continued)

E _i (level)	J ^π _i	E _γ [†]	I _γ [†]	E _f	J ^π _f	Mult. [@]	α	Comments
1939.34	6 ⁺	1176.5 10	30.0 10	763.32	4 ⁺	E2	1.29×10 ⁻³ 2	B(E2)(W.u.)=0.78 10 Mult.: from γ(θ) and RUL.
2008.9		1724.9 5	100	284.00	2 ⁺			
2039.35	(1 ⁺ to 4 ⁺)	715.2 5	45 4	1324.37	3 ⁺			
		1154.3 5	36 4	884.50	2 ⁺			
		1755.5 4	100 4	284.00	2 ⁺			
2039.49	5 ⁻	632.5 2	100.0 10	1406.88	6 ⁺	[E1]	0.00192	B(E1)(W.u.)=0.00053 9 Mult.: D from γ(θ).
		1276.1 5	76.4 11	763.32	4 ⁺	[E1]	5.56×10 ⁻⁴	B(E1)(W.u.)=4.9×10 ⁻⁵ 8 Mult.: D from γ(θ).
2175.6	(4 to 6)	1412.3 3	100	763.32	4 ⁺			
2188.51	8 ⁺	781.6 [#] 1	100	1406.88	6 ⁺	E2	0.00316	B(E2)(W.u.)=95 13 Mult.: from γ(θ) and RUL.
2192.5	(4 ⁺)	1908.5 6	100	284.00	2 ⁺			
2203.4	(3 ⁻ ,4 ⁺)	1318.9 6	44 3	884.50	2 ⁺			
		1440.0 5	100 3	763.32	4 ⁺			
		1919.6 4	73 3	284.00	2 ⁺			
2218.8	0 ⁺	1934.8 5	100	284.00	2 ⁺	[E2]	7.52×10 ⁻⁴	Q from γγ(θ).
2246.7	(4 to 6 ⁺)	315.8 6	100 19	1931.34	5 ⁺			
		1482.8 7	90 8	763.32	4 ⁺			
2347.2	2 ⁺	2063.2 5	100	284.00	2 ⁺			
2395.81	(7) ⁻	356.2 [#] 3	15 3	2039.49	5 ⁻	[E2]	0.0264	B(E2)(W.u.)=0.055 12 Mult.: Q from γ(θ).
		989.1 [#] 2	100.0 18	1406.88	6 ⁺	E1	7.78×10 ⁻⁴	B(E1)(W.u.)=3.91×10 ⁻⁸ 19 Mult.: from γ(θ) and α(K)exp.
2412.87	7 ⁻	224.3 [#] 1	14.3 12	2188.51	8 ⁺	[E1]	0.0246	B(E1)(W.u.)=0.00062 8 Mult.: D from γ(θ).
		373.4 [#] 1	34.5 12	2039.49	5 ⁻	[E2]	0.0229	B(E2)(W.u.)=130 12 Mult.: Q from γ(θ).
		1006.0 [#] 1	100.0 24	1406.88	6 ⁺	E1	7.53×10 ⁻⁴	B(E1)(W.u.)=4.8×10 ⁻⁵ 5 Mult.: from γ(θ) and α(K)exp.
2425.45	(4 ⁻ ,5 ⁺)	249.8 5	3.8 4	2175.6	(4 to 6)			
		386.0 3	18.1 4	2039.35	(1 ⁺ to 4 ⁺)			
		493.9 4	12.4 3	1931.34	5 ⁺			
		591.7 4	10.0 4	1833.75	4 ⁺			
		626.0 2	38.6 4	1799.56	4 ⁺			
		1053.15 20	100.0 10	1372.33	4 ⁺	D+Q		Mult.: from γγ(θ).
		1100.9 3	47.6 7	1324.37	3 ⁺			
		1662.3 5	9.8 5	763.32	4 ⁺			
2451.4	(3 ⁻ to 6 ⁺)	412.0 5	59.6 22	2039.49	5 ⁻			
		1079.0 3	100 3	1372.33	4 ⁺			
		1688.2 [‡] 10	29.0 20	763.32	4 ⁺			

Adopted Levels, Gammas (continued)

<u>$\gamma(^{128}\text{Ba})$ (continued)</u>									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. @	$\delta^{\text{@@}}$	α	Comments
2474.0	(2 ⁺ to 6 ⁺)	1710.7 10	100	763.32	4 ⁺				
2531.5	(4 ⁺ to 7 ⁻)	491.7 5	49 3	2039.49	5 ⁻				
		1124.9 5	100 5	1406.88	6 ⁺				
2571.4	(4 ⁺ to 7 ⁻)	531.7 4	53 7	2039.49	5 ⁻				
		1164.9 5	100 5	1406.88	6 ⁺				
2600.27	8 ⁺	660.9 [#] 1	100.0 24	1939.34	6 ⁺	E2		0.00474	B(E2)(W.u.)=1.3×10 ² 5 Mult.: from $\gamma(\theta)$ and RUL.
		1193.5 [#] 2	15.5 12	1406.88	6 ⁺	E2		1.25×10 ⁻³	B(E2)(W.u.)=1.0 4 Mult.: from $\gamma(\theta)$ and RUL.
2612.83	(8) ⁻	217.0 [#] 1	100	2395.81	(7) ⁻	M1+E2	0.19 +5-6	0.1152	B(E2)(W.u.)=8 5; B(M1)(W.u.)=0.0157 8 Mult.: D+Q from $\gamma(\theta)$, M1+E2 from large δ .
2627.0		451.6 7	16 3	2175.6	(4 to 6)				
		587.3 5	48 3	2039.49	5 ⁻				
		793.5 7	100 8	1833.75	4 ⁺				
		1302.6 6	73.8 22	1324.37	3 ⁺				
2629.0	0 ⁺	2345 1	100	284.00	2 ⁺	[E2]		8.05×10 ⁻⁴	Mult.: Q from $\gamma\gamma(\theta)$.
2631.3	7 ⁺	700.0 [#] 4	100	1931.34	5 ⁺	E2		0.00411	Mult.: Q from $\gamma(\theta)$.
2669.5		1906.2 5	100	763.32	4 ⁺				
2721.1	(5,6 ⁺)	681.9 4	91 7	2039.35	(1 ⁺ to 4 ⁺)				
		781.8 [‡] 5	57 18	1939.34	6 ⁺				
		1348.4 [‡] 6	1.0×10 ² 3	1372.33	4 ⁺				
		1957.7 8	88 15	763.32	4 ⁺				
2746.2		570.6 6	100	2175.6	(4 to 6)				
2848.6		673.0 [‡] 4	100 11	2175.6	(4 to 6)				
		1049.1 [‡] 7	54 23	1799.56	4 ⁺				
2860.78	(8) ⁻	447.9 [#] 1	100	2412.87	7 ⁻	[M1(+E2)]	-4×10 ⁻³ +20-12	0.01733	B(E2)(W.u.)=(0.0005 +52-5); B(M1)(W.u.)=(0.0096 12) Mult.: D(+Q) from $\gamma(\theta)$.
2878.41	(5 ⁻ ,6 ⁺)	483.1 4	21.0 8	2395.81	(7) ⁻				
		838.9 4	28.9 16	2039.49	5 ⁻				
		938.9 3	72.5 14	1939.34	6 ⁺				
		1505.9 4	100.0 19	1372.33	4 ⁺	E2,D			
2906.29	9 ⁻	493.4 [#] 1	100.0 20	2412.87	7 ⁻	E2		0.01022	B(E2)(W.u.)=104 9 Mult.: from $\gamma(\theta)$ and RUL.
		717.8 [#] 1	26.8 7	2188.51	8 ⁺	[E1]		1.47×10 ⁻³	B(E1)(W.u.)=4.0×10 ⁻⁵ 4 Mult.: D from $\gamma(\theta)$.
2927.0	(9) ⁻	314.2 [#] 1	100 6	2612.83	(8) ⁻	M1+E2	0.26 +7-8	0.0427 7	B(E2)(W.u.)=17 9; B(M1)(W.u.)=0.036 4 Mult.: from $\gamma(\theta)$ and large δ .

Adopted Levels, Gammas (continued)

$\gamma(^{128}\text{Ba})$ (continued)									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. @	$\delta^{\text{@}\&}$	α	Comments
2927.0	(9) ⁻	531.4 [#] 3	52 4	2395.81	(7) ⁻	E2		0.00835	B(E2)(W.u.)=9.8 11 Mult.: from $\gamma(\theta)$ and RUL.
2929.9		1096.1 5	100	1833.75	4 ⁺				
2975.3		2212.0 6	100	763.32	4 ⁺				
2977.89	(4,5)	774.8 4	91 3	2203.4	(3 ⁻ , 4 ⁺)				
		1046.4 5	15 4	1931.34	5 ⁺				
		1143.8 5	100 3	1833.75	4 ⁺				
		1605.4 4	98 4	1372.33	4 ⁺				
		1654.1 [‡] 7	30 3	1324.37	3 ⁺				
3082.31	10 ⁺	893.8 [#] 1	100	2188.51	8 ⁺	E2		0.00232	B(E2)(W.u.)=65 10 Mult.: from $\gamma(\theta)$ and RUL.
3116.9		1710.0 5	100	1406.88	6 ⁺				
3292.5	(10) ⁻	365.6 [#] 3	79 10	2927.0	(9) ⁻	M1+E2	0.20 +35-5	0.0289 10	B(E2)(W.u.)=15 +49-15; B(M1)(W.u.)=0.072 22 Mult.: from $\gamma(\theta)$ and large δ .
		679.7 [#] 1	100 3	2612.83	(8) ⁻	[E2]		0.00442	B(E2)(W.u.)=22 6
3334.39	(10) ⁻	428.1 [#] 1	59 8	2906.29	9 ⁻	[M1(+E2)]	-7×10^{-3} +21-14	0.0194	B(E2)(W.u.)=(0.005 +33-5); B(M1)(W.u.)=(0.030 6) Mult.: D(+Q) from $\gamma(\theta)$.
		473.6 [#] 1	100.0 20	2860.78	(8) ⁻	E2		0.01146	B(E2)(W.u.)=113 12 Mult.: from $\gamma(\theta)$ and RUL.
3345.78	10 ⁺	745.5 [#] 1	100	2600.27	8 ⁺	E2		0.00353	B(E2)(W.u.)=1.0 $\times 10^2$ 3 Mult.: from $\gamma(\theta)$ and RUL.
3387.2	(9 ⁺)	755.9 [#] 5	100	2631.3	7 ⁺				
3506.7	11 ⁻	600.4 [#] 4	100	2906.29	9 ⁻	[E2]		0.00604	
3521.71	10 ⁺	439.4 [#] 2	100 9	3082.31	10 ⁺	[M1(+E2)]		0.0181	
		1333.1 [#] 3	61 4	2188.51	8 ⁺	E2		1.02×10^{-3}	B(E2)(W.u.)=0.55 9 Mult.: from $\gamma(\theta)$ and RUL.
3683.2	(11 ⁻)	390.8 [#] 4	100 9	3292.5	(10) ⁻	[M1(+E2)]		0.0244	
		756.0 [#] 5	55 5	2927.0	(9) ⁻	[E2]		0.00341	B(E2)(W.u.)=19 8
3985.29	(12 ⁻)	479 [#]	<74	3506.7	11 ⁻				
		650.9 [#] 1	100 2	3334.39	(10) ⁻	[E2]		0.00492	Mult.: Q from $\gamma(\theta)$.
3988.19	12 ⁺	906.0 [#] 1	100	3082.31	10 ⁺	E2		0.00225	B(E2)(W.u.)=42 14 Mult.: from $\gamma(\theta)$ and RUL.
4017.74	12 ⁺	496.0 [#] 2	23.0 19	3521.71	10 ⁺	E2		0.01008	B(E2)(W.u.)=1.3 $\times 10^2$ 3 Mult.: from $\gamma(\theta)$ and RUL.
		935.5 [#] 2	100.0 19	3082.31	10 ⁺	E2		0.00209	B(E2)(W.u.)=24 5 Mult.: from $\gamma(\theta)$ and RUL.
4112.2	12 ⁺	1029.4 [#] 2	100	3082.31	10 ⁺	[E2]		1.70×10^{-3}	Mult.: Q from $\gamma(\theta)$.
4116.1	(12) ⁻	433 [#]		3683.2	(11) ⁻				

Adopted Levels, Gammas (continued)

$\gamma(^{128}\text{Ba})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. @	$\delta^{\text{@}\&}$	α	Comments
4116.1	(12) ⁻	823.5 [#] 3	100	3292.5	(10) ⁻	E2		0.00279	B(E2)(W.u.)=56 24 Mult.: from $\gamma(\theta)$ and RUL.
4194.8	12 ⁺	849.0 [#] 3	100	3345.78	10 ⁺	[E2]		0.00261	Mult.: Q from $\gamma(\theta)$.
4218.2	13 ⁻	711.5 [#] 1	100	3506.7	11 ⁻	[E2]		0.00395	Mult.: Q from $\gamma(\theta)$.
4556.8	(13) ⁻	441 [#]		4116.1	(12) ⁻				
		873.7 [#] 4	100 5	3683.2	(11) ⁻	[E2]		0.00244	Mult.: Q from $\gamma(\theta)$.
4645.92	14 ⁺	628.3 [#] 2	67 3	4017.74	12 ⁺	E2		0.00538	B(E2)(W.u.)=68 15 Mult.: from $\gamma(\theta)$ and RUL.
		657.7 [#] 1	100 3	3988.19	12 ⁺	E2		0.00479	B(E2)(W.u.)=80 17 Mult.: from $\gamma(\theta)$ and RUL.
4720.37	14 ⁺	702.3 [#] 4	100 6	4017.74	12 ⁺	[E2]		0.00408	B(E2)(W.u.)=1.2×10 ² 3
		732.2 [#] 1	61 6	3988.19	12 ⁺	[E2]		0.00369	B(E2)(W.u.)=60 14
4815.7	(14) ⁻	597.6 [#]		4218.2	13 ⁻				
		830.4 [#] 4		3985.29	(12) ⁻				
4901.6?	(13) ⁺	790 ^{#a}		4112.2	12 ⁺				
		884 ^{#a}		4017.74	12 ⁺				
4956.07	13 ⁺	305 [#]		4650.7	12 ⁺	M1+E2	-0.19 9	0.0463	Mult.: from $\gamma\gamma(\theta)$ and large δ .
		843.3 [#] 2	75 6	4112.2	12 ⁺	M1+E2	-1.5 +7-30	0.0030 4	B(E2)(W.u.)=10 4; B(M1)(W.u.)=0.005 4 Mult.: from $\gamma\gamma(\theta)$ and large δ .
		938 [#]		4017.74	12 ⁺				
		968.4 [#] 2	100 7	3988.19	12 ⁺	M1+E2	-0.6 +6-14	0.0025 4	B(E2)(W.u.)=3 +4-3; B(M1)(W.u.)=0.010 6 Mult.: from $\gamma\gamma(\theta)$ and large δ .
5036.1	14 ⁺	840.9 [#] 3	100	4194.8	12 ⁺	[E2]		0.00266	
5040.0	(14) ⁻	484 [#]		4556.8	(13) ⁻				
		923.8 [#] 4	100	4116.1	(12) ⁻				
5052.2	15 ⁻	834.0 [#] 5	100	4218.2	13 ⁻	[E2]		0.00271	Mult.: Q from $\gamma(\theta)$.
5233.4	14 ⁺	277.3 [#] 2	100	4956.07	13 ⁺	M1+E2	-0.14 4	0.0596	B(E2)(W.u.)=5.E+1 3; B(M1)(W.u.)=0.29 6 Mult.: from $\gamma\gamma(\theta)$ and large δ .
		331.8 [#] 2	56 4	4901.6?	(13) ⁺	(M1)		0.0373	B(M1)(W.u.)=0.096 20
		582 [#]		4650.7	12 ⁺				
		1038.8 [#] 2	56 3	4194.8	12 ⁺				
5384.0	(15) ⁺	738 [#]	100	4645.92	14 ⁺				
5495.9	16 ⁺	850.0 [#] 3	100	4645.92	14 ⁺	[E2]		0.00260	B(E2)(W.u.)=72 7
5499.5	(15) ⁻	942.7 [#] 6	100	4556.8	(13) ⁻				
5529.7	15 ⁺	296.6 [#] 2	100	5233.4	14 ⁺	M1+E2	-0.18 3	0.0499	B(E2)(W.u.)=1.5×10 ² 6; B(M1)(W.u.)=0.59 9 Mult.: from $\gamma\gamma(\theta)$ and large δ .
		573.6 [#] 2	25 10	4956.07	13 ⁺	[E2]		0.00681	B(E2)(W.u.)=43 7

Adopted Levels, Gammas (continued)

$\gamma(^{128}\text{Ba})$ (continued)									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. @	$\delta^{\text{@@}}$	α	Comments
5529.7	15 ⁺	884 ^{#a}		4645.92	14 ⁺				E_γ : estimated by evaluators.
5551.0	(16 ⁺)	830.6 [#] 3	100	4720.37	14 ⁺				
5753.7	(16 ⁻)	701.3 [#]		5052.2	15 ⁻				
		938.0 [#] 3		4815.7	(14 ⁻)				
5853.0	16 ⁺	323.6 [#] 2	100	5529.7	15 ⁺	M1+E2	-0.18 3	0.0397	B(E2)(W.u.)=1.3×10 ² 6; B(M1)(W.u.)=0.60 21
		619.4 [#] 2	30.0 20	5233.4	14 ⁺	E2		0.00558	Mult.: from $\gamma\gamma(\theta)$ and large δ .
		816.7 [#] 2	19.0 10	5036.1	14 ⁺				B(E2)(W.u.)=47 17
		1207 ^{#a}		4645.92	14 ⁺				
5997.8	17 ⁻	945.6 [#] 5	100	5052.2	15 ⁻	[E2]		0.00205	Mult.: Q from $\gamma(\theta)$.
6011.0	(16 ⁻)	971 [#]	100	5040.0	(14 ⁻)				
6214.8	17 ⁺	361.7 [#] 2	100	5853.0	16 ⁺	M1+E2	-0.20 3	0.0297	B(E2)(W.u.)=9.E+1 3; B(M1)(W.u.)=0.45 6
		685.2 [#] 2	100	5529.7	15 ⁺	[E2]		0.00433	Mult.: from $\gamma\gamma(\theta)$ and large δ .
6240.0	(17 ⁺)	744 [#]		5495.9	16 ⁺				B(E2)(W.u.)=98 12
		856 [#]		5384.0	(15 ⁺)				
6436.3	18 ⁺	940.4 [#] 4	100	5495.9	16 ⁺	[E2]		0.00207	B(E2)(W.u.)=105 23
6493.0	(18 ⁺)	942 [#]	100	5551.0	(16 ⁺)				
6608.4	18 ⁺	393.6 [#] 2	100	6214.8	17 ⁺	M1+E2	-0.24 3	0.0238	B(E2)(W.u.)=1.2×10 ² 4; B(M1)(W.u.)=0.50 8
		755.5 [#] 2	45.3	5853.0	16 ⁺	[E2]		0.00342	Mult.: from $\gamma\gamma(\theta)$ and large δ .
6732.7	(18 ⁻)	979 [#]	100	5753.7	(16 ⁻)				B(E2)(W.u.)=87 13
6993.8	(19 ⁻)	996 [#]	100	5997.8	17 ⁻				
7036.1	19 ⁺	427.6 [#] 2	100	6608.4	18 ⁺	M1+E2	-0.22 5	0.0193	B(E2)(W.u.)=1.4×10 ² 7; B(M1)(W.u.)=0.77 12
		821.2 [#] 2	64.0 20	6214.8	17 ⁺	[E2]		0.00281	Mult.: from $\gamma\gamma(\theta)$ and large δ .
7178.2	(19 ⁺)	742 [#]		6436.3	18 ⁺				B(E2)(W.u.)=73 11
		938 [#]		6240.0	(17 ⁺)				
7443.2	20 ⁺	1007 [#]	100	6436.3	18 ⁺				
7493.9	20 ⁺	457.6 [#] 2	100	7036.1	19 ⁺	M1+E2	-0.20 4	0.01628 24	Mult.: from $\gamma\gamma(\theta)$ and large δ .
		885.7 [#] 2	95 9	6608.4	18 ⁺	[E2]		0.00237	
7530.0	(20 ⁺)	1037 [#]	100	6493.0	(18 ⁺)				
7928.8	(21 ⁻)	935 [#]	100	6993.8	(19 ⁻)				
7980.8	21 ⁺	487.2 [#] 2		7493.9	20 ⁺	M1+E2	-0.18 7	0.01393 22	Mult.: from $\gamma\gamma(\theta)$ and large δ .
		944.6 [#] 2		7036.1	19 ⁺	[E2]		0.00205	
8163.4	(21 ⁺)	720 [#]		7443.2	20 ⁺				

Adopted Levels, Gammas (continued)

$\gamma(^{128}\text{Ba})$ (continued)							
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. @	α
8163.4	(21 ⁺)	985 [#]		7178.2	(19 ⁺)		
8484.9	22 ⁺	1042 [#]	100	7443.2	20 ⁺		
8497.2	22 ⁺	516.5 [#] 2	80	7980.8	21 ⁺	[M1(+E2)]	0.01211 18
		1003.2 [#] 2	100 5	7493.9	20 ⁺	[E2]	0.00180
8659.0	(22 ⁺)	1129 [#]	100	7530.0	(20 ⁺)		
8934.8	(23 ⁻)	1006 [#]	100	7928.8	(21 ⁻)		
9032.3	23 ⁺	535.0 [#] 2	61	8497.2	22 ⁺	[M1(+E2)]	0.01110
		1051.5 [#] 2	100 6	7980.8	21 ⁺	[E2]	1.63×10 ⁻³
9167.6	(23 ⁺)	683 [#]		8484.9	22 ⁺		
		1004 [#]		8163.4	(21 ⁺)		
9563.9	(24 ⁺)	1079 [#]	100	8484.9	22 ⁺		
9601.1	24 ⁺	568 [#]		9032.3	23 ⁺	[M1(+E2)]	0.00958
		1104 [#]		8497.2	22 ⁺	[E2]	1.47×10 ⁻³
9814.0	(24 ⁺)	1155 [#]	100	8659.0	(22 ⁺)		
10023.8	(25 ⁻)	1089 [#]	100	8934.8	(23 ⁻)		
10167.7	25 ⁺	566 [#]		9601.1	24 ⁺	[M1(+E2)]	0.00966
		1136 [#]		9032.3	23 ⁺	[E2]	1.38×10 ⁻³
10237.6	(25 ⁺)	1070 [#]	100	9167.6	(23 ⁺)		
10649.9	(26 ⁺)	1086 [#]	100	9563.9	(24 ⁺)		
10785.1	(26 ⁺)	1184 [#]	100	9601.1	24 ⁺		
11055.0	(26 ⁺)	1241 [#]	100	9814.0	(24 ⁺)		
11195.8	(27 ⁻)	1172 [#]	100	10023.8	(25 ⁻)		
11386.6	(27 ⁺)	1149 [#]	100	10237.6	(25 ⁺)		
11775.9	(28 ⁺)	1126 [#]	100	10649.9	(26 ⁺)		
12442	(29 ⁻)	1246 [#]	100	11195.8	(27 ⁻)		
12590.7	(29 ⁺)	1204 [#]	100	11386.6	(27 ⁺)		
12981.9	(30 ⁺)	1206 [#]	100	11775.9	(28 ⁺)		
13737	(31 ⁻)	1295 [#]	100	12442	(29 ⁻)		
14238	(32 ⁺)	1256 [#]	100	12981.9	(30 ⁺)		
15062	(33 ⁻)	1325 [#]	100	13737	(31 ⁻)		
15500	(34 ⁺)	1262 [#]	100	14238	(32 ⁺)		
16288	(35 ⁻)	1226 [#]	100	15062	(33 ⁻)		
16780	(36 ⁺)	1280 [#]	100	15500	(34 ⁺)		
17653	(37 ⁻)	1365 [#]	100	16288	(35 ⁻)		
18217	(38 ⁺)	1437 [#]	100	16780	(36 ⁺)		

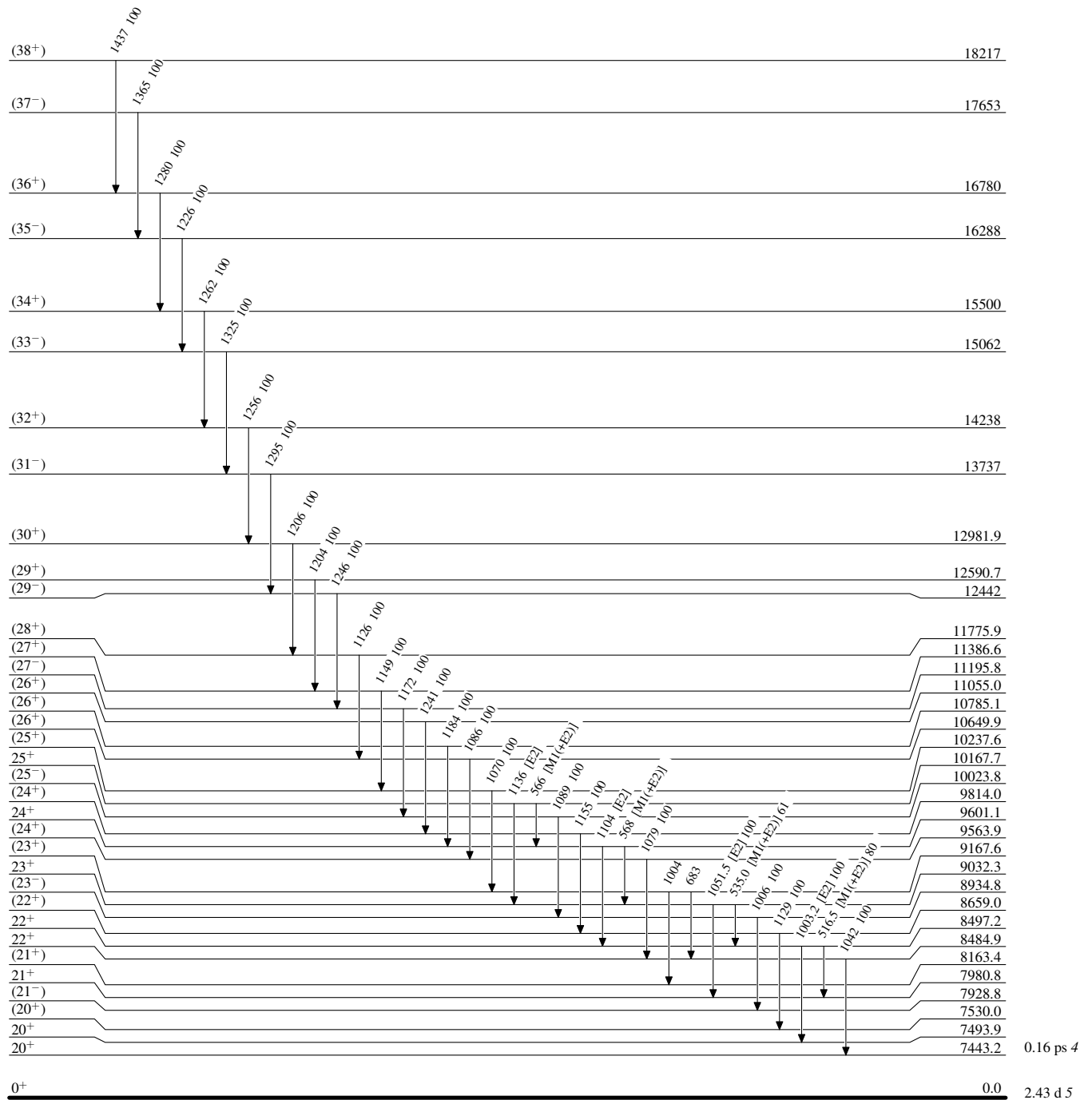
Adopted Levels, Gammas (continued)

γ(¹²⁸Ba) (continued)

- † From ¹²⁸La ε decay (5.18 min), unless otherwise noted.
- ‡ Tentatively assigned to ¹²⁸La ε decay ([1977Zo02](#)).
- # From (HI,xnγ).
- @ From ¹²⁸La ε decay and (HI,xnγ).
- & If No value given it was assumed δ=0.10 for E2/M1, δ=1.00 for E3/M2 and δ=0.10 for the other multipolarities.
- ^a Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas**Level Scheme**

Intensities: Relative photon branching from each level

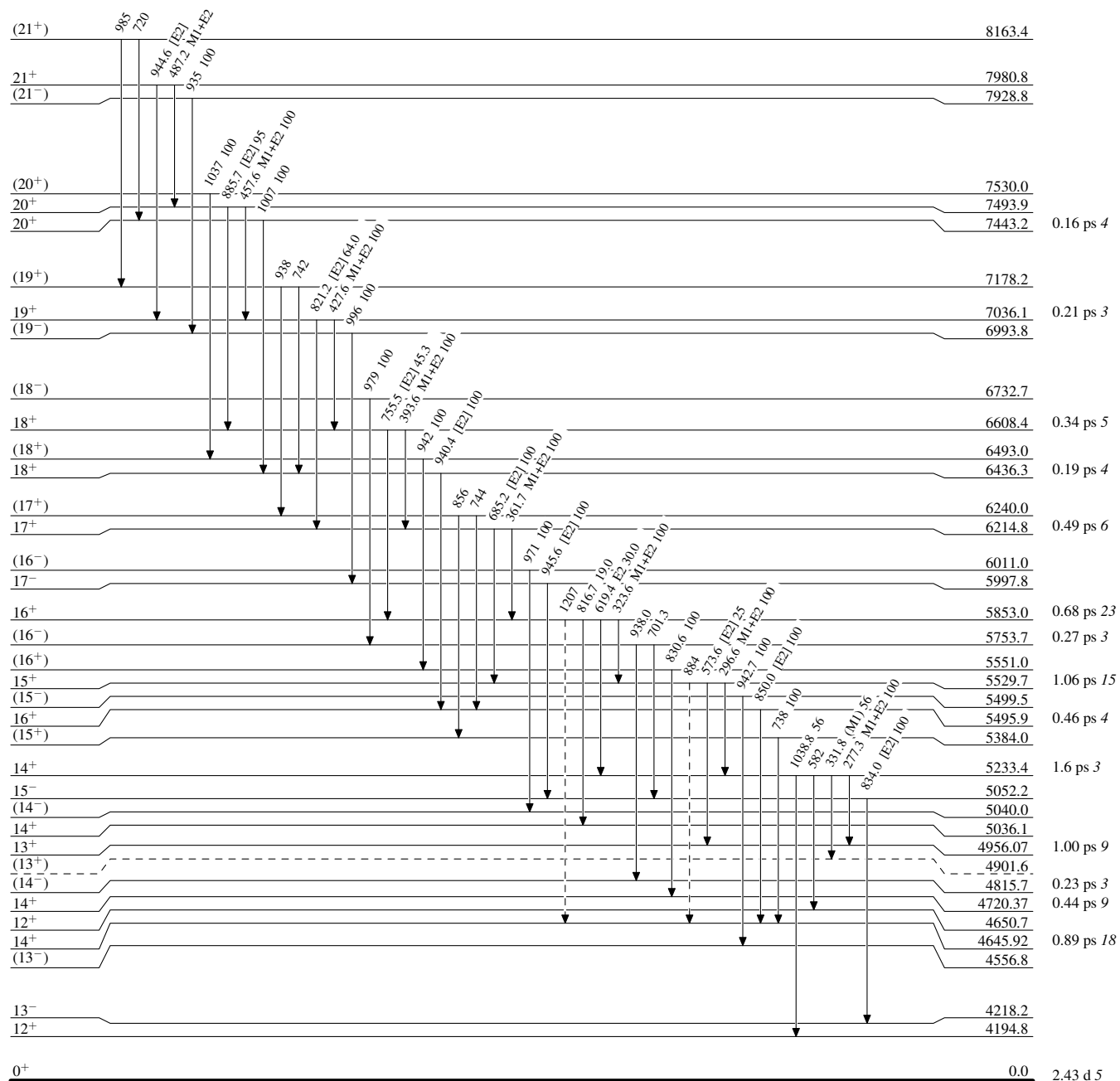


Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

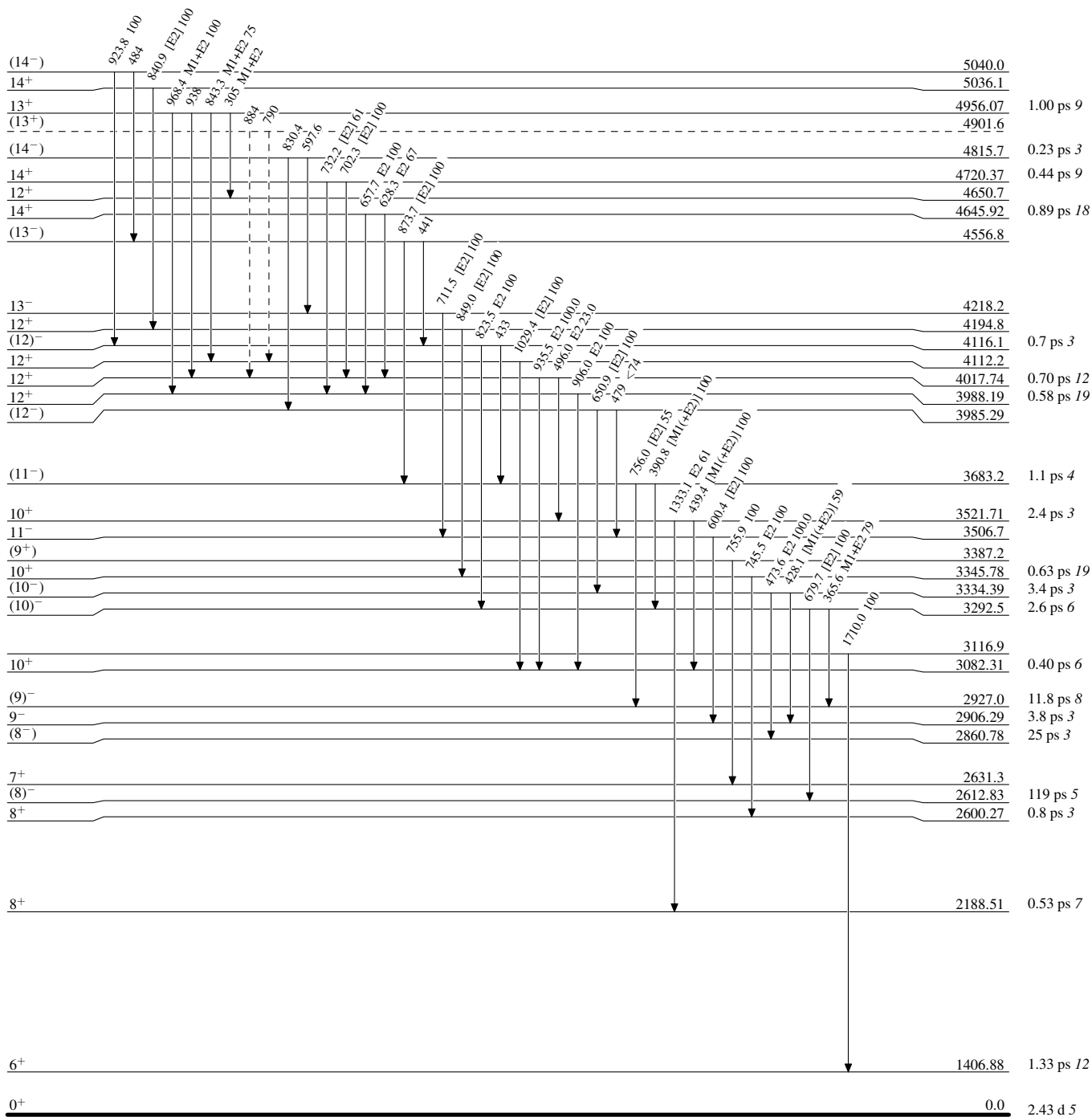
-----► γ Decay (Uncertain)

Adopted Levels, Gammas

Legend

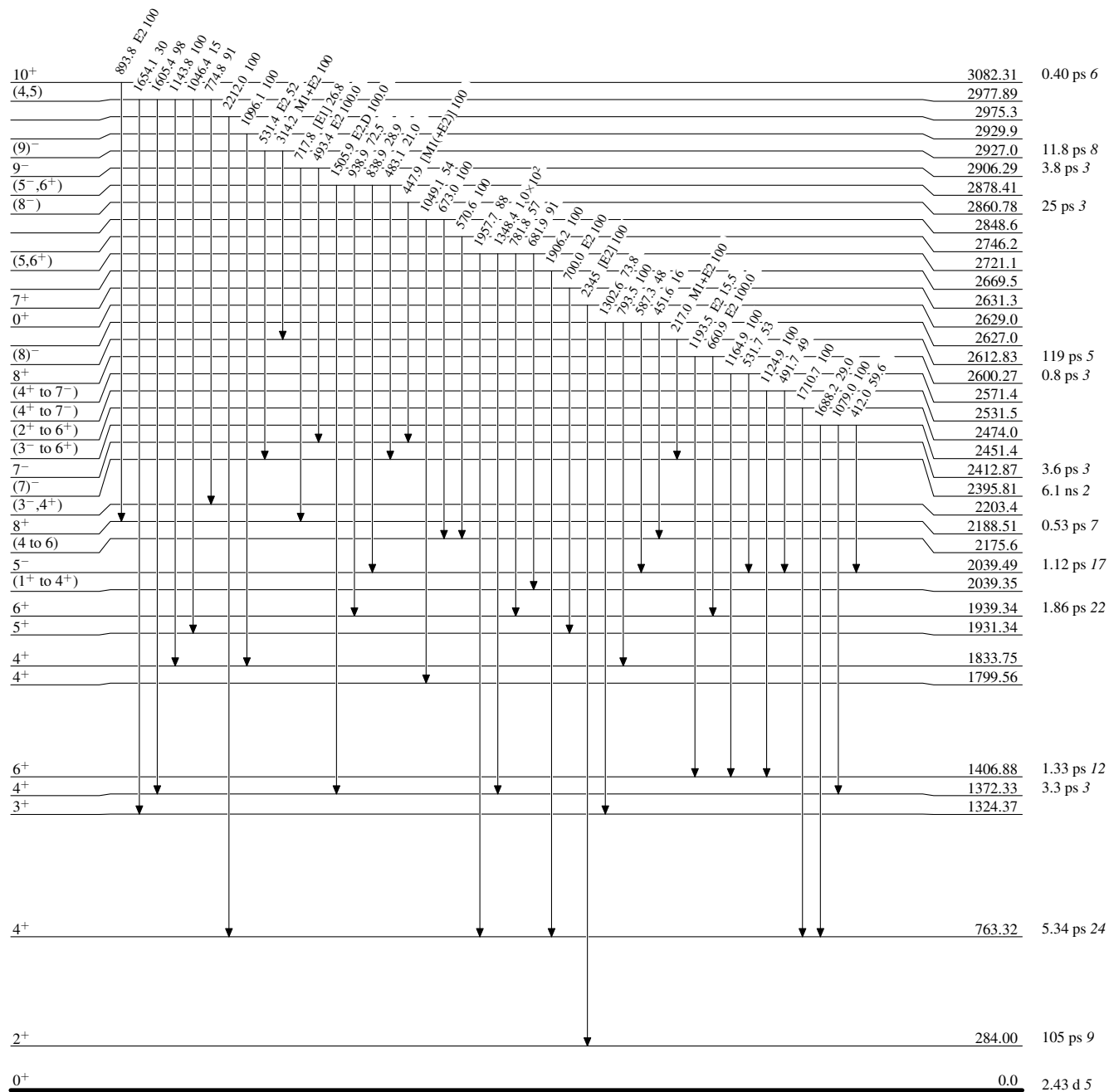
Level Scheme (continued)

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)

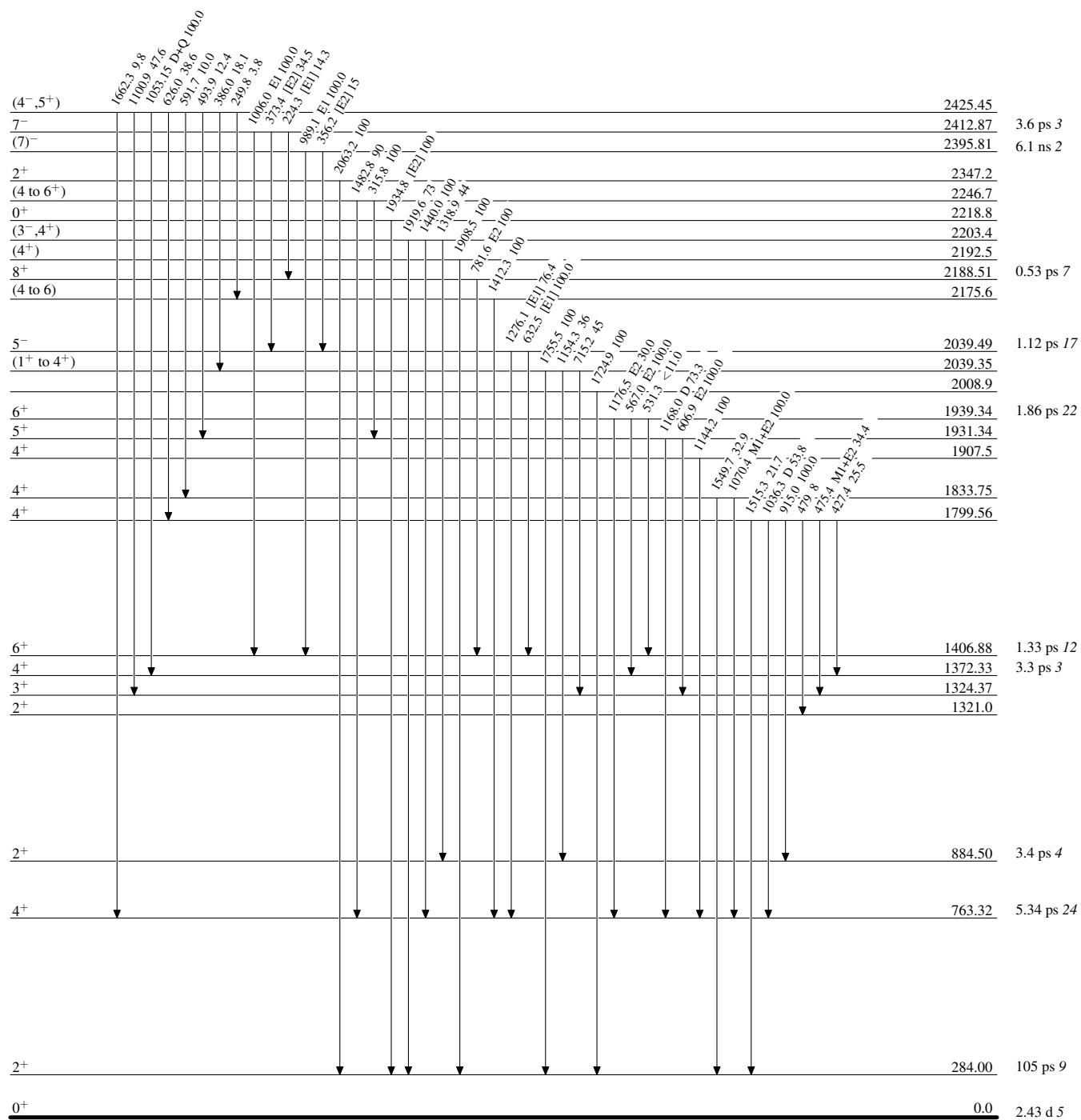
Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



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

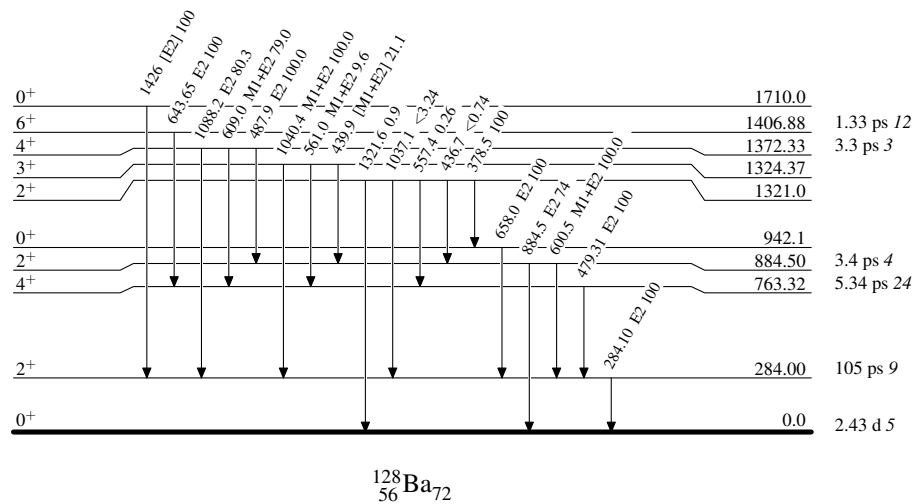
Intensities: Relative photon branching from each level

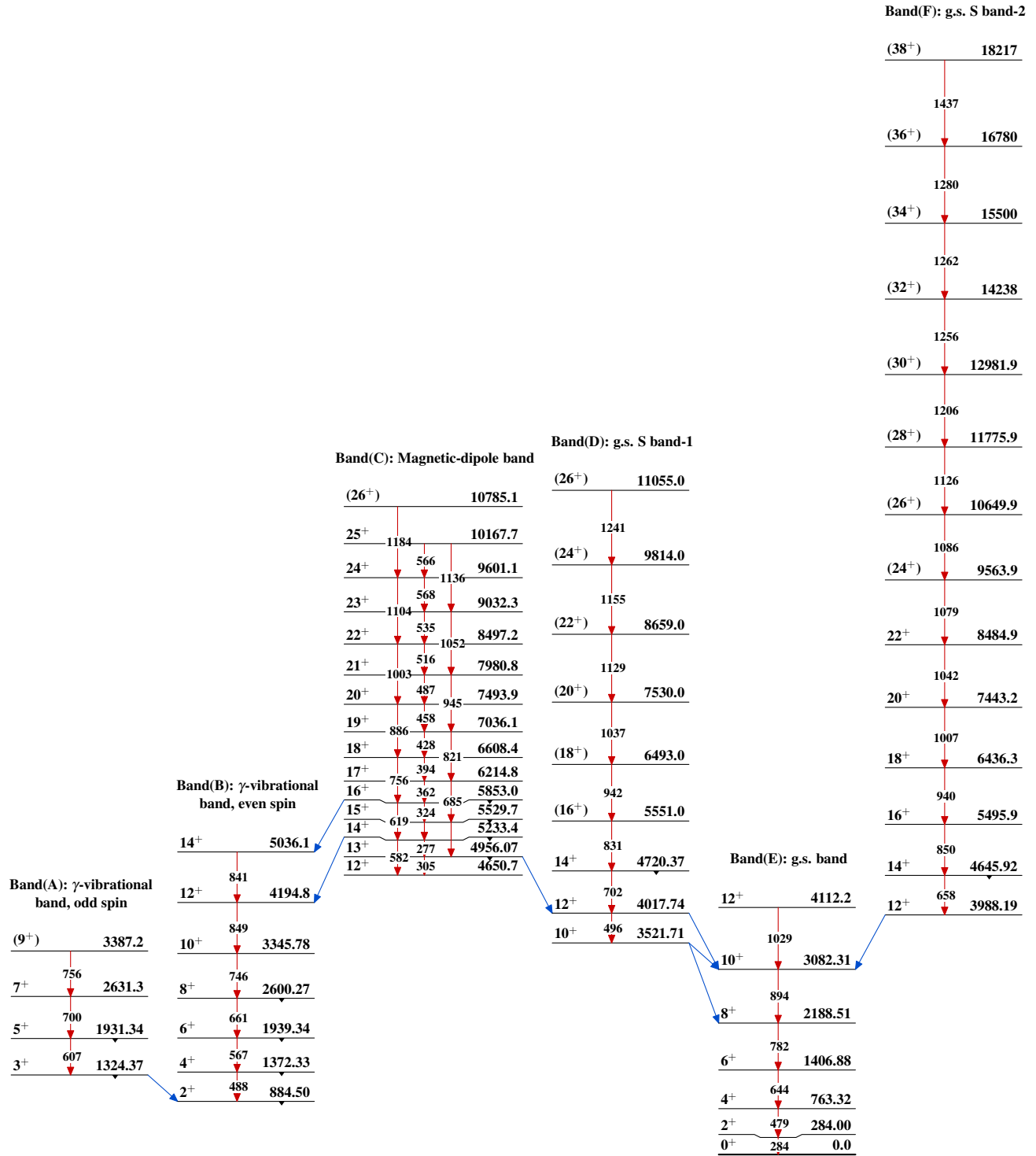


Adopted Levels, Gammas

Level Scheme (continued)

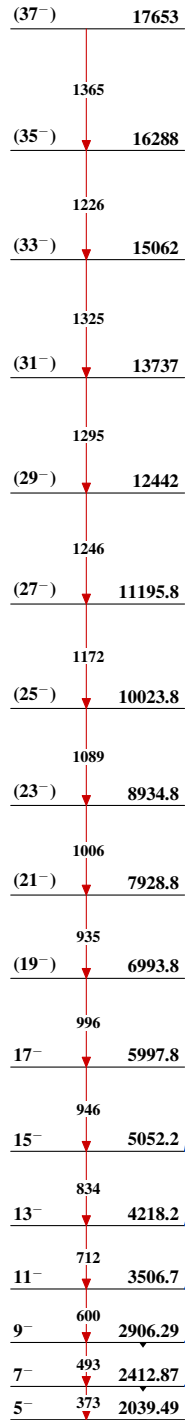
Intensities: Relative photon branching from each level



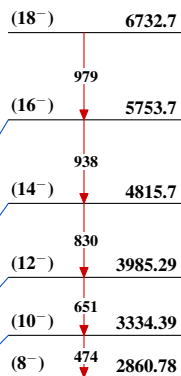
Adopted Levels, Gammas

Adopted Levels, Gammas (continued)

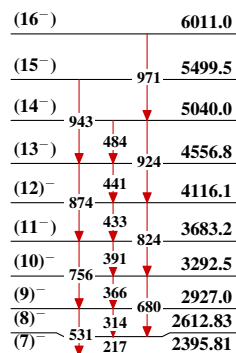
Band(G): 2-quasiproton
band $\alpha=0$



Band(H): 2-quasiproton
band $\alpha=1$



Band(I): 2-quasineutron band



Band(J): Possibly γ -S
band

