

**Adopted Levels, Gammas**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, Alexander A. Rodionov And Yuri L. Khazov		NDS 109,517 (2008)	22-Jan-2008

Q(β<sup>-</sup>)=-3680 16; S(n)=7855 23; S(p)=6687 23; Q(α)=-357 11 [2012Wa38](#)

Note: Current evaluation has used the following Q record -3689 16 7860 23 6695 23 -366 11 [2003Au03](#).

Nuclear structure calculations: [2004Yo04](#) (levels, transition rates), [1996Gr03](#) (analyzed band structures), [1992Zh10](#) (identical bands), [1985Jo03](#) (levels, transition rates IBA model), [1983Ch46](#) (yrast and near-yrast routhians, cranking model), [1982Ch30](#) (M1-γ spectra, core+ quasiparticle model).

[Additional information 1](#).

<sup>135</sup>Ce Levels

Cross Reference (XREF) Flags

<b>A</b>	<sup>135</sup> Ce IT decay (20 s)	<b>D</b>	<sup>122</sup> Sn( <sup>18</sup> O,5nγ)
<b>B</b>	<sup>135</sup> Pr ε decay (24 min)	<b>E</b>	<sup>124</sup> Sn( <sup>16</sup> O,5nγ)
<b>C</b>	<sup>122</sup> Sn( <sup>16</sup> O,3nγ)		

E(level)	J <sup>π</sup> †	T <sub>1/2</sub>	XREF	Comments
0.0	1/2 <sup>(+)</sup>	17.7 h 3	ABCDE	%ε+%β <sup>+</sup> =100 J <sup>π</sup> : spin from atomic beam ( <a href="#">1973In04</a> ), parity from systematics. The g.s. J <sup>π</sup> =1/2 <sup>+</sup> for <sup>133</sup> Ce, 3/2 <sup>+</sup> for <sup>137</sup> Ce and <sup>139</sup> Ce. Shell-model calculations by <a href="#">2004Yo04</a> predict lowest 1/2 <sup>+</sup> and two 3/2 <sup>+</sup> , 5/2 <sup>+</sup> , 11/2 <sup>-</sup> and 9/2 <sup>-</sup> levels below 500 keV. T <sub>1/2</sub> : weighted average of 17.6 h 4 ( <a href="#">1964Ta10</a> ), 17.5 h 4 ( <a href="#">1963Dz02</a> , <a href="#">1974DzZY</a> ) and 17.8 h 3 ( <a href="#">1976Ge10</a> ). Others: 22.0 h 7 ( <a href="#">1967Go16</a> ), 22 h ( <a href="#">1960La07</a> ), 18 h 1 ( <a href="#">1958An39</a> ), 22 h ( <a href="#">1951St03</a> ), ≈16 h ( <a href="#">1948Ch03</a> ), <a href="#">1965Ba46</a> , <a href="#">1959Gr23</a> , <a href="#">1958Dz10</a> .
82.67 5	3/2 <sup>(+)</sup>	0.53 ns 6	ABCDE	J <sup>π</sup> : M1(+E2) γ to 1/2 <sup>(+)</sup> and systematics (see J <sup>π</sup> comment for g.s.). T <sub>1/2</sub> : γcε(t) in <sup>135</sup> Pr ε decay ( <a href="#">1972Ar08</a> ). RUL(E2)=300 implies δ(E2/M1)(82.6γ)<0.4, in disagreement with δ=1.0 5 from intensity balance in <sup>135</sup> Ce IT decay.
296.11 5	(5/2 <sup>+</sup> )		ABCDE	J <sup>π</sup> : E3-M1-M1+E2 cascade from (11/2 <sup>-</sup> ) to 1/2 <sup>(+)</sup> . E(level): 296.11, (5/2 <sup>+</sup> ) and 296.12, 1/2 <sup>(+)</sup> ,3/2 <sup>(+)</sup> levels are proposed as a close doublet by <a href="#">1972Ar08</a> based on Iγ(213γ)/Iγ(296γ)=4.1 5 in <sup>135</sup> Ce IT decay and 0.48 7 in <sup>135</sup> Pr ε decay. It is interesting to note that F-spin multiplet calculation of <a href="#">1985Jo03</a> lists four low-lying levels of J <sup>π</sup> =1/2 <sup>+</sup> , 3/2 <sup>+</sup> , 5/2 <sup>+</sup> and 3/2 <sup>+</sup> , the last two forming a close doublet.
296.12 5	1/2 <sup>(+)</sup> ,3/2 <sup>(+)</sup>		B	J <sup>π</sup> : M1(+E2) γ to 1/2 <sup>(+)</sup> . E(level): See comment for 296.11, (5/2 <sup>+</sup> ) level about doublet.
445.81 <sup>a</sup> 21	(11/2 <sup>-</sup> )	20 s 1	A CDE	%IT=100 J <sup>π</sup> : E3-M1-M1+E2 cascade to 1/2 <sup>(+)</sup> and systematics. T <sub>1/2</sub> : average of 20 s 2 ( <a href="#">1971Va22</a> ), 20 s 2 ( <a href="#">1970Dr04</a> ), 20 s 1 ( <a href="#">1963Br30</a> ).
620.95 11	3/2 <sup>(+)</sup> ,5/2 <sup>(+)</sup>		B	J <sup>π</sup> : E2(+M1) γ to 1/2 <sup>(+)</sup> .
696.47 21	(1/2 <sup>+</sup> ,3/2 <sup>+</sup> ,5/2 <sup>+</sup> )		B	J <sup>π</sup> : M1(+E2) γ to (3/2 <sup>+</sup> ).
780.29 15	(1/2 <sup>+</sup> ,3/2 <sup>+</sup> ,5/2 <sup>+</sup> )		B	J <sup>π</sup> : M1,E2 γ to 1/2 <sup>(+)</sup> .
806.90 19	(1/2,3/2,5/2 <sup>+</sup> )		B	J <sup>π</sup> : γ to 1/2 <sup>(+)</sup> .
1016.84 15	(1/2 <sup>+</sup> ,3/2 <sup>+</sup> ,5/2 <sup>+</sup> )		B	J <sup>π</sup> : M1,E2 γ to (3/2 <sup>+</sup> ), γ to 1/2 <sup>(+)</sup> .
1035.7 <sup>a</sup> 4	(13/2 <sup>-</sup> )		CDE	J <sup>π</sup> : ΔJ=1, D+Q γ to (11/2 <sup>-</sup> ).
1145.2 <sup>a</sup> 4	(15/2 <sup>-</sup> )		CDE	J <sup>π</sup> : ΔJ=(2) γ to (11/2 <sup>-</sup> ).
1367.4? 5	(1/2,3/2,5/2 <sup>+</sup> )		B	J <sup>π</sup> : γ to 1/2 <sup>(+)</sup> .
1670.0 5	(15/2 <sup>-</sup> )		CDE	

Continued on next page (footnotes at end of table)

**Adopted Levels, Gammas (continued)**

<sup>135</sup>Ce Levels (continued)

E(level)	J <sup>π</sup> †	T <sub>1/2</sub>	XREF	Comments
1728.7? 5	(1/2,3/2,5/2)		B	J <sup>π</sup> : γ to (3/2 <sup>+</sup> ). 7/2 <sup>+</sup> disfavored by possible ε feeding from 3/2 <sup>(+)</sup> .
1834.9 3	(1/2,3/2,5/2)		B	J <sup>π</sup> : γ to (3/2 <sup>+</sup> ). 7/2 <sup>+</sup> disfavored by possible ε feeding from 3/2 <sup>(+)</sup> .
1869.4 <sup>a</sup> 5	(17/2 <sup>-</sup> )		CDE	J <sup>π</sup> : ΔJ=(2) γ to (13/2 <sup>-</sup> ), ΔJ=1, D+Q γ to (15/2 <sup>-</sup> ).
1950.6 9	(1/2,3/2,5/2 <sup>+</sup> )		B	J <sup>π</sup> : γ to 1/2 <sup>(+)</sup> .
2020.6 6	(1/2,3/2,5/2 <sup>+</sup> )		B	J <sup>π</sup> : γ to 1/2 <sup>(+)</sup> .
2051.5 <sup>a</sup> 5	(19/2 <sup>-</sup> )		CDE	J <sup>π</sup> : ΔJ=2 γ to (15/2 <sup>-</sup> ).
2125.3 <sup>@</sup> 5	(19/2 <sup>+</sup> )	8.2 ns 4	CDE	μ=-0.66 10 (1989Ra17,1982Ze01) J <sup>π</sup> : ΔJ=1 γ to (17/2 <sup>-</sup> ). T <sub>1/2</sub> : from <sup>122</sup> Sn( <sup>16</sup> O,3nγ) (1982Ze01). μ: γ(θ,H) (1982Ze01). See also 2005St24.
2249.0 5	(19/2 <sup>-</sup> )		CDE	
2551.0 <sup>@</sup> 6	(23/2 <sup>+</sup> )		CDE	J <sup>π</sup> : ΔJ=(2) γ to (19/2 <sup>+</sup> ).
2682.2 6	(21/2 <sup>-</sup> )		CDE	
2887.4 <sup>a</sup> 7	(21/2 <sup>-</sup> )		CDE	
2946.2 <sup>#</sup> 6	(19/2 <sup>+</sup> )		D	
2948.0 6	(23/2 <sup>-</sup> )		CDE	
3054.1 6	(21/2 <sup>+</sup> )		CD	
3076.2 <sup>#</sup> 6	(21/2 <sup>+</sup> )		D	
3104.0 <sup>a</sup> 6	(23/2 <sup>-</sup> )		CDE	
3229.0 <sup>#</sup> 6	(23/2 <sup>+</sup> )		CD	
3431.1 <sup>#</sup> 7	(25/2 <sup>+</sup> )		CD	
3505.4 6	(25/2 <sup>-</sup> )		CDE	
3514.6 <sup>@</sup> 7	(27/2 <sup>+</sup> )		CD	
3699.1 <sup>#</sup> 8	(27/2 <sup>+</sup> )		CD	
3701.8 <sup>c</sup> 7	(27/2 <sup>-</sup> )		CDE	
3771.7? 6	(27/2 <sup>+</sup> )		DE	
4032.3 7	(25/2 <sup>-</sup> )		DE	
4065.4 <sup>&amp;</sup> 6	(25/2 <sup>-</sup> )		CDE	
4127.5 <sup>#</sup> 9	(29/2 <sup>+</sup> )		CD	
4183.0 <sup>&amp;</sup> 6	(27/2 <sup>-</sup> )		DE	
4259.5 <sup>@</sup> 7	(31/2 <sup>+</sup> )		CD	
4400.1 <sup>c</sup> 8	(31/2 <sup>-</sup> )		D	
4460.4 <sup>&amp;</sup> 6	(29/2 <sup>-</sup> )		DE	
4485.8 <sup>#</sup> 9	(31/2 <sup>+</sup> )		CD	
4495.9 <sup>b</sup> 7	(27/2 <sup>-</sup> )		DE	
4634.9 <sup>b</sup> 6	(29/2 <sup>-</sup> )		DE	
4813.3 <sup>b</sup> 6	(31/2 <sup>-</sup> )		DE	
4830.3 <sup>&amp;</sup> 7	(31/2 <sup>-</sup> )		DE	
4978.6 <sup>#</sup> 9	(33/2 <sup>+</sup> )		D	
5062.2 <sup>b</sup> 7	(33/2 <sup>-</sup> )		DE	
5206.0 <sup>&amp;</sup> 7	(33/2 <sup>-</sup> )		DE	
5324.4 <sup>@</sup> 8	(35/2 <sup>+</sup> )		D	
5342.1 <sup>c</sup> 13	(35/2 <sup>-</sup> )		D	
5359.3 <sup>b</sup> 7	(35/2 <sup>-</sup> )	0.64 <sup>‡</sup> ps 11	DE	
5427.8 <sup>#</sup> 10	(35/2 <sup>+</sup> )		D	
5651.1 <sup>&amp;</sup> 7	(35/2 <sup>-</sup> )		DE	
5751.5 <sup>b</sup> 7	(37/2 <sup>-</sup> )	0.451 <sup>‡</sup> ps 21	DE	

Continued on next page (footnotes at end of table)

**Adopted Levels, Gammas (continued)**

<sup>135</sup>Ce Levels (continued)

E(level)	J <sup>π</sup> †	T <sub>1/2</sub>	XREF	E(level)	J <sup>π</sup> †	T <sub>1/2</sub>	XREF
5941.7 <sup>#</sup> 12	(37/2 <sup>+</sup> )		D	6840.2 <sup>b</sup> 8	(41/2 <sup>-</sup> )	0.163 <sup>‡</sup> ps +8-10	DE
6086.0 <sup>&amp;</sup> 7	(37/2 <sup>-</sup> )		DE	6993.7 <sup>&amp;</sup> 8	(41/2 <sup>-</sup> )		DE
6256.3 <sup>b</sup> 7	(39/2 <sup>-</sup> )	0.299 <sup>‡</sup> ps 25	DE	7470.4 <sup>b</sup> 9	(43/2 <sup>-</sup> )		DE
6299.4 <sup>@</sup> 13	(39/2 <sup>+</sup> )		D	7493.1 <sup>&amp;</sup> 9	(43/2 <sup>-</sup> )		DE
6443.8 <sup>#</sup> 13	(39/2 <sup>+</sup> )		D	8008.9 <sup>&amp;</sup> 10	(45/2 <sup>-</sup> )		DE
6477.1 <sup>c</sup> 17	(39/2 <sup>-</sup> )		D	8034.6 <sup>b</sup> 9	(45/2 <sup>-</sup> )		DE
6525.9 <sup>&amp;</sup> 8	(39/2 <sup>-</sup> )		DE				

† For high-spin states (J>11/2) the assignments are from  $\gamma\gamma(\theta)$  (DCO) and/or  $\gamma(\theta)$  data and associated band structures. In  $J^\pi$  arguments,  $\Delta J=2$  statement refers to stretched quadrupole (most likely E2) transition and  $\Delta J=1$  to stretched dipole (with possible quadrupole admixture) transition.

‡ From DSA method (2005JaZZ).

# Band(A):  $\nu h_{11/2} \otimes \pi[(h_{11/2})(g_{7/2})]$ . Proton aligned band,  $\gamma \approx 0^\circ$ . VMI analysis: parameter  $\Delta=128$  keV.

@ Band(B):  $\nu s_{1/2} \otimes \nu h_{11/2}^2$ . Neutron aligned band,  $\gamma \approx -60^\circ$ . VMI analysis: parameter  $\Delta=79$  keV.

& Band(C):  $\nu h_{11/2} \otimes \pi h_{11/2}^2$ . Proton aligned band,  $\gamma \approx 0^\circ$ . VMI analysis: parameter  $\Delta=63$  keV.

<sup>a</sup> Band(D): Triaxial band. Configuration= $\nu h_{11/2}$ ,  $\gamma \approx -30^\circ$ . VMI analysis: parameter  $\Delta=143$  keV.

<sup>b</sup> Band(E): Four-quasiparticle band. Configuration= $\nu[(s_{1/2})(h_{11/2}^2)] \otimes \pi[(h_{11/2})(g_{7/2})]$ . Oblate band,  $\gamma \approx -60^\circ$ . VMI analysis: parameter  $\Delta=192$  keV.

<sup>c</sup> Band(F):  $\nu h_{11/2} \otimes \nu h_{11/2}^2$ . Neutron aligned band,  $\gamma \approx -60^\circ$ . VMI analysis: parameter  $\Delta=58$  keV.

Adopted Levels, Gammas (continued)

$\gamma(^{135}\text{Ce})$									
$E_i(\text{level})$	$J_i^\pi$	$E_\gamma^\dagger$	$I_\gamma^\dagger$	$E_f$	$J_f^\pi$	Mult. <sup>‡</sup>	$\delta^\#$	$\alpha^b$	Comments
82.67	3/2 <sup>(+)</sup>	82.64 7	100	0.0	1/2 <sup>(+)</sup>	M1(+E2)	<0.4	2.19 15	B(M1)(W.u.)=0.022 3 $\alpha(\text{K})=1.77$ 4; $\alpha(\text{L})=0.33$ 9; $\alpha(\text{M})=0.071$ 21; $\alpha(\text{N}+..)=0.018$ 5 $\alpha(\text{N})=0.015$ 5; $\alpha(\text{O})=0.0024$ 6; $\alpha(\text{P})=0.000133$ 3 $E_\gamma$ : from <sup>135</sup> Pr $\epsilon$ decay. Mult.: from $\alpha(\text{K})\text{exp}$ and K/L ratio in <sup>135</sup> Pr $\epsilon$ decay and $\alpha(\text{exp})$ deduced from intensity balance in <sup>135</sup> Ce IT decay. In a ce spectrum shown by 1970Dr04 (in <sup>135</sup> Ce IT decay), K/L ratio seems much smaller than K/L(theory for M1)=7.3, suggesting some E2 admixture. $\delta$ : from RUL(E2)=300. Values from ce and $\gamma$ -ray data disagree: $\delta(\text{E2/M1})=1.0$ 5 (from intensity balance in <sup>135</sup> Ce IT decay); >1.5 from $\alpha(\text{K})\text{exp}$ and 0.0 from K/L ratio (in <sup>135</sup> Pr $\epsilon$ decay).
296.11	(5/2 <sup>+</sup> )	213.45 <sup>c</sup> 6	100 4	82.67	3/2 <sup>(+)</sup>	M1		0.1429	$\alpha(\text{K})=0.1221$ 18; $\alpha(\text{L})=0.01645$ 23; $\alpha(\text{M})=0.00344$ 5; $\alpha(\text{N}+..)=0.000897$ 13 $\alpha(\text{N})=0.000763$ 11; $\alpha(\text{O})=0.0001238$ 18; $\alpha(\text{P})=9.40 \times 10^{-6}$ 14 $E_\gamma$ : from <sup>135</sup> Pr $\epsilon$ decay. $E_\gamma=212.9$ 2 in IT decay.
		296.12 <sup>c</sup> 5	25 3	0.0	1/2 <sup>(+)</sup>	E2		0.0508	$\alpha(\text{K})=0.0407$ 6; $\alpha(\text{L})=0.00792$ 12; $\alpha(\text{M})=0.001704$ 24; $\alpha(\text{N}+..)=0.000431$ 6 $\alpha(\text{N})=0.000371$ 6; $\alpha(\text{O})=5.64 \times 10^{-5}$ 8; $\alpha(\text{P})=2.68 \times 10^{-6}$ 4 $I_\gamma$ : from IT decay. $E_\gamma$ : from <sup>135</sup> Pr $\epsilon$ decay. $E_\gamma=295.8$ 5 in IT decay. Mult.: $\alpha(\text{K})\text{exp}$ in IT decay gives E2(+M1) with $\delta > 1.2$ , $\Delta J^\pi$ requires E2.
296.12	1/2 <sup>(+)</sup> , 3/2 <sup>(+)</sup>	213.45 <sup>cf</sup> 6 296.12 <sup>c</sup> 5	100	82.67	3/2 <sup>(+)</sup> 1/2 <sup>(+)</sup>	M1(+E2)	<0.9	0.0576 22	$I_\gamma$ : probable weak component. $\alpha(\text{K})=0.0487$ 24; $\alpha(\text{L})=0.0071$ 3; $\alpha(\text{M})=0.00148$ 7; $\alpha(\text{N}+..)=0.000384$ 15 $\alpha(\text{N})=0.000328$ 14; $\alpha(\text{O})=5.24 \times 10^{-5}$ 14; $\alpha(\text{P})=3.6 \times 10^{-6}$ 3
445.81	(11/2 <sup>-</sup> )	149.7 2	100	296.11	(5/2 <sup>+</sup> )	E3		3.73	B(E3)(W.u.)= $7.2 \times 10^{-3}$ 4 $\alpha(\text{K})=1.515$ 23; $\alpha(\text{L})=1.72$ 3; $\alpha(\text{M})=0.396$ 7; $\alpha(\text{N}+..)=0.0970$ 16 $\alpha(\text{N})=0.0851$ 14; $\alpha(\text{O})=0.01182$ 19; $\alpha(\text{P})=8.39 \times 10^{-5}$ 13 $E_\gamma$ : from ( <sup>16</sup> O,3n $\gamma$ ).

**Adopted Levels, Gammas (continued)**

γ(<sup>135</sup>Ce) (continued)

<u>E<sub>i</sub>(level)</u>	<u>J<sub>i</sub><sup>π</sup></u>	<u>E<sub>γ</sub><sup>†</sup></u>	<u>I<sub>γ</sub><sup>†</sup></u>	<u>E<sub>f</sub></u>	<u>J<sub>f</sub><sup>π</sup></u>	<u>Mult.<sup>‡</sup></u>	<u>δ<sup>#</sup></u>	<u>α<sup>b</sup></u>	<u>Comments</u>
620.95	3/2 <sup>(+)</sup> ,5/2 <sup>(+)</sup>	324.9 <sup>e</sup> 2	≈4.8 <sup>e</sup>	296.11	(5/2 <sup>+</sup> )	M1,E2		0.042 5	α(K)=0.035 5; α(L)=0.00551 21; α(M)=0.00117 6; α(N+..)=0.000300 11 α(N)=0.000257 11; α(O)=4.04×10 <sup>-5</sup> 7; α(P)=2.6×10 <sup>-6</sup> 5
		324.9 <sup>e</sup> 2	≈4.8 <sup>e</sup>	296.12	1/2 <sup>(+)</sup> ,3/2 <sup>(+)</sup>	M1,E2		0.042 5	α(K)=0.035 5; α(L)=0.00551 21; α(M)=0.00117 6; α(N+..)=0.000300 11 α(N)=0.000257 11; α(O)=4.04×10 <sup>-5</sup> 7; α(P)=2.6×10 <sup>-6</sup> 5
		538.2 2	100 11	82.67	3/2 <sup>(+)</sup>	M1(+E2)	<0.7	0.0123 7	α(K)=0.0105 7; α(L)=0.00140 6; α(M)=0.000292 11; α(N+..)=7.6×10 <sup>-5</sup> 3 α(N)=6.5×10 <sup>-5</sup> 3; α(O)=1.05×10 <sup>-5</sup> 5; α(P)=7.9×10 <sup>-7</sup> 6
		620.9 2	19 3	0.0	1/2 <sup>(+)</sup>	E2(+M1)	>1.2	0.0067 7	α(K)=0.0057 6; α(L)=0.00081 6; α(M)=0.000170 11; α(N+..)=4.4×10 <sup>-5</sup> 3 α(N)=3.76×10 <sup>-5</sup> 25; α(O)=6.0×10 <sup>-6</sup> 5; α(P)=4.1×10 <sup>-7</sup> 5
696.47	(1/2 <sup>+</sup> ,3/2 <sup>+</sup> ,5/2 <sup>+</sup> )	400.7 <sup>df</sup> 5	<22 <sup>d</sup>	296.11	(5/2 <sup>+</sup> )	[M1,E2]		0.024 4	α(K)=0.020 4; α(L)=0.00295 14; α(M)=0.000621 23; α(N+..)=0.000160 8 α(N)=0.000137 6; α(O)=2.18×10 <sup>-5</sup> 15; α(P)=1.5×10 <sup>-6</sup> 4
		400.7 <sup>df</sup> 5	<22 <sup>d</sup>	296.12	1/2 <sup>(+)</sup> ,3/2 <sup>(+)</sup>	[M1,E2]		0.024 4	α(K)=0.020 4; α(L)=0.00295 14; α(M)=0.000621 23; α(N+..)=0.000160 8 α(N)=0.000137 6; α(O)=2.18×10 <sup>-5</sup> 15; α(P)=1.5×10 <sup>-6</sup> 4
		613.8 2	100 15	82.67	3/2 <sup>(+)</sup>	M1(+E2)	<0.7	0.0088 6	α(K)=0.0076 5; α(L)=0.00100 5; α(M)=0.000209 10; α(N+..)=5.44×10 <sup>-5</sup> 25 α(N)=4.64×10 <sup>-5</sup> 21; α(O)=7.5×10 <sup>-6</sup> 4; α(P)=5.7×10 <sup>-7</sup> 4
		697.5 <sup>df</sup> 2	<77 <sup>d</sup>	0.0	1/2 <sup>(+)</sup>	M1,E2		0.0057 12	α(K)=0.0049 10; α(L)=0.00066 11; α(M)=0.000138 21; α(N+..)=3.6×10 <sup>-5</sup> 6 α(N)=3.1×10 <sup>-5</sup> 5; α(O)=4.9×10 <sup>-6</sup> 9; α(P)=3.6×10 <sup>-7</sup> 9
780.29	(1/2 <sup>+</sup> ,3/2 <sup>+</sup> ,5/2 <sup>+</sup> )	484.3 <sup>e</sup> 3	≈133 <sup>e</sup>	296.11	(5/2 <sup>+</sup> )	M1,E2		0.014 3	α(K)=0.0121 24; α(L)=0.00172 18; α(M)=0.00036 4; α(N+..)=9.4×10 <sup>-5</sup> 10 α(N)=8.0×10 <sup>-5</sup> 8; α(O)=1.28×10 <sup>-5</sup> 15; α(P)=8.9×10 <sup>-7</sup> 21
		484.3 <sup>e</sup> 3	≈267 <sup>e</sup>	296.12	1/2 <sup>(+)</sup> ,3/2 <sup>(+)</sup>	M1,E2		0.014 3	α(K)=0.0121 24; α(L)=0.00172 18; α(M)=0.00036 4; α(N+..)=9.4×10 <sup>-5</sup> 10

**Adopted Levels, Gammas (continued)**

γ(<sup>135</sup>Ce) (continued)

<u>E<sub>i</sub>(level)</u>	<u>J<sub>i</sub><sup>π</sup></u>	<u>E<sub>γ</sub><sup>†</sup></u>	<u>I<sub>γ</sub><sup>†</sup></u>	<u>E<sub>f</sub></u>	<u>J<sub>f</sub><sup>π</sup></u>	<u>Mult.<sup>‡</sup></u>	<u>δ<sup>#</sup></u>	<u>α<sup>b</sup></u>	<u>Comments</u>
									α(K)=0.0121 24; α(L)=0.00172 18; α(M)=0.00036 4; α(N+..)=9.4×10 <sup>-5</sup> 10 α(N)=8.0×10 <sup>-5</sup> 8; α(O)=1.28×10 <sup>-5</sup> 15; α(P)=8.9×10 <sup>-7</sup> 21
780.29	(1/2 <sup>+</sup> ,3/2 <sup>+</sup> ,5/2 <sup>+</sup> )	697.5 <sup>d</sup> 2	<350 <sup>d</sup>	82.67	3/2 <sup>(+)</sup>	M1,E2		0.0057 12	α(K)=0.0049 10; α(L)=0.00066 11; α(M)=0.000138 21; α(N+..)=3.6×10 <sup>-5</sup> 6 α(N)=3.1×10 <sup>-5</sup> 5; α(O)=4.9×10 <sup>-6</sup> 9; α(P)=3.6×10 <sup>-7</sup> 9
		780.6 10	100 24	0.0	1/2 <sup>(+)</sup>	M1,E2		0.0044 9	α(K)=0.0037 8; α(L)=0.00050 9; α(M)=0.000104 17; α(N+..)=2.7×10 <sup>-5</sup> 5 α(N)=2.3×10 <sup>-5</sup> 4; α(O)=3.7×10 <sup>-6</sup> 7; α(P)=2.8×10 <sup>-7</sup> 7
806.90	(1/2,3/2,5/2 <sup>+</sup> )	724.4 6	33 17	82.67	3/2 <sup>(+)</sup>				
		806.9 2	100 17	0.0	1/2 <sup>(+)</sup>				
1016.84	(1/2 <sup>+</sup> ,3/2 <sup>+</sup> ,5/2 <sup>+</sup> )	720.6 8	58 25	296.11	(5/2 <sup>+</sup> )	M1(+E2)	<1	0.0058 6	α(K)=0.0050 5; α(L)=0.00066 5; α(M)=0.000137 10; α(N+..)=3.6×10 <sup>-5</sup> 3 α(N)=3.03×10 <sup>-5</sup> 23; α(O)=4.9×10 <sup>-6</sup> 4; α(P)=3.7×10 <sup>-7</sup> 4
		934.1 2	100 17	82.67	3/2 <sup>(+)</sup>	M1,E2		0.0029 6	α(K)=0.0025 5; α(L)=0.00032 6; α(M)=6.8×10 <sup>-5</sup> 11; α(N+..)=1.8×10 <sup>-5</sup> 3 α(N)=1.50×10 <sup>-5</sup> 25; α(O)=2.4×10 <sup>-6</sup> 5; α(P)=1.8×10 <sup>-7</sup> 4
		1016.9 2	85 12	0.0	1/2 <sup>(+)</sup>				
1035.7	(13/2 <sup>-</sup> )	589.7 4	100	445.81	(11/2 <sup>-</sup> )	D+Q <sup>&amp;</sup>	-0.42 +6-10		
1145.2	(15/2 <sup>-</sup> )	109.5 2	1.6 4	1035.7	(13/2 <sup>-</sup> )				E <sub>γ</sub> ,I <sub>γ</sub> : from ( <sup>16</sup> O,3nγ). I <sub>γ</sub> <0.5 from ( <sup>16</sup> O,5nγ).
		699.6 4	100 11	445.81	(11/2 <sup>-</sup> )	(Q) <sup>@</sup>			
1367.4?	(1/2,3/2,5/2 <sup>+</sup> )	747 1	63 40	620.95	3/2 <sup>(+)</sup> ,5/2 <sup>(+)</sup>				
		1284.6 8	63 19	82.67	3/2 <sup>(+)</sup>				
		1367.3 6	100 19	0.0	1/2 <sup>(+)</sup>				
1670.0	(15/2 <sup>-</sup> )	525 1	<8	1145.2	(15/2 <sup>-</sup> )	D <sup>&amp;</sup>			
		634.9 4	100 8	1035.7	(13/2 <sup>-</sup> )	D(+Q) <sup>&amp;</sup>	-0.02 5		
1728.7?	(1/2,3/2,5/2)	1107 <sup>f</sup> 1	32 14	620.95	3/2 <sup>(+)</sup> ,5/2 <sup>(+)</sup>				
		1432.9 <sup>f</sup> 6	100 18	296.11	(5/2 <sup>+</sup> )				
		1646.0 <sup>f</sup> 8	64 14	82.67	3/2 <sup>(+)</sup>				
1834.9	(1/2,3/2,5/2)	1538.9 <sup>e</sup> 4	≈105 <sup>e</sup>	296.11	(5/2 <sup>+</sup> )				
		1538.9 <sup>e</sup> 4	≈105 <sup>e</sup>	296.12	1/2 <sup>(+)</sup> ,3/2 <sup>(+)</sup>				

**Adopted Levels, Gammas (continued)**

$\gamma(^{135}\text{Ce})$  (continued)

$E_i(\text{level})$	$J_i^\pi$	$E_\gamma^\dagger$	$I_\gamma^\dagger$	$E_f$	$J_f^\pi$	Mult. <sup>‡</sup>	$\delta^\#$	$\alpha^b$	Comments
1834.9	(1/2,3/2,5/2)	1751.9 6	100 17	82.67	3/2(+)				
1869.4	(17/2 <sup>-</sup> )	724.3 4	54 6	1145.2	(15/2 <sup>-</sup> )	D+Q <sup>&amp;</sup>	-0.25 9		I <sub>γ</sub> : other: 227 23 in ( <sup>16</sup> O,3n <sub>γ</sub> ).
		833.1 4	100 11	1035.7	(13/2 <sup>-</sup> )	(Q) <sup>@</sup>			
1950.6	(1/2,3/2,5/2 <sup>+</sup> )	1143 2	21 14	806.90	(1/2,3/2,5/2 <sup>+</sup> )				
		1867 2	93 40	82.67	3/2(+)				
		1951 1	100 30	0.0	1/2(+)				
2020.6	(1/2,3/2,5/2 <sup>+</sup> )	1214.2 8	100 30	806.90	(1/2,3/2,5/2 <sup>+</sup> )				
		1937 2	60 20	82.67	3/2(+)				
		2020 1	70 20	0.0	1/2(+)				
2051.5	(19/2 <sup>-</sup> )	181.9 4	3.8 10	1869.4	(17/2 <sup>-</sup> )				
		906.2 4	100 9	1145.2	(15/2 <sup>-</sup> )	Q <sup>@</sup>			
2125.3	(19/2 <sup>+</sup> )	256.0 3	100	1869.4	(17/2 <sup>-</sup> )	(E1)		0.0188	B(E1)(W.u.)=1.8×10 <sup>-6</sup> 1 α(K)=0.01613 24; α(L)=0.00212 3; α(M)=0.000441 7; α(N+..)=0.0001136 17 α(N)=9.71×10 <sup>-5</sup> 14; α(O)=1.547×10 <sup>-5</sup> 23; α(P)=1.080×10 <sup>-6</sup> 16 Mult.: ΔJ=1, dipole from γγ(θ) and assigned J <sup>π</sup> 's.
2249.0	(19/2 <sup>-</sup> )	379.2 4	38 6	1869.4	(17/2 <sup>-</sup> )	D <sup>&amp;</sup>			
		579.5 4	100 13	1670.0	(15/2 <sup>-</sup> )	Q <sup>@</sup>			
2551.0	(23/2 <sup>+</sup> )	425.6 4	100	2125.3	(19/2 <sup>+</sup> )	(Q) <sup>@</sup>			
2682.2	(21/2 <sup>-</sup> )	433.5 4	100	2249.0	(19/2 <sup>-</sup> )	D+Q <sup>&amp;</sup>	-0.16 4		
2887.4	(21/2 <sup>-</sup> )	836 1	100 20	2051.5	(19/2 <sup>-</sup> )	D <sup>&amp;</sup>			
		1019 1	100 20	1869.4	(17/2 <sup>-</sup> )				
2946.2	(19/2 <sup>+</sup> )	1076.6 4	100	1869.4	(17/2 <sup>-</sup> )				
2948.0	(23/2 <sup>-</sup> )	265.7 4	100 13	2682.2	(21/2 <sup>-</sup> )	D <sup>&amp;</sup>			
		896 1	88 13	2051.5	(19/2 <sup>-</sup> )				
3054.1	(21/2 <sup>+</sup> )	108.0 4	<25	2946.2	(19/2 <sup>+</sup> )	D <sup>&amp;</sup>			
		503.1 4	100 25	2551.0	(23/2 <sup>+</sup> )				
		928.7 4	100 25	2125.3	(19/2 <sup>+</sup> )	D+Q <sup>&amp;</sup>	-0.16 8		
3076.2	(21/2 <sup>+</sup> )	129.8 4	<43	2946.2	(19/2 <sup>+</sup> )				
		525.2 4	100 33	2551.0	(23/2 <sup>+</sup> )	D <sup>&amp;</sup>			
		951.1 4	<67	2125.3	(19/2 <sup>+</sup> )				
3104.0	(23/2 <sup>-</sup> )	216 1	<6	2887.4	(21/2 <sup>-</sup> )				
		1052.1 4	100 13	2051.5	(19/2 <sup>-</sup> )	(Q) <sup>@</sup>			
3229.0	(23/2 <sup>+</sup> )	152.7 4	<19	3076.2	(21/2 <sup>+</sup> )	D <sup>&amp;</sup>			
		175.1 4	100 13	3054.1	(21/2 <sup>+</sup> )	D(+Q) <sup>&amp;</sup>	+0.05 8		
		678 1	38 13	2551.0	(23/2 <sup>+</sup> )				

Adopted Levels, Gammas (continued)

γ(<sup>135</sup>Ce) (continued)

<u>E<sub>i</sub>(level)</u>	<u>J<sup>π</sup><sub>i</sub></u>	<u>E<sub>γ</sub><sup>†</sup></u>	<u>I<sub>γ</sub><sup>†</sup></u>	<u>E<sub>f</sub></u>	<u>J<sup>π</sup><sub>f</sub></u>	<u>Mult.<sup>‡</sup></u>	<u>δ<sup>#</sup></u>
3431.1	(25/2 <sup>+</sup> )	202.1 4	100	3229.0	(23/2 <sup>+</sup> )	D(+Q)&	+0.07 7
3505.4	(25/2 <sup>-</sup> )	557.3 4	100 33	2948.0	(23/2 <sup>-</sup> )	D&	
		823.5 4	100 33	2682.2	(21/2 <sup>-</sup> )	Q@	
3514.6	(27/2 <sup>+</sup> )	963.6 4	100	2551.0	(23/2 <sup>+</sup> )	Q@	
3699.1	(27/2 <sup>+</sup> )	268.0 4	100	3431.1	(25/2 <sup>+</sup> )	D+Q&	-0.07 2
3701.8	(27/2 <sup>-</sup> )	753.8 4	100	2948.0	(23/2 <sup>-</sup> )	Q@	
3771.7?	(27/2 <sup>+</sup> )	257 <sup>f</sup> 1	<40	3514.6	(27/2 <sup>+</sup> )		
		1220.6 4	100 20	2551.0	(23/2 <sup>+</sup> )	Q@	
4032.3	(25/2 <sup>-</sup> )	928 <sup>f</sup> 1	100	3104.0	(23/2 <sup>-</sup> )		
4065.4	(25/2 <sup>-</sup> )	962 1	100 50	3104.0	(23/2 <sup>-</sup> )	D&	
		1178.3 4	100 50	2887.4	(21/2 <sup>-</sup> )	(Q)@	
4127.5	(29/2 <sup>+</sup> )	428.3 4	100 9	3699.1	(27/2 <sup>+</sup> )	D+Q&	-0.11 3
		696 1	<18	3431.1	(25/2 <sup>+</sup> )		
4183.0	(27/2 <sup>-</sup> )	117.9 4	43 14	4065.4	(25/2 <sup>-</sup> )	D&	
		150.7 4	100 14	4032.3	(25/2 <sup>-</sup> )	D&	
		1078.6 4	57 14	3104.0	(23/2 <sup>-</sup> )		
4259.5	(31/2 <sup>+</sup> )	745.0 4	100	3514.6	(27/2 <sup>+</sup> )	Q@	
4400.1	(31/2 <sup>-</sup> )	698.3 4	100	3701.8	(27/2 <sup>-</sup> )	Q@	
4460.4	(29/2 <sup>-</sup> )	277.1 4	100	4183.0	(27/2 <sup>-</sup> )	D(+Q)&	-0.03 5
4485.8	(31/2 <sup>+</sup> )	358.2 4	100 10	4127.5	(29/2 <sup>+</sup> )	D(+Q)&	-0.06 7
		786.8 4	20 10	3699.1	(27/2 <sup>+</sup> )		
4495.9	(27/2 <sup>-</sup> )	313		4183.0	(27/2 <sup>-</sup> )		
		991 1	100	3505.4	(25/2 <sup>-</sup> )		
4634.9	(29/2 <sup>-</sup> )	139.1 4	<28	4495.9	(27/2 <sup>-</sup> )	D&	
		452		4183.0	(27/2 <sup>-</sup> )		
		863.2 4	100 20	3771.7?	(27/2 <sup>+</sup> )	(D)&	
		933 1	<40	3701.8	(27/2 <sup>-</sup> )	(D)&	
		1130 1	60 20	3505.4	(25/2 <sup>-</sup> )	(Q)	
4813.3	(31/2 <sup>-</sup> )	178.5 4	100 11	4634.9	(29/2 <sup>-</sup> )	D(+Q)&	+0.06 7
		318		4495.9	(27/2 <sup>-</sup> )		
		352.4 4	22 11	4460.4	(29/2 <sup>-</sup> )	D&	
		631		4183.0	(27/2 <sup>-</sup> )		
4830.3	(31/2 <sup>-</sup> )	195 <sup>f</sup>		4634.9	(29/2 <sup>-</sup> )		
		370.0 4	100	4460.4	(29/2 <sup>-</sup> )	D+Q&	-0.10 6



Adopted Levels, Gammas (continued)

γ(<sup>135</sup>Ce) (continued)

<u>E<sub>i</sub>(level)</u>	<u>J<sub>i</sub><sup>π</sup></u>	<u>E<sub>γ</sub><sup>†</sup></u>	<u>I<sub>γ</sub><sup>†</sup></u>	<u>E<sub>f</sub></u>	<u>J<sub>f</sub><sup>π</sup></u>	<u>Mult.<sup>‡</sup></u>	<u>δ<sup>#</sup></u>	<u>Comments</u>
4978.6	(33/2 <sup>+</sup> )	492.9 4	100 14	4485.8	(31/2 <sup>+</sup> )	D&		
		851 1	<29	4127.5	(29/2 <sup>+</sup> )			
5062.2	(33/2 <sup>-</sup> )	232		4830.3	(31/2 <sup>-</sup> )			
		249.0 4	100 11	4813.3	(31/2 <sup>-</sup> )	D(+Q)&	-0.02 +4-6	
		427		4634.9	(29/2 <sup>-</sup> )			
		603		4460.4	(29/2 <sup>-</sup> )			
		803 <sup>f</sup> 1	<22	4259.5	(31/2 <sup>+</sup> )			
5206.0	(33/2 <sup>-</sup> )	375.6 4	100 25	4830.3	(31/2 <sup>-</sup> )	D&		
		392 <sup>f</sup>		4813.3	(31/2 <sup>-</sup> )			
		571 <sup>f</sup>		4634.9	(29/2 <sup>-</sup> )			
		746 1	<50	4460.4	(29/2 <sup>-</sup> )			
5324.4	(35/2 <sup>+</sup> )	1064.9 4	100	4259.5	(31/2 <sup>+</sup> )	(Q) <sup>@</sup>		
5342.1	(35/2 <sup>-</sup> )	942 1	100	4400.1	(31/2 <sup>-</sup> )	Q <sup>@</sup>		
5359.3	(35/2 <sup>-</sup> )	153		5206.0	(33/2 <sup>-</sup> )			
		297.5 <sup>a</sup> 4		5062.2	(33/2 <sup>-</sup> )	D&		
		529		4830.3	(31/2 <sup>-</sup> )			
		545		4813.3	(31/2 <sup>-</sup> )			
5427.8	(35/2 <sup>+</sup> )	449.2 4	100 20	4978.6	(33/2 <sup>+</sup> )	D&		
		942 1	<40	4485.8	(31/2 <sup>+</sup> )			
5651.1	(35/2 <sup>-</sup> )	445.1 4	100 8	5206.0	(33/2 <sup>-</sup> )	D+Q&	-0.23 3	Doublet with a contaminant peak.
		589 <sup>f</sup>		5062.2	(33/2 <sup>-</sup> )			
		821 1	<15	4830.3	(31/2 <sup>-</sup> )	Q <sup>@</sup>		
		837 <sup>f</sup>		4813.3	(31/2 <sup>-</sup> )			
5751.5	(37/2 <sup>-</sup> )	100		5651.1	(35/2 <sup>-</sup> )			
		392.2 <sup>a</sup> 4		5359.3	(35/2 <sup>-</sup> )	D(+Q)&	-0.04 6	
		545		5206.0	(33/2 <sup>-</sup> )			
		689		5062.2	(33/2 <sup>-</sup> )			
5941.7	(37/2 <sup>+</sup> )	514 1		5427.8	(35/2 <sup>+</sup> )			
		963 1		4978.6	(33/2 <sup>+</sup> )			
6086.0	(37/2 <sup>-</sup> )	434.9 4	100 9	5651.1	(35/2 <sup>-</sup> )	D+Q&	-0.18 5	
		727		5359.3	(35/2 <sup>-</sup> )			
		880 1	<18	5206.0	(33/2 <sup>-</sup> )			
		1024		5062.2	(33/2 <sup>-</sup> )			
6256.3	(39/2 <sup>-</sup> )	170		6086.0	(37/2 <sup>-</sup> )			
		504.6 <sup>a</sup> 4		5751.5	(37/2 <sup>-</sup> )	D&		
		605		5651.1	(35/2 <sup>-</sup> )			
		897		5359.3	(35/2 <sup>-</sup> )			

Adopted Levels, Gammas (continued)

γ(<sup>135</sup>Ce) (continued)

<u>E<sub>i</sub>(level)</u>	<u>J<sup>π</sup><sub>i</sub></u>	<u>E<sub>γ</sub><sup>†</sup></u>	<u>I<sub>γ</sub><sup>†</sup></u>	<u>E<sub>f</sub></u>	<u>J<sup>π</sup><sub>f</sub></u>	<u>Mult.<sup>‡</sup></u>	<u>δ<sup>#</sup></u>
6299.4	(39/2 <sup>+</sup> )	975 <i>l</i>	100	5324.4	(35/2 <sup>+</sup> )		
6443.8	(39/2 <sup>+</sup> )	502 <i>l</i>		5941.7	(37/2 <sup>+</sup> )		
		1016 <sup><i>f</i></sup> <i>l</i>		5427.8	(35/2 <sup>+</sup> )		
6477.1	(39/2 <sup>-</sup> )	1135 <i>l</i>	100	5342.1	(35/2 <sup>-</sup> )		
6525.9	(39/2 <sup>-</sup> )	440.0 <i>4</i>	100 <i>17</i>	6086.0	(37/2 <sup>-</sup> )	D+Q&	-0.19 +8-11
		775		5751.5	(37/2 <sup>-</sup> )		
		875 <i>l</i>	<33	5651.1	(35/2 <sup>-</sup> )		
		1167		5359.3	(35/2 <sup>-</sup> )		
6840.2	(41/2 <sup>-</sup> )	314		6525.9	(39/2 <sup>-</sup> )		
		583.6 <sup><i>a</i></sup> <i>4</i>		6256.3	(39/2 <sup>-</sup> )		
		754		6086.0	(37/2 <sup>-</sup> )		
		1089		5751.5	(37/2 <sup>-</sup> )		
6993.7	(41/2 <sup>-</sup> )	468.0 <i>4</i>	100 <i>33</i>	6525.9	(39/2 <sup>-</sup> )	D&	
		737		6256.3	(39/2 <sup>-</sup> )		
		908 <i>l</i>	<67	6086.0	(37/2 <sup>-</sup> )		
		1242		5751.5	(37/2 <sup>-</sup> )		
7470.4	(43/2 <sup>-</sup> )	477		6993.7	(41/2 <sup>-</sup> )		
		630 <sup><i>a</i></sup> <i>l</i>		6840.2	(41/2 <sup>-</sup> )		
		944 <sup><i>f</i></sup>		6525.9	(39/2 <sup>-</sup> )		
		1214		6256.3	(39/2 <sup>-</sup> )		
7493.1	(43/2 <sup>-</sup> )	500 <i>l</i>		6993.7	(41/2 <sup>-</sup> )	D&	
		652		6840.2	(41/2 <sup>-</sup> )		
		968 <i>l</i>		6525.9	(39/2 <sup>-</sup> )		
		1238		6256.3	(39/2 <sup>-</sup> )		
8008.9	(45/2 <sup>-</sup> )	517 <sup><i>a</i></sup> <i>l</i>		7493.1	(43/2 <sup>-</sup> )		
		538		7470.4	(43/2 <sup>-</sup> )		
		1168		6840.2	(41/2 <sup>-</sup> )		
8034.6?	(45/2 <sup>-</sup> )	542 <sup><i>f</i></sup>		7493.1	(43/2 <sup>-</sup> )		
		564 <sup><i>f</i></sup> <i>l</i>		7470.4	(43/2 <sup>-</sup> )		
		1041 <sup><i>f</i></sup>		6993.7	(41/2 <sup>-</sup> )		
		1194 <sup><i>f</i></sup>		6840.2	(41/2 <sup>-</sup> )		

<sup>†</sup> For levels populated in both (<sup>16</sup>O,3nγ) and (<sup>16</sup>O,5nγ), values are generally from the latter, unless otherwise stated.

<sup>‡</sup> From ce data in <sup>135</sup>Pr decay when multipolarity is explicitly defined such as M1, E2, etc. The assignments D or Q (most likely E2) are from angular correlation/distribution data in high-spin reactions.

<sup>#</sup> From ce data in <sup>135</sup>Pr ε decay for γ rays from low-spin (J<11/2) levels, and from γ(θ) and γγ(θ) data in <sup>122</sup>Sn(<sup>18</sup>O,5nγ) for γ rays from high-spin (J>11/2) levels.

Adopted Levels, Gammas (continued)

$\gamma(^{135}\text{Ce})$  (continued)

@  $\gamma\gamma(\theta)$  (DCO) and/or  $\gamma(\theta)$  in high-spin reactions indicate  $\Delta J=2$ , quadrupole (E2).

&  $\gamma\gamma(\theta)$  (DCO) and/or  $\gamma(\theta)$  in high-spin reactions indicate  $\Delta J=1$ , dipole with possible quadrupole admixture for  $\Delta\pi=\text{no}$  transitions.

<sup>a</sup> Possibly the most intense branch.

<sup>b</sup> Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on  $\gamma$ -ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

<sup>c</sup> Multiply placed.

<sup>d</sup> Multiply placed with undivided intensity.

<sup>e</sup> Multiply placed with intensity suitably divided.

<sup>f</sup> Placement of transition in the level scheme is uncertain.

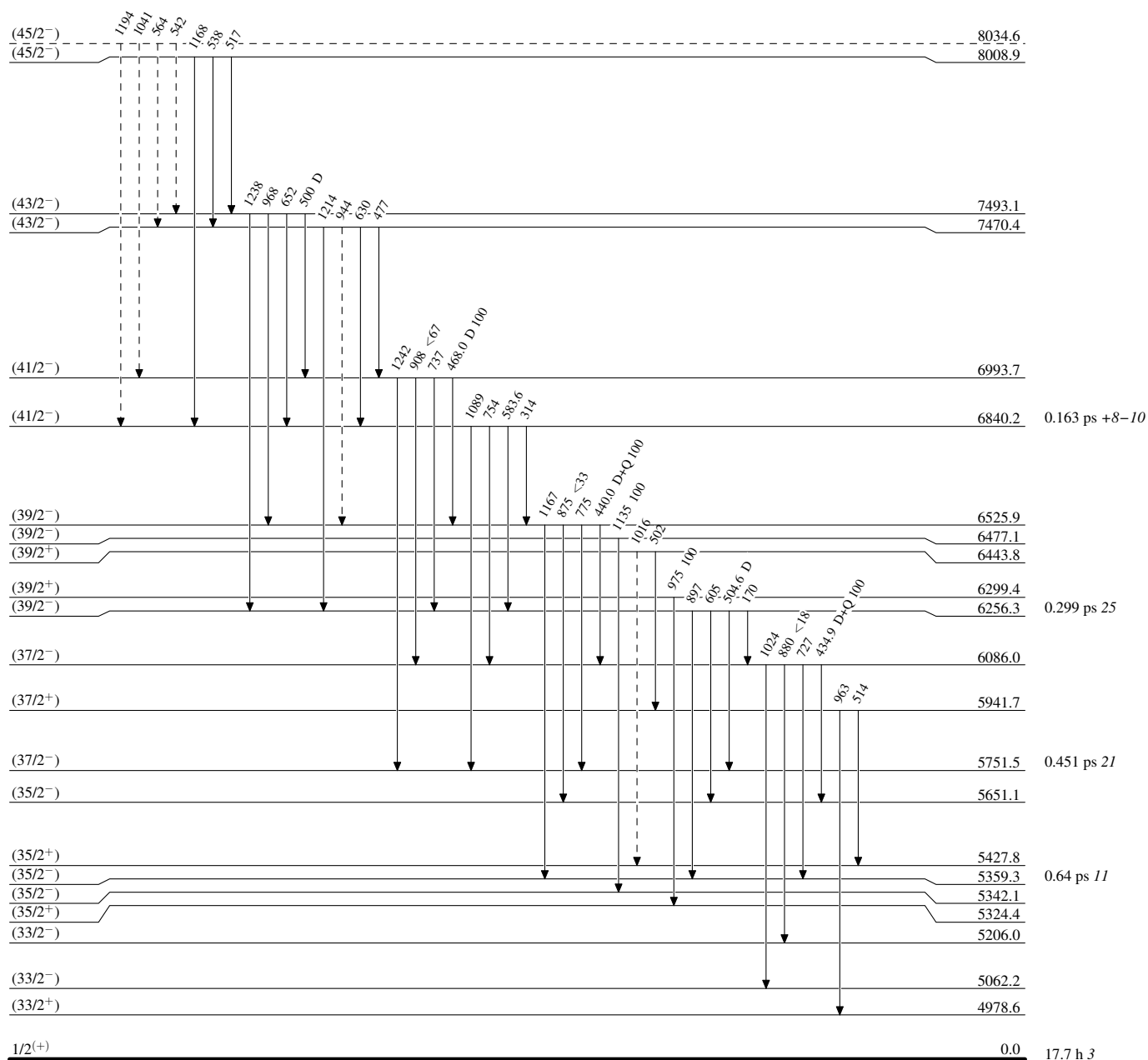
**Adopted Levels, Gammas**

Legend

Level Scheme

Intensities: Relative photon branching from each level

-----▶  $\gamma$  Decay (Uncertain)



$^{135}_{58}\text{Ce}_{77}$

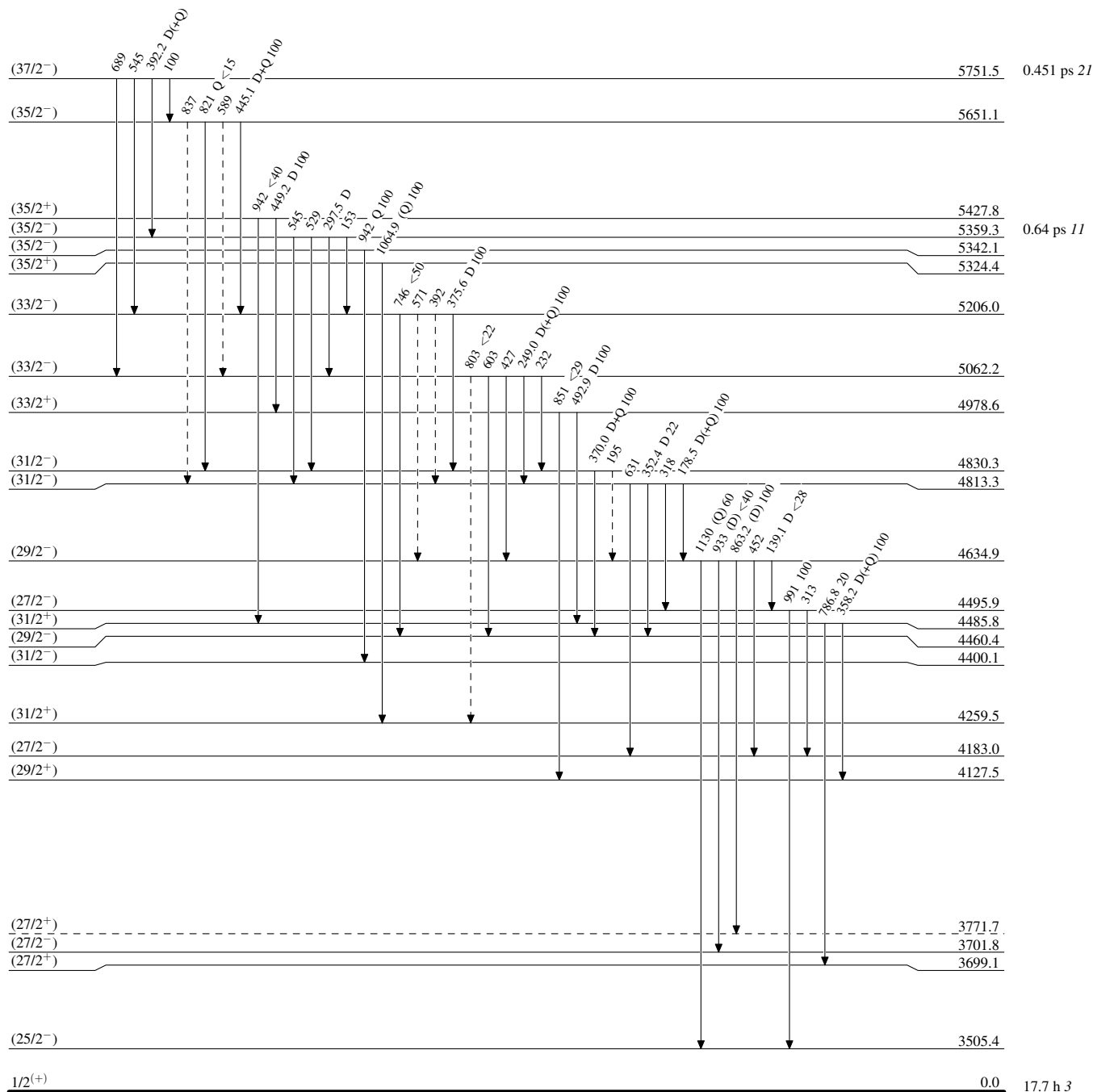
**Adopted Levels, Gammas**

Legend

**Level Scheme (continued)**

Intensities: Relative photon branching from each level

-----▶  $\gamma$  Decay (Uncertain)



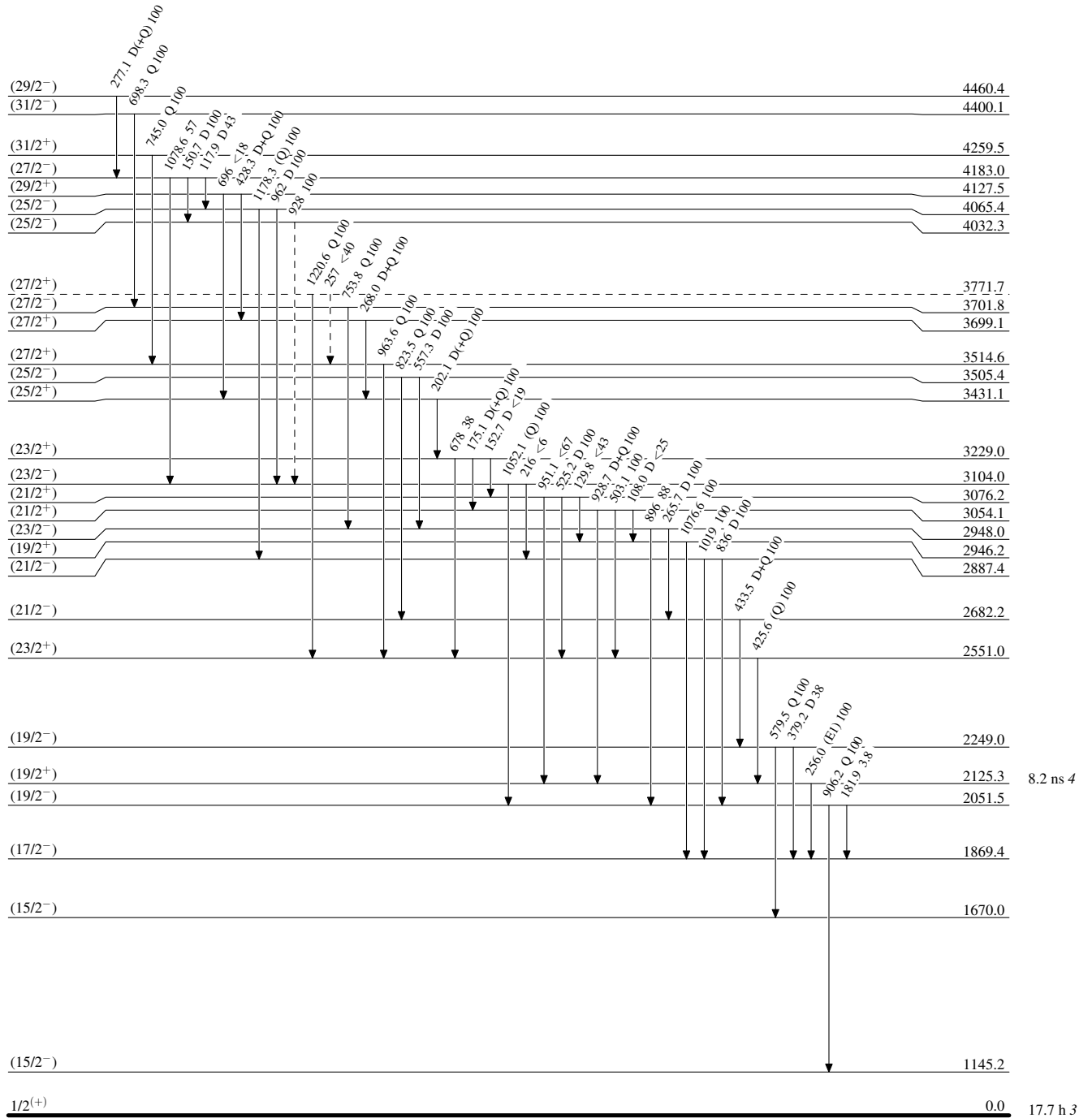
**Adopted Levels, Gammas**

Legend

**Level Scheme (continued)**

Intensities: Relative photon branching from each level

-----▶  $\gamma$  Decay (Uncertain)



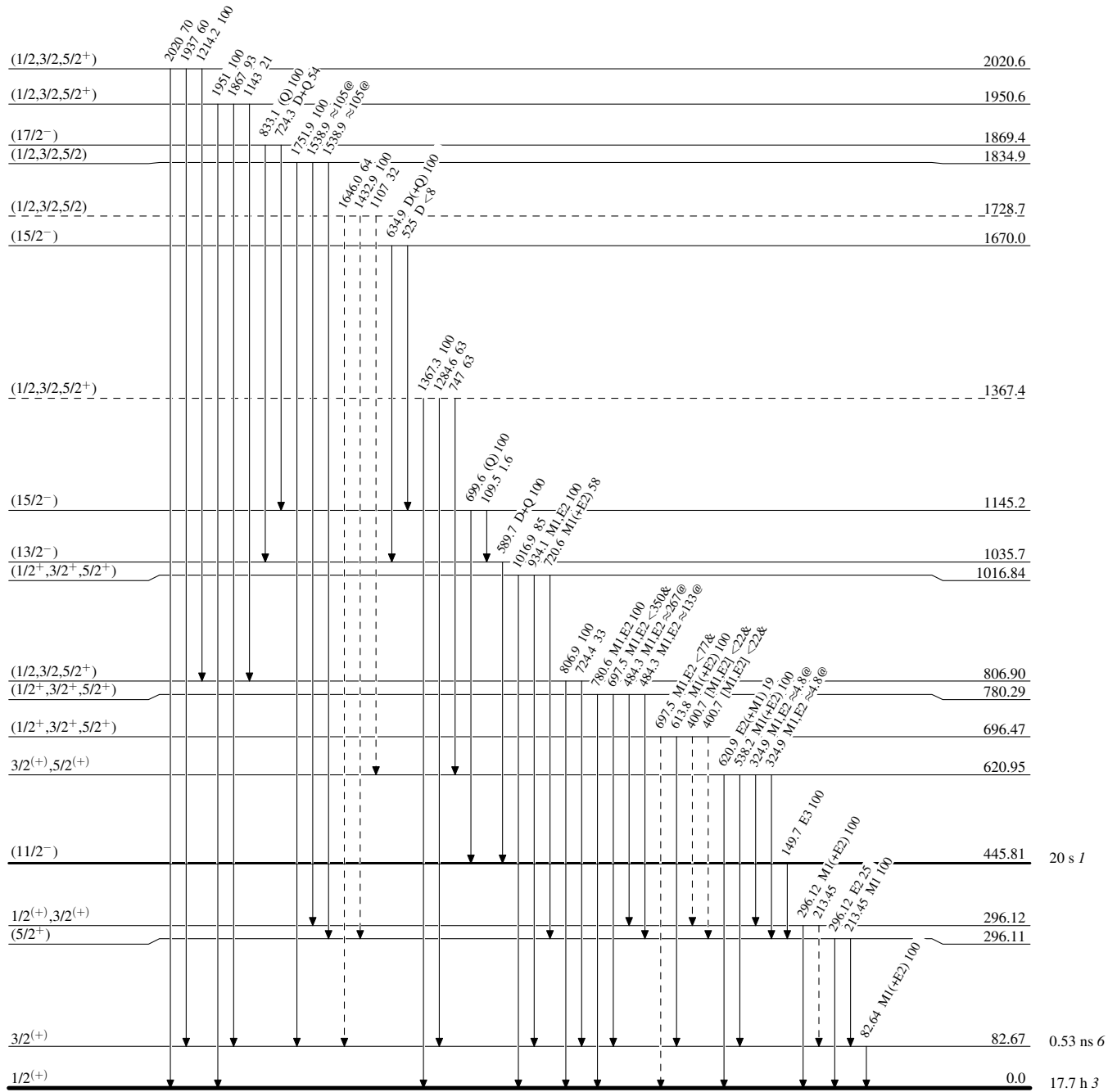
**Adopted Levels, Gammas**

**Level Scheme (continued)**

**Legend**

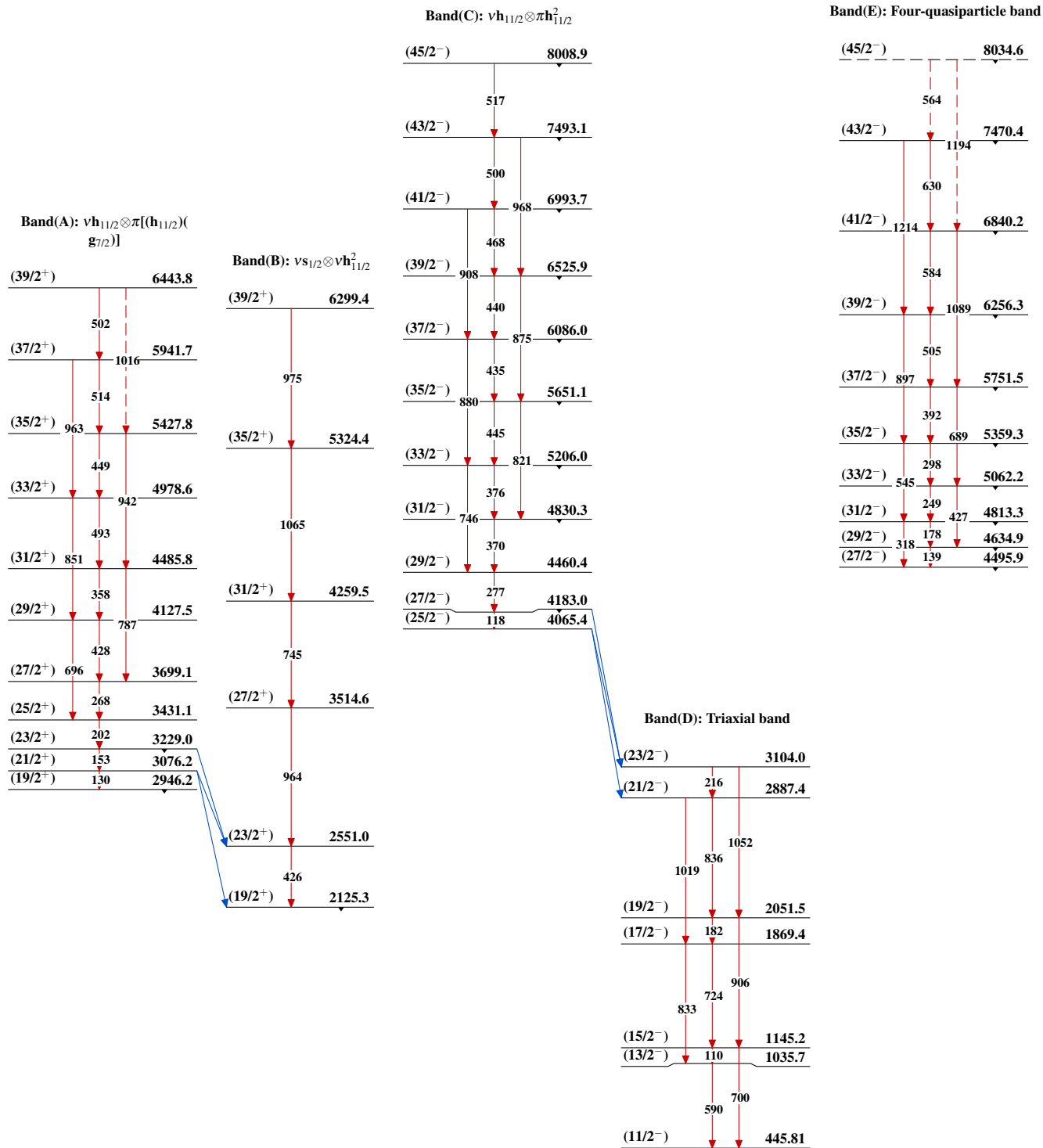
Intensities: Relative photon branching from each level  
& Multiply placed: undivided intensity given  
@ Multiply placed: intensity suitably divided

-----▶  $\gamma$  Decay (Uncertain)



<sup>135</sup><sub>58</sub>Ce<sub>77</sub>

**Adopted Levels, Gammas**





**Adopted Levels, Gammas (continued)**Band(F):  $\nu h_{11/2} \otimes \nu h_{11/2}^2$ (39/2<sup>-</sup>)      6477.1

1135

(35/2<sup>-</sup>)      5342.1

942

(31/2<sup>-</sup>)      4400.1

698

(27/2<sup>-</sup>)      3701.8 $^{135}_{58}\text{Ce}_{77}$