

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 200,2 (2025)	22-Aug-2022

Q(β^-)=-8178 15; S(n)=10210 10; S(p)=4882 7; Q(α)=4279.7 26 2021Wa16
 S(2n)=18247 10, S(2p)=7065 6 (2021Wa16).

Data for excited levels are primarily from the (HI,xn γ) studies.

¹⁵⁴Er Levels

Lifetimes for 9 levels above 3500 keV have been measured by 1981Wa04 and 1979Ag01. Since these values are very different and may depend on ordering of the γ rays, and the ordering adopted here is different, the half-lives have not been adopted.

Cross Reference (XREF) Flags

- A ¹⁵⁴Tm ϵ decay (8.1 s) D (HI,xn γ)
- B ¹⁵⁴Tm ϵ decay (3.30 s) E (HI,xn γ):SD,tsd
- C ¹⁵⁸Yb α decay

E(level) $\dagger \ddagger \#$	J $^\pi$ @	T _{1/2}	XREF	Comments
0 &	0 ⁺	3.73 min 9	ABCD	$\% \alpha = 0.47$ 13; $\% \epsilon + \% \beta^+ = 99.53$ 13 From an evaluation of data on nuclear rms charge radii, 2014An02 report $\langle r^2 \rangle^{1/2} = 5.113$ fm 27. T _{1/2} : Weighted average of 3.6 m 3 (1982Ba75) and 240 s 20 (1982To14) from ϵ decay and 3.75 m 12 (1974PeZS) and 3.6 m 2 (1982Bo04) from α decay. Others: 3.75 m 50 (1974To07) and 4.5 m 10 (1963Ma18) from α decay. $\% \alpha$: From 1974To07. Other: 0.17 10 (1968Go13). E α =4168 3 (from 2013Ba31 evaluation recommended by 1991Ry01). $\Delta \langle r^2 \rangle$ (¹⁵² Er- ¹⁵⁴ Er)=0.25 fm ² 6 and $\Delta \langle r^2 \rangle$ (¹⁵⁴ Er- ¹⁵⁶ Er)=0.26 fm ² 9, experimental values from the compilation of 1995Ne12; the values were computed by subtraction of two entries.
560.80 & 10	2 ⁺		AB D	J $^\pi$: E2 γ to 0 ⁺ level and expected band structure.
1162.20 & 14	4 ⁺		B D	J $^\pi$: E2 γ to 2 ⁺ level and expected band structure.
1787.61 & 17	6 ⁺		B D	J $^\pi$: E2 γ to 4 ⁺ level and expected band structure.
1897.1 ^a 4	5 ⁽⁻⁾		D	J $^\pi$: D γ to 4 ⁺ level and expected band structure.
2329.53 & 20	8 ⁺		B D	J $^\pi$: E2 γ to 6 ⁺ level and expected band structure.
2462.06 ^a 23	7 ⁽⁻⁾		D	J $^\pi$: D γ to 6 ⁺ level and expected band structure.
2583.58 22	8 ⁺		B D	J $^\pi$: E2 γ to 6 ⁺ level and expected band structure.
3015.80 ^a 22	9 ⁽⁻⁾		D	J $^\pi$: E2 γ to 7 ⁽⁻⁾ level and expected band structure.
3017.33 & 22	10 ⁺		D	J $^\pi$: E2 γ to 8 ⁺ level and expected band structure.
3027.4 ^a 7	11 ⁽⁻⁾	39 ns 4	D	$\%IT \approx 100$; $\% \alpha \approx 0$ $\mu = +0.167$ 13 J $^\pi$: from agreement of measured g-factor (1983Ng02 and 1984Ra11) with that calculated for the configuration ((ν i _{13/2})(ν h _{9/2})). This configuration is expected to lie lower than that with J $^\pi$ =10 ⁻ . T _{1/2} : weighted average of 35 ns 3 (1978Ag01), 40 ns 3 (1979Ba03), and 50 ns 5 (1980Bo07) from (HI,xn γ) studies. μ : from 2020StZV based on g-factor=+0.0154 12 (1984Ra11). Other: g-factor=+0.017 3 (1983Ng02). $\% \alpha$: from a search for α decay of high-spin isomers (1980Vr01).
3655.83 & 30	12 ⁺		D	J $^\pi$: E2 γ to 10 ⁺ level and expected band structure.
3832.4 ^a 7	13 ⁽⁻⁾	55 ps 17	D	J $^\pi$: E2 γ to 11 ⁽⁻⁾ level and expected band structure.
4275.3 & 4	14 ⁺		D	J $^\pi$: E2 γ to 12 ⁺ level and expected band structure.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) ^{154}Er Levels (continued)

E(level) $\dagger\ddagger\#$	$J^\pi@$	$T_{1/2}$	XREF	Comments
4501.2 ^a 6	15 ⁽⁻⁾	42 ps 14	D	J^π : E2 γ to 13 ⁽⁻⁾ level and expected band structure.
4532.1 5	(15 ⁺)		D	J^π : D γ 's from 16 ⁺ and to 14 ⁺ levels, respectively.
4678.8 ^{&} 5	16 ⁺		D	J^π : E2 γ to 14 ⁺ level and expected band structure.
5008.1 ^a 6	17 ⁽⁻⁾	24 ps 10	D	J^π : E2 γ to 15 ⁽⁻⁾ level and expected band structure.
5329.6 ^{&} 5	18 ⁺		D	J^π : E2 γ to 16 ⁺ level and expected band structure.
5463.7 ^a 6	19 ⁽⁻⁾	326 ps 28	D	J^π : E2 γ to 17 ⁽⁻⁾ level and expected band structure.
6065.1 ^{&} 8	20 ⁺		D	J^π : E2 γ to 18 ⁺ level and expected band structure.
6089.0 6	20 ⁽⁻⁾		D	J^π : M1+E2 γ from 21 ⁽⁻⁾ level and D γ to 19 ⁽⁻⁾ level.
6291.2 ^a 6	21 ⁽⁻⁾	14 ps	D	J^π : E2 γ to 19 ⁽⁻⁾ level and expected band structure.
6577.1? 7	21 ⁽⁻⁾		D	E(level): See the comment on this level energy in the heavy-ion data set. J^π : E2 γ from 23 ⁽⁻⁾ level and E2 γ to 19 ⁽⁻⁾ level.
6747.1 ^{&} 7	22 ⁽⁺⁾		D	J^π : D γ from 23 ⁽⁻⁾ level and expected band structure.
7017.9 ^a 6	23 ⁽⁻⁾	256 ps 28	D	J^π : E2 γ to 21 ⁽⁻⁾ level and expected band structure.
7336.2 ^a 7	25 ⁽⁻⁾	42 ps 10	D	J^π : E2 γ to 23 ⁽⁻⁾ level and expected band structure.
8011.7 7	26 ⁽⁻⁾		D	J^π : D γ from 27 ⁽⁻⁾ and M1+E2 γ to 25 ⁽⁻⁾ .
8108.8 ^a 7	27 ⁽⁻⁾	35 \times 10 ¹ ps 10	D	J^π : E2 γ to 25 ⁽⁻⁾ level.
8312.5 7	26 ⁽⁺⁾		D	J^π : D γ to 25 ⁽⁻⁾ level and γ from (28) ⁺ level.
8659.7 7	27 ⁽⁺⁾		D	J^π : D γ 's to 26 ⁽⁺⁾ and 26 ⁽⁻⁾ levels, respectively. $\pi=(+)$ adopted by 1989Sc19.
8671.6 7	28 ⁽⁺⁾		D	J^π : E1 γ to 27 ⁽⁻⁾ level.
9296.9 7	29 ⁽⁺⁾		D	J^π : D γ to 28 ⁽⁺⁾ level and M1+E2 γ from 29 ⁽⁺⁾ level.
9477.6 ^a 7	29 ⁽⁻⁾		D	J^π : E2 γ 's to 27 ⁽⁻⁾ level and expected band structure.
9482.9 7	29 ⁽⁺⁾		D	J^π : D γ 's from 30 ⁽⁺⁾ and to 28 ⁽⁺⁾ levels, respectively; $\pi=(+)$ adopted by 1989Sc19.
9591.4 7	30 ⁽⁺⁾		D	J^π : E2 γ to 28 ⁽⁺⁾ level.
9845.4 7	30 ⁽⁺⁾		D	J^π : E2 γ from 32 ⁽⁺⁾ level and D γ from 31 ⁽⁻⁾ .
10110.4 ^a 7	31 ⁽⁻⁾		D	J^π : E2 γ 's to 29 ⁽⁻⁾ level and expected band structure.
10152.5 7	32 ⁽⁺⁾		D	J^π : E2 γ to 30 ⁽⁺⁾ level.
10431.7 ^a 7	33 ⁽⁻⁾	260 ps 49	D	J^π : E2 γ 's to 31 ⁽⁻⁾ level and expected band structure.
11356.1 7	34		D	J^π : D γ to 33 ⁽⁻⁾ level.
11506.0? 7	35 ⁽⁺⁾		D	E(level): See the comment on this level energy in the heavy-ion data set. J^π : J=35 from D γ to 34 level and $\pi=(+)$ from M1+E2 γ from 36 ⁽⁺⁾ .
11624.1 7	34 ⁽⁺⁾		D	J^π : D γ to 33 ⁽⁻⁾ level and γ to 32 ⁽⁺⁾ level.
11663.2 7	34 ⁽⁺⁾		D	J^π : E2 γ 's from 36 ⁽⁺⁾ level and D γ to 33 ⁽⁻⁾ level.
11891.7 8	35		D	J^π : D γ to 34 ⁽⁺⁾ level.
11899.5 7	36 ⁽⁺⁾		D	J^π : J=36 from $\Delta J=1$, 393.6 γ to 35 ⁽⁺⁾ , 11506 level (its M1+E2 character was used to define parity for 11506 level); $\pi=(+)$ from γ to 34 ⁽⁺⁾ level.
13212.5 8	37		D	J^π : D γ to 36 ⁽⁺⁾ level.
13503.1 8	38 ⁽⁺⁾		D	J^π : E2 γ 's to 36 ⁽⁺⁾ level.
13953.2? 8			D	E(level): See the comment on this level energy in the heavy-ion data set.
14003.1 8	38 ⁽⁺⁾		D	J^π : E2 γ 's to 36 ⁽⁺⁾ level.
14271.8 9	39		D	J^π : D γ to 38 ⁽⁺⁾ level.
14385.1 9	39		D	J^π : E2 γ 's to 37 level.
14678.9 9	39		D	J^π : E2 γ 's to 37 level.
14924.3 9	41		D	J^π : E2 γ 's to 39 level.
16032.8 10	42		D	J^π : D γ to 41 level.
x^b	J1		E	Additional information 1. J^π : 2001La17, from (HI,xn γ):SD,TSD suggest $J_1 \approx (24^+)$.
696.37+x ^b 17	J1+2		E	
1430.72+x ^b 18	J1+4		E	
2207.94+x ^b 20	J1+6		E	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) ^{154}Er Levels (continued)

E(level) $\dagger\ddagger\#$	$J^\pi@$	XREF	Comments
3032.38+x ^b 21	J1+8	E	
3907.14+x ^b 22	J1+10	E	
4834.59+x ^b 23	J1+12	E	
5814.48+x ^b 25	J1+14	E	
6847.06+x ^b 26	J1+16	E	
7932.67+x ^b 28	J1+18	E	
9070.66+x ^b 31	J1+20	E	
10261.6+x ^b 4	J1+22	E	
11504.6+x ^b 4	J1+24	E	
12805.0+x ^b 5	J1+26	E	
14154.4+x ^b 5	J1+28	E	
y ^c	J2	E	Additional information 2. J ^π : 2001La17, from (HI,xnγ):SD,HD suggest J ₂ ≈(26 ⁺).
744.73+y ^c 20	J2+2	E	
1533.57+y ^c 25	J2+4	E	
2367.03+y ^c 26	J2+6	E	
3246.07+y ^c 27	J2+8	E	
4171.63+y ^c 32	J2+10	E	
5143.77+y ^c 34	J2+12	E	
6162.1+y ^c 4	J2+14	E	
7227.7+y ^c 4	J2+16	E	
8340.3+y ^c 4	J2+18	E	
9499.1+y ^c 4	J2+20	E	
10706.3+y ^c 5	J2+22	E	
11959.7+y ^c 5	J2+24	E	
13260.2+y ^c 5	J2+26	E	
z ^d	J3	E	Additional information 3.
848.0+z ^d 10	J3+2	E	
1744.0+z ^d 14	J3+4	E	
2695.0+z ^d 17	J3+6	E	
3700.0+z ^d 20	J3+8	E	
4759.0+z ^d 23	J3+10	E	
5873.0+z ^d 25	J3+12	E	
7041.0+z ^d 27	J3+14	E	
8264.0+z ^d 28	J3+16	E	
9542.0+z ^d 30	J3+18	E	
10875.0+z ^d 32	J3+20	E	
u ^e	J4	E	Additional information 4.
931.0+u ^e 10	J4+2	E	
1929.0+u ^e 14	J4+4	E	
2994.0+u ^e 17	J4+6	E	
4125.0+u ^e 20	J4+8	E	
5325.0+u ^e 23	J4+10	E	
6594.0+u ^e 25	J4+12	E	
7939.0+u ^e 27	J4+14	E	
9364.0+u ^e 28	J4+16	E	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

¹⁵⁴Er Levels (continued)

† [Additional information 5.](#)

‡ From least-squares fit to E_γ data, except for super-deformed bands.

The uncertainties for the level energies in the two super-deformed bands are relative to the lowest level in each band.

@ Based on measured γ multiplicities, expected band or rather parity conserving structures, and generally increasing spin values with increasing excitation energy in heavy-ion-induced reaction studies.

& Band(A): Positive-parity level sequence.

^a Band(B): Negative-parity level sequence.

^b Band(C): TSD-1 band. Found by [1995Be36](#) and confirmed by [2001La17](#) and [2013Re11](#). Average transition quadrupole moment Q_t=11.0 10 deduced from measured fractional Doppler shifts ([2013Re11](#)). Based on a single proton N=6 intruder orbital. Population of the reaction channel leading to ¹⁵⁴Er: 0.5% ([2001La17](#)), ≈ 0.4% ([1995Be36](#)), and 0.6% ([2013Re11](#)).

^c Band(D): SD band. Found by [2001La17](#) and confirmed by [2013Re11](#). Probable prolate shape, with conf π6⁴ν7². Average transition quadrupole moment Q_t=19.5 32 deduced from measured fractional Doppler shifts ([2013Re11](#)). Population is about 1/3 ([2001La17](#)) and 1/2 ([2013Re11](#)) of that for TSD-1 band.

^d Band(E): TSD-2 band. Found by [2013Re11](#). Average transition quadrupole moment Q_t=9.9 22 deduced from measured fractional Doppler shifts ([2013Re11](#)). Population is about 1/4 of that for TSD-1 band.

^e Band(F): Possible TSD-3 band. Found by [2013Re11](#). Population is about 1/4 of that for TSD-1 band.

γ(¹⁵⁴Er)

[Additional information 6.](#)

The unplaced γ's are not given here, see (HI,xny) data and ¹⁵⁴Tm ε decay (3.3 s).

E _i (level)	J _i ^π	E _γ [†]	I _γ [†]	E _f	J _f ^π	Mult. #	α [@]	Comments
560.80	2 ⁺	560.8 [‡] 1	100 [‡]	0	0 ⁺	E2	0.01231 17	α(K)=0.00992 14; α(L)=0.001859 26; α(M)=0.000422 6 α(N)=9.75×10 ⁻⁵ 14; α(O)=1.332×10 ⁻⁵ 19; α(P)=5.54×10 ⁻⁷ 8
1162.20	4 ⁺	601.4 [‡] 1	100 [‡]	560.80	2 ⁺	E2	0.01038 15	α(K)=0.00842 12; α(L)=0.001528 21; α(M)=0.000346 5 α(N)=7.99×10 ⁻⁵ 11; α(O)=1.098×10 ⁻⁵ 15; α(P)=4.72×10 ⁻⁷ 7
1787.61	6 ⁺	625.4 [‡] 1	100 [‡]	1162.20	4 ⁺	E2	0.00946 13	α(K)=0.00769 11; α(L)=0.001372 19; α(M)=0.000310 4 α(N)=7.17×10 ⁻⁵ 10; α(O)=9.88×10 ⁻⁶ 14; α(P)=4.32×10 ⁻⁷ 6
1897.1	5 ⁽⁻⁾	735 1	100	1162.20	4 ⁺	D		
2329.53	8 ⁺	541.9 [‡] 1	100 [‡]	1787.61	6 ⁺	E2	0.01341 19	α(K)=0.01077 15; α(L)=0.002052 29; α(M)=0.000467 7 α(N)=0.0001077 15; α(O)=1.468×10 ⁻⁵ 21; α(P)=6.00×10 ⁻⁷ 8
2462.06	7 ⁽⁻⁾	565.0 3	16	1897.1	5 ⁽⁻⁾	D		
		674.5 2	100	1787.61	6 ⁺	D		
2583.58	8 ⁺	253.8 3	33	2329.53	8 ⁺	D		
		796.0 [‡] 2	100 [‡]	1787.61	6 ⁺	E2	0.00545 8	α(K)=0.00451 6; α(L)=0.000735 10; α(M)=0.0001647 23 α(N)=3.82×10 ⁻⁵ 5; α(O)=5.35×10 ⁻⁶ 7; α(P)=2.56×10 ⁻⁷ 4
3015.80	9 ⁽⁻⁾	432.2 1	100	2583.58	8 ⁺	D		
		553.8 2	85	2462.06	7 ⁽⁻⁾	E2	0.01270 18	α(K)=0.01022 14; α(L)=0.001928 27; α(M)=0.000438 6

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

								$\gamma(^{154}\text{Er})$ (continued)	
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\dagger	E_f	J_f^π	Mult.#	$\alpha^@$	Comments	
								$\alpha(\text{N})=0.0001011$ 14; $\alpha(\text{O})=1.380\times 10^{-5}$ 19; $\alpha(\text{P})=5.70\times 10^{-7}$ 8	
3015.80	9 ⁽⁻⁾	686.3 2	65	2329.53	8 ⁺	D			
3017.33	10 ⁺	687.8 1	100	2329.53	8 ⁺	E2	0.00757 11	$\alpha(\text{K})=0.00620$ 9; $\alpha(\text{L})=0.001065$ 15; $\alpha(\text{M})=0.0002397$ 34	
								$\alpha(\text{N})=5.55\times 10^{-5}$ 8; $\alpha(\text{O})=7.70\times 10^{-6}$ 11; $\alpha(\text{P})=3.50\times 10^{-7}$ 5	
3027.4	11 ⁽⁻⁾	(9)		3017.33	10 ⁺				
		(11)		3015.80	9 ⁽⁻⁾				
3655.83	12 ⁺	638.5 2	100	3017.33	10 ⁺	E2	0.00900 13	$\alpha(\text{N})=6.77\times 10^{-5}$ 10; $\alpha(\text{O})=9.35\times 10^{-6}$ 13; $\alpha(\text{P})=4.13\times 10^{-7}$ 6	
								$\alpha(\text{K})=0.00734$ 10; $\alpha(\text{L})=0.001297$ 18; $\alpha(\text{M})=0.000293$ 4	
3832.4	13 ⁽⁻⁾	805.0 1	100	3027.4	11 ⁽⁻⁾	E2	0.00532 7	B(E2)(W.u.)=0.62 +28-15	
								$\alpha(\text{K})=0.00440$ 6; $\alpha(\text{L})=0.000715$ 10; $\alpha(\text{M})=0.0001601$ 22	
								$\alpha(\text{N})=3.71\times 10^{-5}$ 5; $\alpha(\text{O})=5.21\times 10^{-6}$ 7; $\alpha(\text{P})=2.499\times 10^{-7}$ 35	
4275.3	14 ⁺	619.5 2	100	3655.83	12 ⁺	E2	0.00967 14	$\alpha(\text{K})=0.00786$ 11; $\alpha(\text{L})=0.001408$ 20; $\alpha(\text{M})=0.000318$ 4	
								$\alpha(\text{N})=7.36\times 10^{-5}$ 10; $\alpha(\text{O})=1.014\times 10^{-5}$ 14; $\alpha(\text{P})=4.42\times 10^{-7}$ 6	
4501.2	15 ⁽⁻⁾	668.8 1	100	3832.4	13 ⁽⁻⁾	E2	0.00808 11	B(E2)(W.u.)=2.0 +10-5	
								$\alpha(\text{K})=0.00660$ 9; $\alpha(\text{L})=0.001146$ 16; $\alpha(\text{M})=0.000258$ 4	
								$\alpha(\text{N})=5.98\times 10^{-5}$ 8; $\alpha(\text{O})=8.28\times 10^{-6}$ 12; $\alpha(\text{P})=3.73\times 10^{-7}$ 5	
								E _{γ} : 1981Wa04 argue 668.8 γ follows 805.0 γ .	
4532.1	(15 ⁺)	256.8 4	100	4275.3	14 ⁺	D			
4678.8	16 ⁺	146.7 4	33	4532.1	(15 ⁺)	D			
		403.5 3	100	4275.3	14 ⁺	E2	0.0292 4	$\alpha(\text{K})=0.02258$ 32; $\alpha(\text{L})=0.00510$ 7; $\alpha(\text{M})=0.001177$ 17	
								$\alpha(\text{N})=0.000271$ 4; $\alpha(\text{O})=3.59\times 10^{-5}$ 5; $\alpha(\text{P})=1.220\times 10^{-6}$ 17	
5008.1	17 ⁽⁻⁾	506.9 1	100	4501.2	15 ⁽⁻⁾	E2	0.01588 22	B(E2)(W.u.)=14 +9-4	
								$\alpha(\text{K})=0.01266$ 18; $\alpha(\text{L})=0.002498$ 35; $\alpha(\text{M})=0.000570$ 8	
								$\alpha(\text{N})=0.0001314$ 18; $\alpha(\text{O})=1.779\times 10^{-5}$ 25; $\alpha(\text{P})=7.01\times 10^{-7}$ 10	
5329.6	18 ⁺	650.8 2	100	4678.8	16 ⁺	E2	0.00861 12	$\alpha(\text{K})=0.00702$ 10; $\alpha(\text{L})=0.001232$ 17; $\alpha(\text{M})=0.000278$ 4	
								$\alpha(\text{N})=6.43\times 10^{-5}$ 9; $\alpha(\text{O})=8.89\times 10^{-6}$ 12; $\alpha(\text{P})=3.96\times 10^{-7}$ 6	
5463.7	19 ⁽⁻⁾	134.1 4	1.8	5329.6	18 ⁺	D		B(E1)(W.u.)=5.2 $\times 10^{-6}$ +12-11; B(M1)(W.u.)=4.9 $\times 10^{-4}$ +11-10	
		455.6 1	100	5008.1	17 ⁽⁻⁾	E2	0.02097 29	B(E2)(W.u.)=1.74 +16-14	
								$\alpha(\text{K})=0.01651$ 23; $\alpha(\text{L})=0.00346$ 5; $\alpha(\text{M})=0.000793$ 11	
								$\alpha(\text{N})=0.0001826$ 26; $\alpha(\text{O})=2.449\times 10^{-5}$ 34; $\alpha(\text{P})=9.05\times 10^{-7}$ 13	
6065.1	20 ⁺	735 1	100	5329.6	18 ⁺	E2	0.00651 9	$\alpha(\text{K})=0.00536$ 8; $\alpha(\text{L})=0.000897$ 13; $\alpha(\text{M})=0.0002015$ 29	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{154}\text{Er})$ (continued)								
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\dagger	E_f	J_f^π	Mult.#	$\alpha^@$	Comments
								$\alpha(\text{N})=4.67\times 10^{-5}$ 7; $\alpha(\text{O})=6.51\times 10^{-6}$ 9; $\alpha(\text{P})=3.03\times 10^{-7}$ 4
6089.0	20 ⁽⁻⁾	625 1	100	5463.7	19 ⁽⁻⁾	D		
6291.2	21 ⁽⁻⁾	202.2 1	69	6089.0	20 ⁽⁻⁾	M1+E2	0.32 7	$\alpha(\text{K})=0.24$ 9; $\alpha(\text{L})=0.057$ 9; $\alpha(\text{M})=0.0132$ 25 $\alpha(\text{N})=0.0030$ 5; $\alpha(\text{O})=0.00040$ 4; $\alpha(\text{P})=1.4\times 10^{-5}$ 6 α : Value computed assuming $\delta=1$.
		827.5 1	100	5463.7	19 ⁽⁻⁾	E2	0.00501 7	B(E2)(W.u.)=1.1 $\alpha(\text{K})=0.00415$ 6; $\alpha(\text{L})=0.000669$ 9; $\alpha(\text{M})=0.0001496$ 21 $\alpha(\text{N})=3.47\times 10^{-5}$ 5; $\alpha(\text{O})=4.87\times 10^{-6}$ 7; $\alpha(\text{P})=2.358\times 10^{-7}$ 33
6577.1?	21 ⁽⁻⁾	1113.7 3	100	5463.7	19 ⁽⁻⁾	E2	0.00270 4	$\alpha(\text{N})=1.746\times 10^{-5}$ 24; $\alpha(\text{O})=2.488\times 10^{-6}$ 35; $\alpha(\text{P})=1.291\times 10^{-7}$ 18; $\alpha(\text{IPF})=4.36\times 10^{-7}$ 8 $\alpha(\text{K})=0.002266$ 32; $\alpha(\text{L})=0.000339$ 5; $\alpha(\text{M})=7.52\times 10^{-5}$ 11
6747.1	22 ⁽⁺⁾	682.0 4	100	6065.1	20 ⁺			Mult.: $\gamma(\theta)$ of 1989Sc13 suggests dipole, but J^π 's require E2.
7017.9	23 ⁽⁻⁾	270.7 4	2.1	6747.1	22 ⁽⁺⁾	D		B(E1)(W.u.)= 9.0×10^{-7} +21-20; B(M1)(W.u.)= 8.4×10^{-5} +20-18
		441.0 3	5	6577.1?	21 ⁽⁻⁾	E2	0.02288 32	B(E2)(W.u.)=0.125 +30-26 $\alpha(\text{N})=0.0002026$ 29; $\alpha(\text{O})=2.71\times 10^{-5}$ 4; $\alpha(\text{P})=9.80\times 10^{-7}$ 14 $\alpha(\text{K})=0.01794$ 25; $\alpha(\text{L})=0.00383$ 5; $\alpha(\text{M})=0.000880$ 12
		726.7 1	100	6291.2	21 ⁽⁻⁾	E2	0.00668 9	B(E2)(W.u.)=0.206 +26-21 $\alpha(\text{K})=0.00549$ 8; $\alpha(\text{L})=0.000924$ 13; $\alpha(\text{M})=0.0002075$ 29 $\alpha(\text{N})=4.81\times 10^{-5}$ 7; $\alpha(\text{O})=6.70\times 10^{-6}$ 9; $\alpha(\text{P})=3.11\times 10^{-7}$ 4
7336.2	25 ⁽⁻⁾	318.3 1	100	7017.9	23 ⁽⁻⁾	E2	0.0578 8	B(E2)(W.u.)=80 +25-15 $\alpha(\text{K})=0.0429$ 6; $\alpha(\text{L})=0.01153$ 16; $\alpha(\text{M})=0.00269$ 4 $\alpha(\text{N})=0.000616$ 9; $\alpha(\text{O})=7.97\times 10^{-5}$ 11; $\alpha(\text{P})=2.231\times 10^{-6}$ 31
8011.7	26 ⁽⁻⁾	675.5 1	100	7336.2	25 ⁽⁻⁾	M1+E2	0.012 4	$\alpha(\text{K})=0.010$ 4; $\alpha(\text{L})=0.0015$ 4; $\alpha(\text{M})=3.4\times 10^{-4}$ 9 $\alpha(\text{N})=8.0\times 10^{-5}$ 22; $\alpha(\text{O})=1.14\times 10^{-5}$ 33; $\alpha(\text{P})=5.9\times 10^{-7}$ 23 α : Value computed assuming $\delta=1$.
8108.8	27 ⁽⁻⁾	97.0 3	27	8011.7	26 ⁽⁻⁾	D		B(E1)(W.u.)= 1.6×10^{-4} +7-4; B(M1)(W.u.)=0.015 +7-4
		772.6 2	100	7336.2	25 ⁽⁻⁾	E2	0.00582 8	B(E2)(W.u.)=0.094 +39-21 $\alpha(\text{K})=0.00481$ 7; $\alpha(\text{L})=0.000792$ 11; $\alpha(\text{M})=0.0001775$ 25 $\alpha(\text{N})=4.11\times 10^{-5}$ 6; $\alpha(\text{O})=5.75\times 10^{-6}$ 8; $\alpha(\text{P})=2.73\times 10^{-7}$ 4
8312.5	26 ⁽⁺⁾	976.3 3	100	7336.2	25 ⁽⁻⁾	D		
8659.7	27 ⁽⁺⁾	347.4 3	88	8312.5	26 ⁽⁺⁾	D		
		647.8 3	100	8011.7	26 ⁽⁻⁾	D		
8671.6	28 ⁽⁺⁾	359.0 4	2	8312.5	26 ⁽⁺⁾			
		562.9 1	100	8108.8	27 ⁽⁻⁾	E1	0.00431 6	$\alpha(\text{K})=0.00366$ 5; $\alpha(\text{L})=0.000509$ 7;

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{154}\text{Er})$ (continued)								
<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_γ[†]</u>	<u>I_γ[†]</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult. #</u>	<u>α[@]</u>	<u>Comments</u>
								α(M)=0.0001118 16 α(N)=2.59×10 ⁻⁵ 4; α(O)=3.71×10 ⁻⁶ 5; α(P)=1.972×10 ⁻⁷ 28
9296.9	29(+)	625 1	100	8671.6	28(+)	D		
9477.6	29(-)	1368.8 2	100	8108.8	27(-)	E2	1.83×10 ⁻³ 3	α(K)=0.001520 21; α(L)=0.0002191 31; α(M)=4.84×10 ⁻⁵ 7 α(N)=1.126×10 ⁻⁵ 16; α(O)=1.616×10 ⁻⁶ 23; α(P)=8.66×10 ⁻⁸ 12; α(IPF)=3.37×10 ⁻⁵ 5
9482.9	29(+)	811.4 4	100	8671.6	28(+)	D		
9591.4	30(+)	108.5 4	12	9482.9	29(+)	D		
		113.8 5	2	9477.6	29(-)			
		294.5 2	100	9296.9	29(+)	M1+E2	0.107 34	α(K)=0.086 32; α(L)=0.0163 10; α(M)=0.00371 14 α(N)=0.00086 4; α(O)=0.000117 12; α(P)=5.0×10 ⁻⁶ 22 α: Value computed assuming δ=1.
		919.7 2	90	8671.6	28(+)	E2	0.00400 6	α(K)=0.00333 5; α(L)=0.000521 7; α(M)=0.0001161 16 α(N)=2.69×10 ⁻⁵ 4; α(O)=3.81×10 ⁻⁶ 5; α(P)=1.896×10 ⁻⁷ 27
9845.4	30(+)	362.7 3	100	9482.9	29(+)			
10110.4	31(-)	265.0 3	42	9845.4	30(+)	D		
		518.8 3	38	9591.4	30(+)	D		
		632.8 2	100	9477.6	29(-)	E2	0.00920 13	α(K)=0.00749 10; α(L)=0.001329 19; α(M)=0.000300 4 α(N)=6.94×10 ⁻⁵ 10; α(O)=9.58×10 ⁻⁶ 13; α(P)=4.21×10 ⁻⁷ 6
10152.5	32(+)	307.1 3	14	9845.4	30(+)	E2	0.0643 9	α(K)=0.0474 7; α(L)=0.01312 19; α(M)=0.00307 4 α(N)=0.000702 10; α(O)=9.04×10 ⁻⁵ 13; α(P)=2.449×10 ⁻⁶ 35
		561.1 1	100	9591.4	30(+)	E2	0.01230 17	α(K)=0.00991 14; α(L)=0.001857 26; α(M)=0.000421 6 α(N)=9.73×10 ⁻⁵ 14; α(O)=1.330×10 ⁻⁵ 19; α(P)=5.53×10 ⁻⁷ 8
10431.7	33(-)	279.2 1	100	10152.5	32(+)	D		B(E1)(W.u.)=3.3×10 ⁻⁵ +8-6; B(M1)(W.u.)=0.0031 +8-5
		321.3 2	24	10110.4	31(-)	E2	0.0562 8	B(E2)(W.u.)=2.5 +7-6 α(N)=0.000596 8; α(O)=7.71×10 ⁻⁵ 11; α(P)=2.177×10 ⁻⁶ 31 α(K)=0.0418 6; α(L)=0.01115 16; α(M)=0.00260 4
11356.1	34	924.5 2	100	10431.7	33(-)	D		
11506.0?	35(+)	150.0 2	100	11356.1	34	D		
11624.1	34(+)	1192.3 3	100	10431.7	33(-)	D		
		1471 4	30	10152.5	32(+)			
11663.2	34(+)	1231.5 3	100	10431.7	33(-)	D		
11891.7	35	267.6 3	100	11624.1	34(+)	D		
11899.5	36(+)	236.2 4	11	11663.2	34(+)	E2	0.1460 22	α(K)=0.1000 15; α(L)=0.0354 5; α(M)=0.00837 13

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{154}\text{Er})$ (continued)								
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\dagger	E_f	J_f^π	Mult. #	$\alpha^@$	Comments
11899.5	36(+)	275.2 4 393.6 2	5 100	11624.1 11506.0?	34(+) 35(+)	M1+E2	0.048 17	$\alpha(\text{N})=0.001910$ 30; $\alpha(\text{O})=0.000240$ 4; $\alpha(\text{P})=4.90\times 10^{-6}$ 7 $\alpha(\text{K})=0.039$ 15; $\alpha(\text{L})=0.0068$ 12; $\alpha(\text{M})=0.00152$ 24 $\alpha(\text{N})=0.00035$ 6; $\alpha(\text{O})=4.9\times 10^{-5}$ 10; $\alpha(\text{P})=2.3\times 10^{-6}$ 10
13212.5 13503.1	37 38(+)	1313.0 3 1603.5 3	100 100	11899.5 11899.5	36(+) 36(+)	D E2	 1.44 $\times 10^{-3}$ 2	$\alpha(\text{K})=0.001130$ 16; $\alpha(\text{L})=0.0001594$ 22; $\alpha(\text{M})=3.51\times 10^{-5}$ 5 $\alpha(\text{N})=8.17\times 10^{-6}$ 11; $\alpha(\text{O})=1.178\times 10^{-6}$ 16; $\alpha(\text{P})=6.44\times 10^{-8}$ 9; $\alpha(\text{IPF})=0.0001087$ 15
13953.2? 14003.1	 38(+)	450.1 3 500.0 3 2103.5 4	100 100 38	13503.1 13503.1 11899.5	38(+) 38(+) 36(+)	D D E2	 1.14 $\times 10^{-3}$ 2	$\alpha(\text{K})=0.000687$ 10; $\alpha(\text{L})=9.44\times 10^{-5}$ 13; $\alpha(\text{M})=2.073\times 10^{-5}$ 29 $\alpha(\text{N})=4.83\times 10^{-6}$ 7; $\alpha(\text{O})=6.99\times 10^{-7}$ 10; $\alpha(\text{P})=3.91\times 10^{-8}$ 5; $\alpha(\text{IPF})=0.000331$ 5
14271.8 14385.1	39 39	268.7 3 1172.5 5	100 100	14003.1 13212.5	38(+) 37	D E2	 2.44 $\times 10^{-3}$ 3	$\alpha(\text{N})=1.561\times 10^{-5}$ 22; $\alpha(\text{O})=2.229\times 10^{-6}$ 31; $\alpha(\text{P})=1.168\times 10^{-7}$ 16; $\alpha(\text{IPF})=2.77\times 10^{-6}$ 5 $\alpha(\text{K})=0.002049$ 29; $\alpha(\text{L})=0.000303$ 4; $\alpha(\text{M})=6.72\times 10^{-5}$ 9
14678.9	39	1466.3 4	100	13212.5	37	E2	1.64 $\times 10^{-3}$ 2	$\alpha(\text{K})=0.001335$ 19; $\alpha(\text{L})=0.0001906$ 27; $\alpha(\text{M})=4.20\times 10^{-5}$ 6 $\alpha(\text{N})=9.78\times 10^{-6}$ 14; $\alpha(\text{O})=1.406\times 10^{-6}$ 20; $\alpha(\text{P})=7.61\times 10^{-8}$ 11; $\alpha(\text{IPF})=6.12\times 10^{-5}$ 9
14924.3	41	652.5 3	100	14271.8	39	E2	0.00856 12	$\alpha(\text{K})=0.00698$ 10; $\alpha(\text{L})=0.001224$ 17; $\alpha(\text{M})=0.000276$ 4 $\alpha(\text{N})=6.39\times 10^{-5}$ 9; $\alpha(\text{O})=8.83\times 10^{-6}$ 12; $\alpha(\text{P})=3.93\times 10^{-7}$ 6
16032.8 696.37+x	42 J1+2	1108.5 4 696.37 17	100 100	14924.3 x	41 J1	D [E2]	 0.00736 10	$\alpha(\text{K})=0.00603$ 8; $\alpha(\text{L})=0.001031$ 14; $\alpha(\text{M})=0.0002320$ 33 $\alpha(\text{N})=5.37\times 10^{-5}$ 8; $\alpha(\text{O})=7.46\times 10^{-6}$ 10; $\alpha(\text{P})=3.41\times 10^{-7}$ 5

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma(^{154}\text{Er})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\dagger	E_f	J_f^π	Mult. #	$\alpha^@$	Comments
1430.72+x	J1+4	734.35 5	100	696.37+x	J1+2	E2	0.00652 9	$\alpha(\text{K})=0.00537$ 8; $\alpha(\text{L})=0.000899$ 13; $\alpha(\text{M})=0.0002020$ 28 $\alpha(\text{N})=4.68\times 10^{-5}$ 7; $\alpha(\text{O})=6.53\times 10^{-6}$ 9; $\alpha(\text{P})=3.04\times 10^{-7}$ 4
2207.94+x	J1+6	777.21 8	100	1430.72+x	J1+4	E2	0.00575 8	$\alpha(\text{K})=0.00475$ 7; $\alpha(\text{L})=0.000780$ 11; $\alpha(\text{M})=0.0001748$ 24 $\alpha(\text{N})=4.05\times 10^{-5}$ 6; $\alpha(\text{O})=5.67\times 10^{-6}$ 8; $\alpha(\text{P})=2.69\times 10^{-7}$ 4
3032.38+x	J1+8	824.44 7	100	2207.94+x	J1+6	[E2]	0.00505 7	$\alpha(\text{K})=0.00419$ 6; $\alpha(\text{L})=0.000675$ 9; $\alpha(\text{M})=0.0001510$ 21 $\alpha(\text{N})=3.50\times 10^{-5}$ 5; $\alpha(\text{O})=4.92\times 10^{-6}$ 7; $\alpha(\text{P})=2.377\times 10^{-7}$ 33
3907.14+x	J1+10	874.76 6	100	3032.38+x	J1+8	[E2]	0.00445 6	$\alpha(\text{K})=0.00370$ 5; $\alpha(\text{L})=0.000586$ 8; $\alpha(\text{M})=0.0001308$ 18 $\alpha(\text{N})=3.03\times 10^{-5}$ 4; $\alpha(\text{O})=4.28\times 10^{-6}$ 6; $\alpha(\text{P})=2.101\times 10^{-7}$ 29
4834.59+x	J1+12	927.45 9	100	3907.14+x	J1+10	E2	0.00393 6	$\alpha(\text{K})=0.00327$ 5; $\alpha(\text{L})=0.000511$ 7; $\alpha(\text{M})=0.0001138$ 16 $\alpha(\text{N})=2.64\times 10^{-5}$ 4; $\alpha(\text{O})=3.73\times 10^{-6}$ 5; $\alpha(\text{P})=1.863\times 10^{-7}$ 26
5814.48+x	J1+14	979.88 8	100	4834.59+x	J1+12	E2	0.00350 5	$\alpha(\text{K})=0.00293$ 4; $\alpha(\text{L})=0.000450$ 6; $\alpha(\text{M})=0.0001002$ 14 $\alpha(\text{N})=2.326\times 10^{-5}$ 33; $\alpha(\text{O})=3.30\times 10^{-6}$ 5; $\alpha(\text{P})=1.667\times 10^{-7}$ 23
6847.06+x	J1+16	1032.58 9	100	5814.48+x	J1+14	E2	0.00315 4	$\alpha(\text{K})=0.00263$ 4; $\alpha(\text{L})=0.000400$ 6; $\alpha(\text{M})=8.89\times 10^{-5}$ 12 $\alpha(\text{N})=2.065\times 10^{-5}$ 29; $\alpha(\text{O})=2.93\times 10^{-6}$ 4; $\alpha(\text{P})=1.500\times 10^{-7}$ 21
7932.67+x	J1+18	1085.61 10	100	6847.06+x	J1+16	E2	0.00284 4	$\alpha(\text{K})=0.002384$ 33; $\alpha(\text{L})=0.000358$ 5; $\alpha(\text{M})=7.95\times 10^{-5}$ 11 $\alpha(\text{N})=1.847\times 10^{-5}$ 26; $\alpha(\text{O})=2.63\times 10^{-6}$ 4; $\alpha(\text{P})=1.358\times 10^{-7}$ 19
9070.66+x	J1+20	1137.98 13	100	7932.67+x	J1+18	E2	0.00259 4	$\alpha(\text{K})=0.002172$ 30; $\alpha(\text{L})=0.000323$ 5; $\alpha(\text{M})=7.17\times 10^{-5}$ 10 $\alpha(\text{N})=1.665\times 10^{-5}$ 23; $\alpha(\text{O})=2.376\times 10^{-6}$ 33; $\alpha(\text{P})=1.238\times 10^{-7}$ 17; $\alpha(\text{IPF})=1.028\times 10^{-6}$ 15
10261.6+x	J1+22	1190.95 23	100	9070.66+x	J1+20	E2	2.37×10^{-3} 3	$\alpha(\text{K})=0.001987$ 28; $\alpha(\text{L})=0.000293$ 4; $\alpha(\text{M})=6.49\times 10^{-5}$ 9 $\alpha(\text{N})=1.509\times 10^{-5}$ 21; $\alpha(\text{O})=2.157\times 10^{-6}$ 30; $\alpha(\text{P})=1.133\times 10^{-7}$ 16; $\alpha(\text{IPF})=4.26\times 10^{-6}$ 6

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

γ(¹⁵⁴Er) (continued)

<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_γ[†]</u>	<u>I_γ[†]</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult. #</u>	<u>α[@]</u>	<u>Comments</u>
11504.6+x	J1+24	1242.93 11	100	10261.6+x	J1+22	[E2]	2.18×10 ⁻³ 3	α(K)=0.001829 26; α(L)=0.000268 4; α(M)=5.93×10 ⁻⁵ 8 α(N)=1.378×10 ⁻⁵ 19; α(O)=1.972×10 ⁻⁶ 28; α(P)=1.042×10 ⁻⁷ 15; α(IPF)=1.025×10 ⁻⁵ 14
12805.0+x	J1+26	1300.39 18	100	11504.6+x	J1+24	[E2]	2.01×10 ⁻³ 3	α(K)=0.001677 23; α(L)=0.0002436 34; α(M)=5.39×10 ⁻⁵ 8 α(N)=1.252×10 ⁻⁵ 18; α(O)=1.795×10 ⁻⁶ 25; α(P)=9.55×10 ⁻⁸ 13; α(IPF)=1.908×10 ⁻⁵ 27
14154.4+x	J1+28	1349.49 20	100	12805.0+x	J1+26	[E2]	1.88×10 ⁻³ 3	α(K)=0.001562 22; α(L)=0.0002256 32; α(M)=4.99×10 ⁻⁵ 7 α(N)=1.159×10 ⁻⁵ 16; α(O)=1.663×10 ⁻⁶ 23; α(P)=8.90×10 ⁻⁸ 12; α(IPF)=2.91×10 ⁻⁵ 4
744.73+y	J2+2	744.73 20	100	y	J2			
1533.57+y	J2+4	788.84 15	100	744.73+y	J2+2			
2367.03+y	J2+6	833.45 7	100	1533.57+y	J2+4			
3246.07+y	J2+8	879.04 8	100	2367.03+y	J2+6			
4171.63+y	J2+10	925.56 17	100	3246.07+y	J2+8			
5143.77+y	J2+12	972.13 11	100	4171.63+y	J2+10			
6162.1+y	J2+14	1018.36 15	100	5143.77+y	J2+12			
7227.7+y	J2+16	1065.53 10	100	6162.1+y	J2+14			
8340.3+y	J2+18	1112.59 11	100	7227.7+y	J2+16			
9499.1+y	J2+20	1158.81 12	100	8340.3+y	J2+18			
10706.3+y	J2+22	1207.19 13	100	9499.1+y	J2+20			
11959.7+y	J2+24	1253.39 18	100	10706.3+y	J2+22			
13260.2+y?	J2+26	1300.54 ^{&} 24	100	11959.7+y	J2+24			
848.0+z	J3+2	848		z	J3			
1744.0+z	J3+4	896		848.0+z	J3+2			
2695.0+z	J3+6	951		1744.0+z	J3+4			
3700.0+z	J3+8	1005		2695.0+z	J3+6			
4759.0+z	J3+10	1059		3700.0+z	J3+8			
5873.0+z	J3+12	1114		4759.0+z	J3+10			
7041.0+z	J3+14	1168		5873.0+z	J3+12			
8264.0+z	J3+16	1223		7041.0+z	J3+14			
9542.0+z	J3+18	1278		8264.0+z	J3+16			
10875.0+z	J3+20	1333		9542.0+z	J3+18			
931.0+u	J4+2	931		u	J4			
1929.0+u	J4+4	998		931.0+u	J4+2			
2994.0+u	J4+6	1065		1929.0+u	J4+4			
4125.0+u	J4+8	1131		2994.0+u	J4+6			
5325.0+u	J4+10	1200		4125.0+u	J4+8			
6594.0+u	J4+12	1269		5325.0+u	J4+10			
7939.0+u	J4+14	1345		6594.0+u	J4+12			
9364.0+u	J4+16	1425		7939.0+u	J4+14			

[†] From (HI,xny) and (HI,xny):SD,TSD, unless mentioned otherwise.

[‡] From ¹⁵⁴Er ε decay (3.30 s).

Adopted Levels, Gammas (continued) **$\gamma(^{154}\text{Er})$ (continued)**

From the heavy-ion-induced reaction studies.

@ [Additional information 7](#).

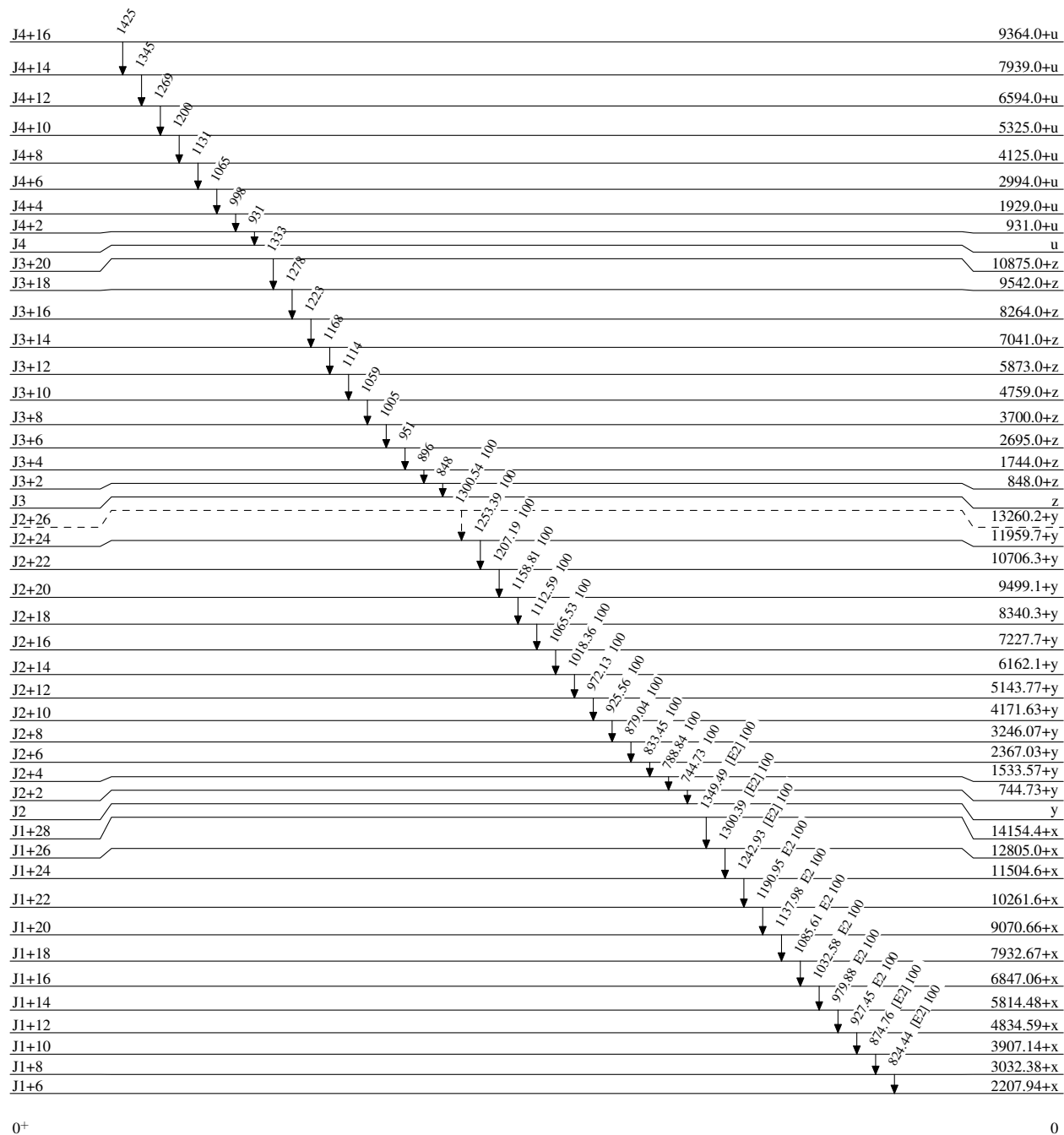
& Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

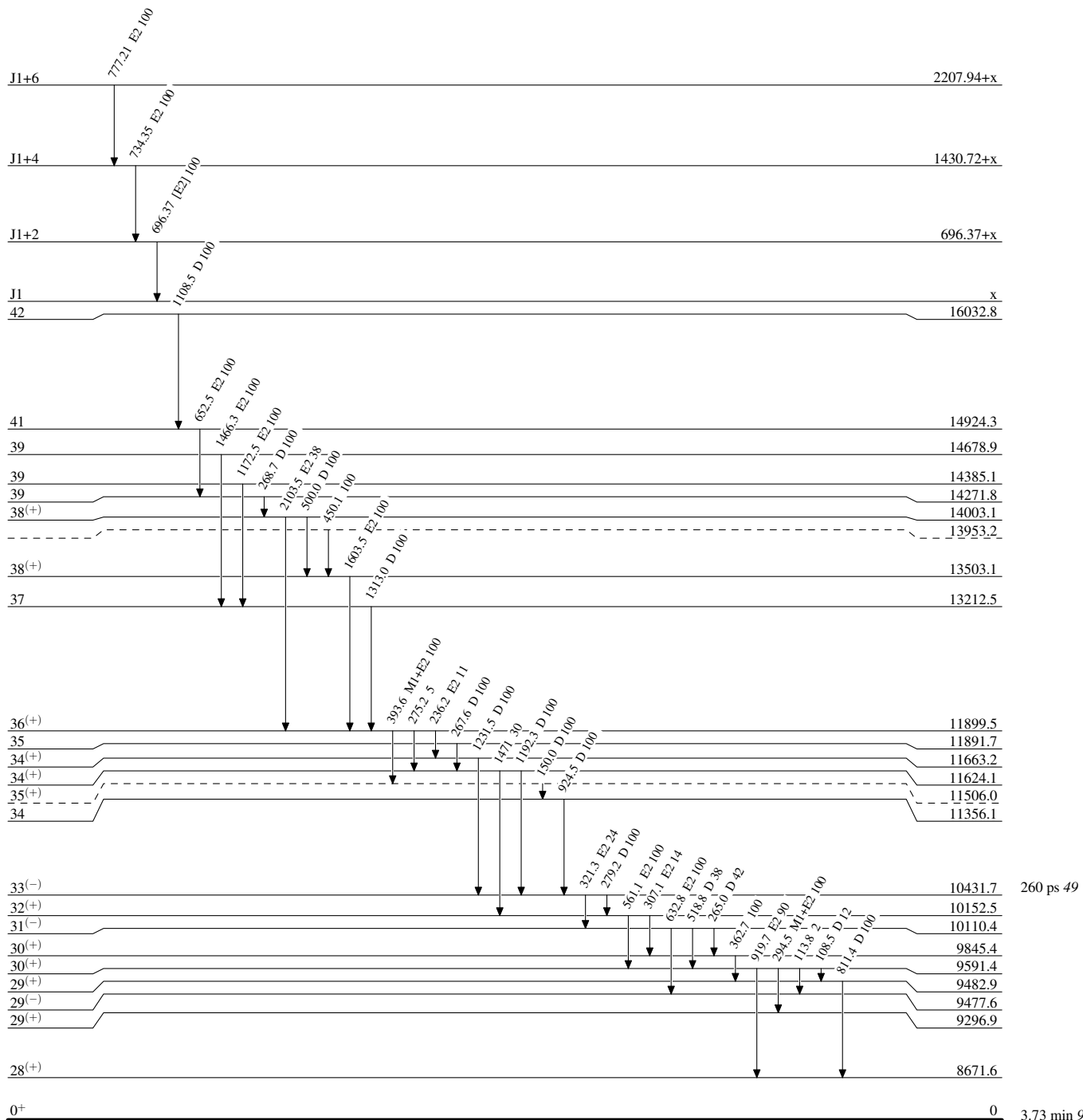
-----► γ Decay (Uncertain)

3.73 min 9

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



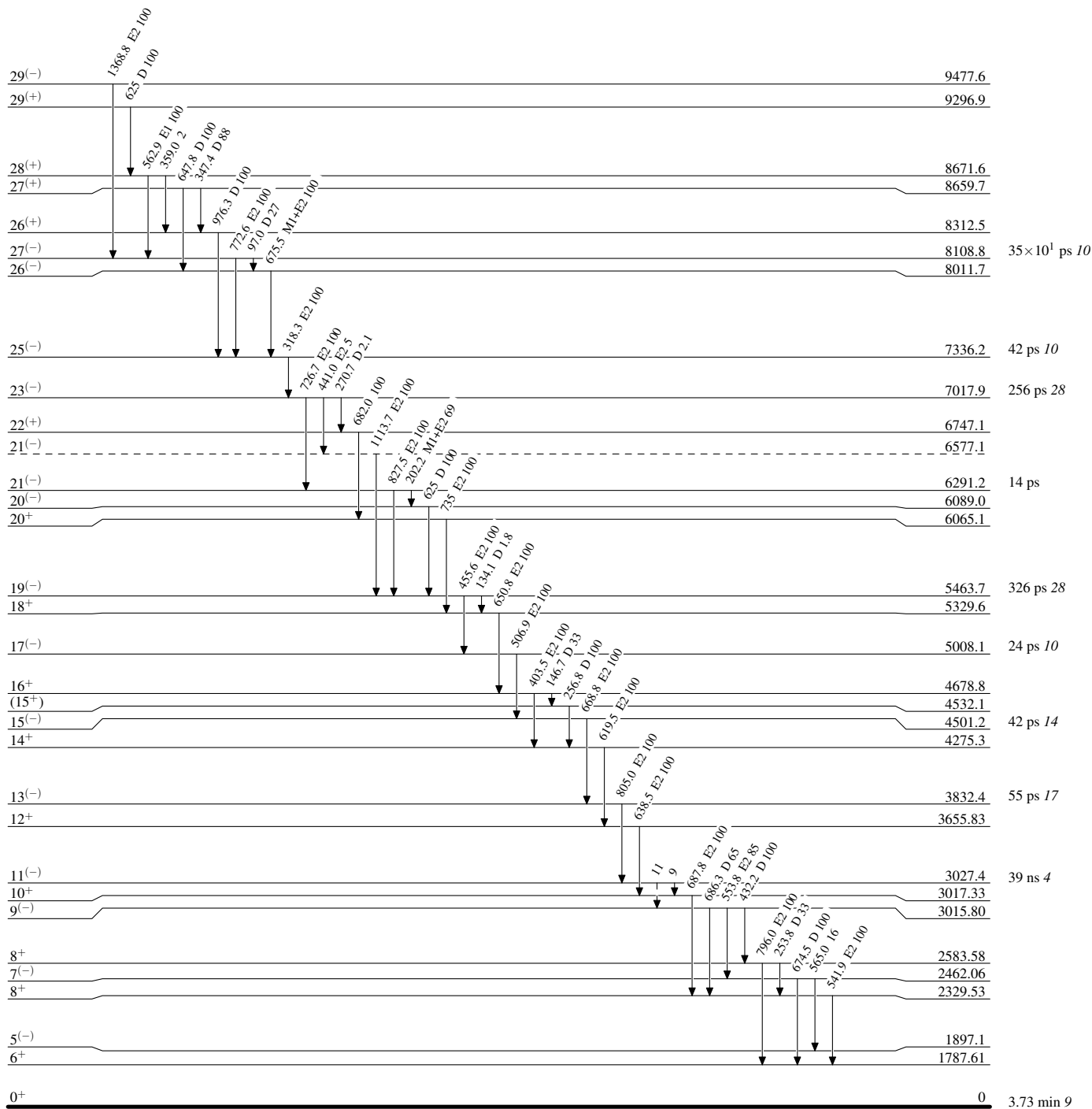
Adopted Levels, Gammas

Legend

Level Scheme (continued)

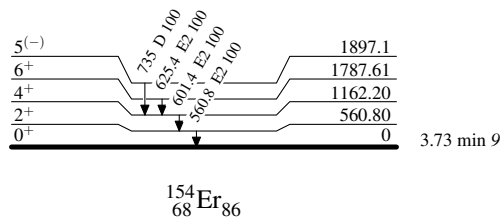
Intensities: Relative photon branching from each level

-----▶ γ Decay (Uncertain)



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

Intensities: Relative photon branching from each level



Adopted Levels, Gammas

