

¹⁴⁴Sm(d,nγ),(t,2nγ) 1986RuZX

Type	Author	History	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	Citation NDS 110, 507 (2009)	1-Oct-2008

E(d)=9.5 MeV.

Measured: γ, γγ, γ(θ), excit, ce.

E, J, Eγ, mult were presented on the level scheme; details were not given but they are based on γ(θ), excit, mult.

Level scheme was interpreted in terms of octupole multiplets.

¹⁴⁵Eu Levels

E(level)	Jπ [†]	E(level)	Jπ [†]	E(level)	Jπ [†]	T _{1/2}
0.0	5/2 ⁺	2049	3/2 ⁺	2684	(9/2,11/2) ⁻	
330	7/2 ⁺	2114	5/2 ⁺	2690	13/2 ⁺ ,(11/2,9/2) ⁺	
716	11/2 ⁻	2117	9/2 ⁻ ,11/2 ⁻	2726	(15/2) ⁻	
809	1/2 ⁺	2195	(9/2) ⁺	2747		
1042	3/2 ⁺	2203	3/2 ⁺	2814	17/2 ⁻	
1368	9/2 ⁻	2237	9/2 ⁺ , (7/2 ⁺)	2836	19/2 ⁻	5 ns
1500	7/2 ⁻	2245	15/2 ⁺	2862	19/2 ⁻	
1567	3/2 ⁽⁻⁾ ,5/2 ⁽⁻⁾	2283	15/2 ⁻	2897	13/2 ⁺	
1600	3/2 ⁻	2295	(11/2) ⁺	2911	21/2 ⁻	
1602	11/2 ⁻	2314	(13/2) ⁻	2925	(13/2) ⁻	
1745	7/2 ⁻	2318	5/2 ⁺	2939	9/2 ⁺ ,11/2 ⁺ ,13/2 ⁺	
1758	3/2 ⁺	2322	3/2 ⁻	3026	(17/2) ⁻	
1762	3/2 ⁻	2352	(11/2,13/2) ⁻	3119	(9/2,13/2) ⁺	
1766	5/2 ⁻	2400	(13/2 ⁺)	3183	23/2 ⁻	
1792	11/2 ⁻	2422		3187	(15/2,17/2)	
1827	(9/2 ⁻)	2423	5/2 ⁺ ,7/2 ⁺ ,9/2 ⁺	3349	(19/2) ⁻	
1844.8	3/2 ⁺ , (5/2) ⁺	2465		3412	(21/2)	
1845	13/2 ⁻	2507	5/2 ⁺ ,7/2 ⁺ ,9/2 ⁺	3449	(15/2,17/2) ⁻	
1881	1/2 ⁺ , (3/2) ⁺	2574	15/2 ⁻	3977	25/2 ⁺	
1915	(3/2,5/2) ⁺	2617	(9/2 ⁺)	4123	27/2 ⁺	

[†] From 1986RuZX based upon γ(E), γ(θ), γ(mult), but detailed arguments were not given.

γ(¹⁴⁵Eu)

E _γ	E _i (level)	J _i ^π	E _f	J _f ^π	Mult. [‡]	α [†]	Comments
22	2836	19/2 ⁻	2814	17/2 ⁻			
75.3	2911	21/2 ⁻	2836	19/2 ⁻			
146.5	4123	27/2 ⁺	3977	25/2 ⁺			
190.4	1792	11/2 ⁻	1602	11/2 ⁻	M1	0.301	α(K)=0.255 4; α(L)=0.0361 5; α(M)=0.00780 11; α(N+..)=0.00210 3 α(N)=0.00179 3; α(O)=0.000283 4; α(P)=2.81×10 ⁻⁵ 4
233.9	1602	11/2 ⁻	1368	9/2 ⁻			
239.5	2814	17/2 ⁻	2574	15/2 ⁻			
242.9	1845	13/2 ⁻	1602	11/2 ⁻			
260	2574	15/2 ⁻	2314	(13/2) ⁻			
262.0	2836	19/2 ⁻	2574	15/2 ⁻	E2 [#]	0.0891	α(K)=0.0672 10; α(L)=0.01705 24; α(M)=0.00385 6; α(N+..)=0.000997 14 α(N)=0.000865 13; α(O)=0.0001256 18; α(P)=6.09×10 ⁻⁶ 9
271.9	3183	23/2 ⁻	2911	21/2 ⁻			
329.1	2574	15/2 ⁻	2245	15/2 ⁺			
329.5	330	7/2 ⁺	0.0	5/2 ⁺	M1	0.0686	α(K)=0.0583 9; α(L)=0.00813 12; α(M)=0.001752 25;

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$^{144}\text{Sm}(\text{d},\text{n}\gamma),(\text{t},2\text{n}\gamma)$ **1986RuZX (continued)** $\gamma(^{145}\text{Eu})$ (continued)

E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	α^\dagger	Comments
386.7	716	11/2 ⁻	330	7/2 ⁺	M2	0.1649	$\alpha(\text{N}+\dots)=0.000471$ 7 $\alpha(\text{N})=0.000401$ 6; $\alpha(\text{O})=6.38\times 10^{-5}$ 9; $\alpha(\text{P})=6.37\times 10^{-6}$ 9 $\alpha(\text{K})=0.1361$ 19; $\alpha(\text{L})=0.0225$ 4; $\alpha(\text{M})=0.00497$ 7; $\alpha(\text{N}+\dots)=0.001337$ 19
399.9	2245	15/2 ⁺	1845	13/2 ⁻	E1	0.00757 11	$\alpha(\text{N})=0.001140$ 16; $\alpha(\text{O})=0.000180$ 3; $\alpha(\text{P})=1.702\times 10^{-5}$ 24 $\alpha=0.00757$ 11; $\alpha(\text{K})=0.00646$ 9; $\alpha(\text{L})=0.000873$ 13; $\alpha(\text{M})=0.000187$ 3; $\alpha(\text{N}+\dots)=4.99\times 10^{-5}$ 7 $\alpha(\text{N})=4.26\times 10^{-5}$ 6; $\alpha(\text{O})=6.67\times 10^{-6}$ 10; $\alpha(\text{P})=6.26\times 10^{-7}$ 9
412.7	2726	(15/2) ⁻	2314	(13/2) ⁻	M1	0.0250	$\alpha(\text{K})=0.0213$ 3; $\alpha(\text{L})=0.00293$ 5; $\alpha(\text{M})=0.000630$ 9; $\alpha(\text{N}+\dots)=0.0001697$ 24 $\alpha(\text{N})=0.0001444$ 21; $\alpha(\text{O})=2.30\times 10^{-5}$ 4; $\alpha(\text{P})=2.31\times 10^{-6}$ 4
424.4	1792	11/2 ⁻	1368	9/2 ⁻			
486.6	3349	(19/2) ⁻	2862	19/2 ⁻			
530.3	2814	17/2 ⁻	2283	15/2 ⁻	M1	0.0201	$\alpha(\text{K})=0.01712$ 24; $\alpha(\text{L})=0.00235$ 4; $\alpha(\text{M})=0.000506$ 7; $\alpha(\text{N}+\dots)=0.0001361$ 19 $\alpha(\text{N})=0.0001158$ 17; $\alpha(\text{O})=1.84\times 10^{-5}$ 3; $\alpha(\text{P})=1.86\times 10^{-6}$ 3
550.1	3412	(21/2)	2862	19/2 ⁻	E1	0.00339 5	$\alpha=0.00339$ 5; $\alpha(\text{K})=0.00290$ 4; $\alpha(\text{L})=0.000385$ 6; $\alpha(\text{M})=8.25\times 10^{-5}$ 12; $\alpha(\text{N}+\dots)=2.21\times 10^{-5}$ 3 $\alpha(\text{N})=1.88\times 10^{-5}$ 3; $\alpha(\text{O})=2.96\times 10^{-6}$ 5; $\alpha(\text{P})=2.86\times 10^{-7}$ 4 $\alpha=0.00917$ 13; $\alpha(\text{K})=0.00757$ 11; $\alpha(\text{L})=0.001252$ 18; $\alpha(\text{M})=0.000274$ 4; $\alpha(\text{N}+\dots)=7.26\times 10^{-5}$ 11 $\alpha(\text{N})=6.23\times 10^{-5}$ 9; $\alpha(\text{O})=9.56\times 10^{-6}$ 14; $\alpha(\text{P})=7.63\times 10^{-7}$ 11
552.8	2836	19/2 ⁻	2283	15/2 ⁻			
568.8	2814	17/2 ⁻	2245	15/2 ⁺			
578.8	2862	19/2 ⁻	2283	15/2 ⁻	E2	0.00917 13	$\alpha=0.00288$ 4; $\alpha(\text{K})=0.00246$ 4; $\alpha(\text{L})=0.000326$ 5; $\alpha(\text{M})=6.98\times 10^{-5}$ 10; $\alpha(\text{N}+\dots)=1.87\times 10^{-5}$ 3 $\alpha(\text{N})=1.592\times 10^{-5}$ 23; $\alpha(\text{O})=2.51\times 10^{-6}$ 4; $\alpha(\text{P})=2.43\times 10^{-7}$ 4
613.6	2897	13/2 ⁺	2283	15/2 ⁻	E1	0.00288 4	$\alpha(\text{K})=0.01024$ 15; $\alpha(\text{L})=0.001395$ 20; $\alpha(\text{M})=0.000300$ 5; $\alpha(\text{N}+\dots)=8.07\times 10^{-5}$ 12 $\alpha(\text{N})=6.87\times 10^{-5}$ 10; $\alpha(\text{O})=1.094\times 10^{-5}$ 16; $\alpha(\text{P})=1.106\times 10^{-6}$ 16
651.7	1368	9/2 ⁻	716	11/2 ⁻	M1	0.01201	$\alpha=0.00231$ 4; $\alpha(\text{K})=0.00198$ 3; $\alpha(\text{L})=0.000261$ 4; $\alpha(\text{M})=5.59\times 10^{-5}$ 8; $\alpha(\text{N}+\dots)=1.496\times 10^{-5}$ 21 $\alpha(\text{N})=1.275\times 10^{-5}$ 18; $\alpha(\text{O})=2.01\times 10^{-6}$ 3; $\alpha(\text{P})=1.97\times 10^{-7}$ 3
652.3	2897	13/2 ⁺	2245	15/2 ⁺	E1	0.00231 4	$\alpha(\text{K})=0.01050$ 15; $\alpha(\text{L})=0.00212$ 3; $\alpha(\text{M})=0.000474$ 7; $\alpha(\text{N}+\dots)=0.0001250$ 18 $\alpha(\text{N})=0.0001076$ 15; $\alpha(\text{O})=1.630\times 10^{-5}$ 23; $\alpha(\text{P})=1.137\times 10^{-6}$ 16
680.3	2925	(13/2) ⁻	2245	15/2 ⁺			
716.3	716	11/2 ⁻	0.0	5/2 ⁺	E3	0.01322	$\alpha=0.00415$ 6; $\alpha(\text{K})=0.00349$ 5; $\alpha(\text{L})=0.000521$ 8; $\alpha(\text{M})=0.0001131$ 16; $\alpha(\text{N}+\dots)=3.01\times 10^{-5}$ 5 $\alpha(\text{N})=2.58\times 10^{-5}$ 4; $\alpha(\text{O})=4.01\times 10^{-6}$ 6; $\alpha(\text{P})=3.57\times 10^{-7}$ 5 $\alpha=0.0046$ 12; $\alpha(\text{K})=0.0039$ 10; $\alpha(\text{L})=0.00054$ 12; $\alpha(\text{M})=0.00012$ 3; $\alpha(\text{N}+\dots)=3.1\times 10^{-5}$ 7 $\alpha(\text{N})=2.7\times 10^{-5}$ 6; $\alpha(\text{O})=4.2\times 10^{-6}$ 10; $\alpha(\text{P})=4.1\times 10^{-7}$ 12 $\alpha=0.0045$ 12; $\alpha(\text{K})=0.0039$ 10; $\alpha(\text{L})=0.00054$ 12;
793.7	3977	25/2 ⁺	3183	23/2 ⁻	E2	0.00415 6	$\alpha=0.0045$ 12; $\alpha(\text{K})=0.0039$ 10; $\alpha(\text{L})=0.00054$ 12;
808.5	809	1/2 ⁺	0.0	5/2 ⁺			
881.4	2726	(15/2) ⁻	1845	13/2 ⁻	M1+E2	0.0046 12	
885.5	1602	11/2 ⁻	716	11/2 ⁻	M1+E2	0.0045 12	

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¹⁴⁴Sm(d,n γ),(t,2n γ) **1986RuZX (continued)**

$\gamma(^{145}\text{Eu})$ (continued)

E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	α^\dagger	Comments
							$\alpha(\text{M})=0.000116$ 25; $\alpha(\text{N+..})=3.1\times 10^{-5}$ 7 $\alpha(\text{N})=2.6\times 10^{-5}$ 6; $\alpha(\text{O})=4.2\times 10^{-6}$ 10; $\alpha(\text{P})=4.1\times 10^{-7}$ 12
897.7	2690	13/2 ⁺ ,(11/2,9/2) ⁺	1792	11/2 ⁻			
941.6	3187	(15/2,17/2)	2245	15/2 ⁺			
949.2	1758	3/2 ⁺	809	1/2 ⁺	M1+E2	0.0039 10	$\alpha=0.0039$ 10; $\alpha(\text{K})=0.0033$ 9; $\alpha(\text{L})=0.00045$ 10; $\alpha(\text{M})=9.8\times 10^{-5}$ 21; $\alpha(\text{N+..})=2.6\times 10^{-5}$ 6 $\alpha(\text{N})=2.2\times 10^{-5}$ 5; $\alpha(\text{O})=3.5\times 10^{-6}$ 8; $\alpha(\text{P})=3.5\times 10^{-7}$ 10
953.2	1762	3/2 ⁻	809	1/2 ⁺	E1	0.001185 17	$\alpha=0.001185$ 17; $\alpha(\text{K})=0.001017$ 15; $\alpha(\text{L})=0.0001320$ 19; $\alpha(\text{M})=2.82\times 10^{-5}$ 4; $\alpha(\text{N+..})=7.57\times 10^{-6}$ $\alpha(\text{N})=6.44\times 10^{-6}$ 9; $\alpha(\text{O})=1.020\times 10^{-6}$ 15; $\alpha(\text{P})=1.017\times 10^{-7}$ 15
968.7	2814	17/2 ⁻	1845	13/2 ⁻	E2	0.00280 4	$\alpha=0.00280$ 4; $\alpha(\text{K})=0.00237$ 4; $\alpha(\text{L})=0.000340$ 5; $\alpha(\text{M})=7.35\times 10^{-5}$ 11; $\alpha(\text{N+..})=1.96\times 10^{-5}$ 3 $\alpha(\text{N})=1.676\times 10^{-5}$ 24; $\alpha(\text{O})=2.63\times 10^{-6}$ 4; $\alpha(\text{P})=2.43\times 10^{-7}$ 4
972.2	2574	15/2 ⁻	1602	11/2 ⁻	E2	0.00278 4	$\alpha=0.00278$ 4; $\alpha(\text{K})=0.00235$ 4; $\alpha(\text{L})=0.000337$ 5; $\alpha(\text{M})=7.29\times 10^{-5}$ 11; $\alpha(\text{N+..})=1.95\times 10^{-5}$ 3 $\alpha(\text{N})=1.662\times 10^{-5}$ 24; $\alpha(\text{O})=2.61\times 10^{-6}$ 4; $\alpha(\text{P})=2.41\times 10^{-7}$ 4
1038.4	1368	9/2 ⁻	330	7/2 ⁺	E1	0.001009 15	$\alpha=0.001009$ 15; $\alpha(\text{K})=0.000867$ 13; $\alpha(\text{L})=0.0001121$ 16; $\alpha(\text{M})=2.39\times 10^{-5}$ 4; $\alpha(\text{N+..})=6.42\times 10^{-6}$ $\alpha(\text{N})=5.47\times 10^{-6}$ 8; $\alpha(\text{O})=8.67\times 10^{-7}$ 13; $\alpha(\text{P})=8.68\times 10^{-8}$ 13
1041.7	1042	3/2 ⁺	0.0	5/2 ⁺	M1	0.00385 6	$\alpha=0.00385$ 6; $\alpha(\text{K})=0.00329$ 5; $\alpha(\text{L})=0.000441$ 7; $\alpha(\text{M})=9.47\times 10^{-5}$ 14; $\alpha(\text{N+..})=2.55\times 10^{-5}$ 4 $\alpha(\text{N})=2.17\times 10^{-5}$ 3; $\alpha(\text{O})=3.46\times 10^{-6}$ 5; $\alpha(\text{P})=3.53\times 10^{-7}$ 5
1076.0	1792	11/2 ⁻	716	11/2 ⁻	M1+E2	0.0029 7	$\alpha=0.0029$ 7; $\alpha(\text{K})=0.0025$ 6; $\alpha(\text{L})=0.00034$ 7; $\alpha(\text{M})=7.3\times 10^{-5}$ 15; $\alpha(\text{N+..})=2.0\times 10^{-5}$ 4 $\alpha(\text{N})=1.7\times 10^{-5}$ 4; $\alpha(\text{O})=2.6\times 10^{-6}$ 6; $\alpha(\text{P})=2.6\times 10^{-7}$ 7
1080.4	2925	(13/2) ⁻	1845	13/2 ⁻			
1088.5	2690	13/2 ⁺ ,(11/2,9/2) ⁺	1602	11/2 ⁻	(E1)	0.000925 13	$\alpha=0.000925$ 13; $\alpha(\text{K})=0.000795$ 12; $\alpha(\text{L})=0.0001026$ 15; $\alpha(\text{M})=2.19\times 10^{-5}$ 3; $\alpha(\text{N+..})=5.88\times 10^{-6}$ $\alpha(\text{N})=5.01\times 10^{-6}$ 7; $\alpha(\text{O})=7.94\times 10^{-7}$ 12; $\alpha(\text{P})=7.96\times 10^{-8}$ 12
1128.7	1845	13/2 ⁻	716	11/2 ⁻	M1+E2	0.0026 6	$\alpha=0.0026$ 6; $\alpha(\text{K})=0.0022$ 5; $\alpha(\text{L})=0.00030$ 7; $\alpha(\text{M})=6.5\times 10^{-5}$ 13; $\alpha(\text{N+..})=1.8\times 10^{-5}$ 4 $\alpha(\text{N})=1.5\times 10^{-5}$ 3; $\alpha(\text{O})=2.4\times 10^{-6}$ 5; $\alpha(\text{P})=2.3\times 10^{-7}$ 6; $\alpha(\text{IPF})=9.1\times 10^{-7}$ 5
1181.0	3026	(17/2) ⁻	1845	13/2 ⁻	E2	0.00186 3	$\alpha=0.00186$ 3; $\alpha(\text{K})=0.001579$ 23; $\alpha(\text{L})=0.000219$ 3; $\alpha(\text{M})=4.73\times 10^{-5}$ 7; $\alpha(\text{N+..})=1.643\times 10^{-5}$ 23 $\alpha(\text{N})=1.079\times 10^{-5}$ 16; $\alpha(\text{O})=1.701\times 10^{-6}$ 24; $\alpha(\text{P})=1.628\times 10^{-7}$ 23; $\alpha(\text{IPF})=3.77\times 10^{-6}$ 6

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¹⁴⁴Sm(d,n γ),(t,2n γ) **1986RuZX (continued)**

$\gamma(^{145}\text{Eu})$ (continued)

E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	α^\dagger	Comments
1204.5	3449	(15/2,17/2) ⁻	2245	15/2 ⁺	E1	0.000798 12	$\alpha=0.000798$ 12; $\alpha(\text{K})=0.000662$ 10; $\alpha(\text{L})=8.52\times 10^{-5}$ 12; $\alpha(\text{M})=1.82\times 10^{-5}$ 3; $\alpha(\text{N+..})=3.22\times 10^{-5}$ 5 $\alpha(\text{N})=4.15\times 10^{-6}$ 6; $\alpha(\text{O})=6.59\times 10^{-7}$ 10; $\alpha(\text{P})=6.64\times 10^{-8}$ 10; $\alpha(\text{IPF})=2.73\times 10^{-5}$ 4
1293.7	2897	13/2 ⁺	1602	11/2 ⁻	E1	0.000749 11	$\alpha=0.000749$ 11; $\alpha(\text{K})=0.000584$ 9; $\alpha(\text{L})=7.49\times 10^{-5}$ 11; $\alpha(\text{M})=1.598\times 10^{-5}$ 23; $\alpha(\text{N+..})=7.43\times 10^{-5}$ 1 $\alpha(\text{N})=3.65\times 10^{-6}$ 6; $\alpha(\text{O})=5.80\times 10^{-7}$ 9; $\alpha(\text{P})=5.86\times 10^{-8}$ 9; $\alpha(\text{IPF})=7.00\times 10^{-5}$ 10
1326.6	3119	(9/2,13/2) ⁺	1792	11/2 ⁻	E1	0.000738 11	$\alpha=0.000738$ 11; $\alpha(\text{K})=0.000559$ 8; $\alpha(\text{L})=7.16\times 10^{-5}$ 10; $\alpha(\text{M})=1.528\times 10^{-5}$ 22; $\alpha(\text{N+..})=9.23\times 10^{-5}$ 1 $\alpha(\text{N})=3.49\times 10^{-6}$ 5; $\alpha(\text{O})=5.55\times 10^{-7}$ 8; $\alpha(\text{P})=5.61\times 10^{-8}$ 8; $\alpha(\text{IPF})=8.82\times 10^{-5}$ 13
1336.9	2939	9/2 ⁺ ,11/2 ⁺ ,13/2 ⁺	1602	11/2 ⁻	E1	0.000735 11	$\alpha=0.000735$ 11; $\alpha(\text{K})=0.000551$ 8; $\alpha(\text{L})=7.06\times 10^{-5}$ 10; $\alpha(\text{M})=1.507\times 10^{-5}$ 21; $\alpha(\text{N+..})=9.84\times 10^{-5}$ 1 $\alpha(\text{N})=3.44\times 10^{-6}$ 5; $\alpha(\text{O})=5.47\times 10^{-7}$ 8; $\alpha(\text{P})=5.53\times 10^{-8}$ 8; $\alpha(\text{IPF})=9.44\times 10^{-5}$ 14
1400.8	2117	9/2 ⁻ ,11/2 ⁻	716	11/2 ⁻	M1+E2	0.0017 3	$\alpha=0.0017$ 3; $\alpha(\text{K})=0.0014$ 3; $\alpha(\text{L})=0.00019$ 4; $\alpha(\text{M})=4.0\times 10^{-5}$ 7; $\alpha(\text{N+..})=5.7\times 10^{-5}$ 5 $\alpha(\text{N})=9.1\times 10^{-6}$ 16; $\alpha(\text{O})=1.5\times 10^{-6}$ 3; $\alpha(\text{P})=1.5\times 10^{-7}$ 3; $\alpha(\text{IPF})=4.62\times 10^{-5}$ 23
1415.9	1745	7/2 ⁻	330	7/2 ⁺	E1	0.000727 11	$\alpha=0.000727$ 11; $\alpha(\text{K})=0.000499$ 7; $\alpha(\text{L})=6.39\times 10^{-5}$ 9; $\alpha(\text{M})=1.362\times 10^{-5}$ 19; $\alpha(\text{N+..})=0.0001501$ $\alpha(\text{N})=3.11\times 10^{-6}$ 5; $\alpha(\text{O})=4.95\times 10^{-7}$ 7; $\alpha(\text{P})=5.01\times 10^{-8}$ 7; $\alpha(\text{IPF})=0.0001465$ 21
1422.9	2465		1042	3/2 ⁺			
1436.5	1766	5/2 ⁻	330	7/2 ⁺	E1	0.000727 11	$\alpha=0.000727$ 11; $\alpha(\text{K})=0.000487$ 7; $\alpha(\text{L})=6.23\times 10^{-5}$ 9; $\alpha(\text{M})=1.328\times 10^{-5}$ 19; $\alpha(\text{N+..})=0.0001644$ $\alpha(\text{N})=3.04\times 10^{-6}$ 5; $\alpha(\text{O})=4.83\times 10^{-7}$ 7; $\alpha(\text{P})=4.89\times 10^{-8}$ 7; $\alpha(\text{IPF})=0.0001608$ 23
1497.9	1827	(9/2 ⁻)	330	7/2 ⁺	E1	0.000732 11	$\alpha=0.000732$ 11; $\alpha(\text{K})=0.000454$ 7; $\alpha(\text{L})=5.79\times 10^{-5}$ 9; $\alpha(\text{M})=1.235\times 10^{-5}$ 18; $\alpha(\text{N+..})=0.000208$ 3 $\alpha(\text{N})=2.82\times 10^{-6}$ 4; $\alpha(\text{O})=4.49\times 10^{-7}$ 7; $\alpha(\text{P})=4.56\times 10^{-8}$ 7; $\alpha(\text{IPF})=0.000205$ 3
1499.9	1500	7/2 ⁻	0.0	5/2 ⁺	E1	0.000732 11	$\alpha=0.000732$ 11; $\alpha(\text{K})=0.000453$ 7; $\alpha(\text{L})=5.78\times 10^{-5}$ 8; $\alpha(\text{M})=1.233\times 10^{-5}$ 18; $\alpha(\text{N+..})=0.000210$ 3 $\alpha(\text{N})=2.82\times 10^{-6}$ 4; $\alpha(\text{O})=4.48\times 10^{-7}$ 7; $\alpha(\text{P})=4.55\times 10^{-8}$ 7; $\alpha(\text{IPF})=0.000206$ 3
1513.2	2322	3/2 ⁻	809	1/2 ⁺	(E1)	0.000734 11	$\alpha=0.000734$ 11; $\alpha(\text{K})=0.000446$ 7; $\alpha(\text{L})=5.69\times 10^{-5}$ 8; $\alpha(\text{M})=1.214\times 10^{-5}$ 17; $\alpha(\text{N+..})=0.000219$ 3 $\alpha(\text{N})=2.78\times 10^{-6}$ 4; $\alpha(\text{O})=4.41\times 10^{-7}$ 7; $\alpha(\text{P})=4.48\times 10^{-8}$ 7; $\alpha(\text{IPF})=0.000216$ 3
1567.0	2283	15/2 ⁻	716	11/2 ⁻	(E2)	0.001168 17	$\alpha=0.001168$ 17; $\alpha(\text{K})=0.000914$ 13; $\alpha(\text{L})=0.0001226$ 18; $\alpha(\text{M})=2.63\times 10^{-5}$ 4; $\alpha(\text{N+..})=0.000105$

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¹⁴⁴Sm(d,n γ),(t,2n γ) **1986RuZX (continued)**

$\gamma(^{145}\text{Eu})$ (continued)

E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	α^\dagger	Comments
1567.2	1567	3/2 ⁽⁻⁾ ,5/2 ⁽⁻⁾	0.0	5/2 ⁺	(E1)	0.000745 11	$\alpha(\text{N})=6.01 \times 10^{-6}$ 9; $\alpha(\text{O})=9.53 \times 10^{-7}$ 14; $\alpha(\text{P})=9.42 \times 10^{-8}$ 14; $\alpha(\text{IPF})=9.85 \times 10^{-5}$ 14 $\alpha=0.000745$ 11; $\alpha(\text{K})=0.000421$ 6; $\alpha(\text{L})=5.36 \times 10^{-5}$ 8; $\alpha(\text{M})=1.143 \times 10^{-5}$ 16; $\alpha(\text{N}+..)=0.000259$ 4 $\alpha(\text{N})=2.61 \times 10^{-6}$ 4; $\alpha(\text{O})=4.16 \times 10^{-7}$ 6; $\alpha(\text{P})=4.23 \times 10^{-8}$ 6; $\alpha(\text{IPF})=0.000256$ 4
1597.6	2314	(13/2) ⁻	716	11/2 ⁻	M1+E2	0.00134 21	$\alpha=0.00134$ 21; $\alpha(\text{K})=0.00105$ 17; $\alpha(\text{L})=0.000140$ 22; $\alpha(\text{M})=3.0 \times 10^{-5}$ 5; $\alpha(\text{N}+..)=0.000124$ 8 $\alpha(\text{N})=6.9 \times 10^{-6}$ 11; $\alpha(\text{O})=1.09 \times 10^{-6}$ 18; $\alpha(\text{P})=1.10 \times 10^{-7}$ 20; $\alpha(\text{IPF})=0.000116$ 7
1600.1	1600	3/2 ⁻	0.0	5/2 ⁺	E1	0.000753 11	$\alpha=0.000753$ 11; $\alpha(\text{K})=0.000406$ 6; $\alpha(\text{L})=5.18 \times 10^{-5}$ 8; $\alpha(\text{M})=1.104 \times 10^{-5}$ 16; $\alpha(\text{N}+..)=0.000284$ 4 $\alpha(\text{N})=2.52 \times 10^{-6}$ 4; $\alpha(\text{O})=4.01 \times 10^{-7}$ 6; $\alpha(\text{P})=4.08 \times 10^{-8}$ 6; $\alpha(\text{IPF})=0.000281$ 4
1613.3	2422		809	1/2 ⁺			
1635.9	2352	(11/2,13/2) ⁻	716	11/2 ⁻	M1	0.001488 21	$\alpha=0.001488$ 21; $\alpha(\text{K})=0.001154$ 17; $\alpha(\text{L})=0.0001527$ 22; $\alpha(\text{M})=3.27 \times 10^{-5}$ 5; $\alpha(\text{N}+..)=0.000148$ $\alpha(\text{N})=7.49 \times 10^{-6}$ 11; $\alpha(\text{O})=1.196 \times 10^{-6}$ 17; $\alpha(\text{P})=1.228 \times 10^{-7}$ 18; $\alpha(\text{IPF})=0.0001398$ 20
1683.5	2400	(13/2 ⁺)	716	11/2 ⁻	E1	0.000777 11	$\alpha=0.000777$ 11; $\alpha(\text{K})=0.000373$ 6; $\alpha(\text{L})=4.75 \times 10^{-5}$ 7; $\alpha(\text{M})=1.013 \times 10^{-5}$ 15; $\alpha(\text{N}+..)=0.000346$ 5 $\alpha(\text{N})=2.32 \times 10^{-6}$ 4; $\alpha(\text{O})=3.68 \times 10^{-7}$ 6; $\alpha(\text{P})=3.76 \times 10^{-8}$ 6; $\alpha(\text{IPF})=0.000343$ 5
1719.0	2049	3/2 ⁺	330	7/2 ⁺	E2	0.001058 15	$\alpha=0.001058$ 15; $\alpha(\text{K})=0.000768$ 11; $\alpha(\text{L})=0.0001022$ 15; $\alpha(\text{M})=2.19 \times 10^{-5}$ 3; $\alpha(\text{N}+..)=0.000165$ $\alpha(\text{N})=5.01 \times 10^{-6}$ 7; $\alpha(\text{O})=7.95 \times 10^{-7}$ 12; $\alpha(\text{P})=7.92 \times 10^{-8}$ 11; $\alpha(\text{IPF})=0.0001598$ 23
1745.3	1745	7/2 ⁻	0.0	5/2 ⁺	E1	0.000798 12	$\alpha=0.000798$ 12; $\alpha(\text{K})=0.000352$ 5; $\alpha(\text{L})=4.47 \times 10^{-5}$ 7; $\alpha(\text{M})=9.54 \times 10^{-6}$ 14; $\alpha(\text{N}+..)=0.000392$ 6 $\alpha(\text{N})=2.18 \times 10^{-6}$ 3; $\alpha(\text{O})=3.47 \times 10^{-7}$ 5; $\alpha(\text{P})=3.54 \times 10^{-8}$ 5; $\alpha(\text{IPF})=0.000389$ 6
1757.9	1758	3/2 ⁺	0.0	5/2 ⁺	M1+E2	0.00119 16	$\alpha=0.00119$ 16; $\alpha(\text{K})=0.00086$ 13; $\alpha(\text{L})=0.000114$ 16; $\alpha(\text{M})=2.4 \times 10^{-5}$ 4; $\alpha(\text{N}+..)=0.000194$ 13 $\alpha(\text{N})=5.6 \times 10^{-6}$ 8; $\alpha(\text{O})=8.9 \times 10^{-7}$ 13; $\alpha(\text{P})=9.0 \times 10^{-8}$ 15; $\alpha(\text{IPF})=0.000188$ 12
1765.7	1766	5/2 ⁻	0.0	5/2 ⁺			
1784.3	2114	5/2 ⁺	330	7/2 ⁺	M1+E2	0.00117 15	$\alpha=0.00117$ 15; $\alpha(\text{K})=0.00083$ 12; $\alpha(\text{L})=0.000110$ 15; $\alpha(\text{M})=2.4 \times 10^{-5}$ 4; $\alpha(\text{N}+..)=0.000207$ 13 $\alpha(\text{N})=5.4 \times 10^{-6}$ 8; $\alpha(\text{O})=8.6 \times 10^{-7}$ 12; $\alpha(\text{P})=8.7 \times 10^{-8}$ 14; $\alpha(\text{IPF})=0.000200$ 13
1844.8	1844.8	3/2 ⁺ , (5/2) ⁺	0.0	5/2 ⁺	M1	0.001270 18	$\alpha=0.001270$ 18; $\alpha(\text{K})=0.000880$ 13; $\alpha(\text{L})=0.0001159$ 17; $\alpha(\text{M})=2.48 \times 10^{-5}$ 4; $\alpha(\text{N}+..)=0.000249$ $\alpha(\text{N})=5.69 \times 10^{-6}$ 8; $\alpha(\text{O})=9.08 \times 10^{-7}$ 13; $\alpha(\text{P})=9.34 \times 10^{-8}$ 13; $\alpha(\text{IPF})=0.000243$ 4
1857.8	2574	15/2 ⁻	716	11/2 ⁻	E2	0.000999 14	$\alpha=0.000999$ 14; $\alpha(\text{K})=0.000666$ 10; $\alpha(\text{L})=8.80 \times 10^{-5}$ 13; $\alpha(\text{M})=1.88 \times 10^{-5}$ 3; $\alpha(\text{N}+..)=0.000227$ 4 $\alpha(\text{N})=4.31 \times 10^{-6}$ 6; $\alpha(\text{O})=6.84 \times 10^{-7}$ 10; $\alpha(\text{P})=6.86 \times 10^{-8}$ 10; $\alpha(\text{IPF})=0.000222$ 4
1865.4	2195	(9/2) ⁺	330	7/2 ⁺	M1	0.001255 18	$\alpha=0.001255$ 18; $\alpha(\text{K})=0.000858$ 12; $\alpha(\text{L})=0.0001131$ 16; $\alpha(\text{M})=2.42 \times 10^{-5}$ 4; $\alpha(\text{N}+..)=0.000260$ $\alpha(\text{N})=5.55 \times 10^{-6}$ 8; $\alpha(\text{O})=8.85 \times 10^{-7}$ 13; $\alpha(\text{P})=9.11 \times 10^{-8}$ 13; $\alpha(\text{IPF})=0.000253$ 4
1880.6	1881	1/2 ⁺ , (3/2) ⁺	0.0	5/2 ⁺	E2	0.000992 14	$\alpha=0.000992$ 14; $\alpha(\text{K})=0.000651$ 10; $\alpha(\text{L})=8.59 \times 10^{-5}$

Continued on next page (footnotes at end of table)

¹⁴⁴Sm(d,n γ),(t,2n γ) **1986RuZX (continued)**

$\gamma(^{145}\text{Eu})$ (continued)

E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	α^\dagger	Comments
1900.2	2617	(9/2 ⁺)	716	11/2 ⁻	(E1)	0.000860 12	12; $\alpha(\text{M})=1.84\times 10^{-5}$ 3; $\alpha(\text{N+..})=0.000237$ 4 $\alpha(\text{N})=4.21\times 10^{-6}$ 6; $\alpha(\text{O})=6.69\times 10^{-7}$ 10; $\alpha(\text{P})=6.71\times 10^{-8}$ 10; $\alpha(\text{IPF})=0.000232$ 4 $\alpha=0.000860$ 12; $\alpha(\text{K})=0.000307$ 5; $\alpha(\text{L})=3.89\times 10^{-5}$ 6; $\alpha(\text{M})=8.28\times 10^{-6}$ 12; $\alpha(\text{N+..})=0.000507$ 7 $\alpha(\text{N})=1.89\times 10^{-6}$ 3; $\alpha(\text{O})=3.02\times 10^{-7}$ 5; $\alpha(\text{P})=3.08\times 10^{-8}$ 5; $\alpha(\text{IPF})=0.000504$ 7 $\alpha=0.001229$ 18; $\alpha(\text{K})=0.000817$ 12; $\alpha(\text{L})=0.0001075$ 15; $\alpha(\text{M})=2.30\times 10^{-5}$ 4; $\alpha(\text{N+..})=0.000281$ $\alpha(\text{N})=5.28\times 10^{-6}$ 8; $\alpha(\text{O})=8.42\times 10^{-7}$ 12; $\alpha(\text{P})=8.66\times 10^{-8}$ 13; $\alpha(\text{IPF})=0.000275$ 4 $\alpha=0.001224$ 18; $\alpha(\text{K})=0.000809$ 12; $\alpha(\text{L})=0.0001065$ 15; $\alpha(\text{M})=2.28\times 10^{-5}$ 4; $\alpha(\text{N+..})=0.000285$ $\alpha(\text{N})=5.23\times 10^{-6}$ 8; $\alpha(\text{O})=8.34\times 10^{-7}$ 12; $\alpha(\text{P})=8.58\times 10^{-8}$ 12; $\alpha(\text{IPF})=0.000279$ 4 $\alpha=0.000973$ 14; $\alpha(\text{K})=0.000601$ 9; $\alpha(\text{L})=7.91\times 10^{-5}$ 11; $\alpha(\text{M})=1.692\times 10^{-5}$ 24; $\alpha(\text{N+..})=0.000276$ $\alpha(\text{N})=3.87\times 10^{-6}$ 6; $\alpha(\text{O})=6.15\times 10^{-7}$ 9; $\alpha(\text{P})=6.19\times 10^{-8}$ 9; $\alpha(\text{IPF})=0.000271$ 4 $\alpha=0.001197$ 17; $\alpha(\text{K})=0.000761$ 11; $\alpha(\text{L})=0.0001001$ 14; $\alpha(\text{M})=2.14\times 10^{-5}$ 3; $\alpha(\text{N+..})=0.000314$ $\alpha(\text{N})=4.91\times 10^{-6}$ 7; $\alpha(\text{O})=7.84\times 10^{-7}$ 11; $\alpha(\text{P})=8.07\times 10^{-8}$ 12; $\alpha(\text{IPF})=0.000308$ 5 $\alpha=0.001188$ 17; $\alpha(\text{K})=0.000744$ 11; $\alpha(\text{L})=9.79\times 10^{-5}$ 14; $\alpha(\text{M})=2.10\times 10^{-5}$ 3; $\alpha(\text{N+..})=0.000325$ 5 $\alpha(\text{N})=4.80\times 10^{-6}$ 7; $\alpha(\text{O})=7.66\times 10^{-7}$ 11; $\alpha(\text{P})=7.89\times 10^{-8}$ 11; $\alpha(\text{IPF})=0.000319$ 5
1907.0	2237	9/2 ⁺ , (7/2 ⁺)	330	7/2 ⁺	M1	0.001229 18	
1915.0	1915	(3/2,5/2) ⁺	0.0	5/2 ⁺	M1	0.001224 18	
1965.0	2295	(11/2) ⁺	330	7/2 ⁺	E2	0.000973 14	
1968.2	2684	(9/2,11/2) ⁻	716	11/2 ⁻	M1	0.001197 17	
1988.1	2318	5/2 ⁺	330	7/2 ⁺	M1	0.001188 17	
2030.2	2747		716	11/2 ⁻			
2048.2	2049	3/2 ⁺	0.0	5/2 ⁺			
2092.9	2423	5/2 ⁺ , 7/2 ⁺ , 9/2 ⁺	330	7/2 ⁺	M1,E2	0.00105 10	$\alpha=0.00105$ 10; $\alpha(\text{K})=0.00060$ 7; $\alpha(\text{L})=7.9\times 10^{-5}$ 9; $\alpha(\text{M})=1.68\times 10^{-5}$ 19; $\alpha(\text{N+..})=0.000359$ 23 $\alpha(\text{N})=3.9\times 10^{-6}$ 5; $\alpha(\text{O})=6.1\times 10^{-7}$ 7; $\alpha(\text{P})=6.3\times 10^{-8}$ 8; $\alpha(\text{IPF})=0.000354$ 23
2177.8	2507	5/2 ⁺ , 7/2 ⁺ , 9/2 ⁺	330	7/2 ⁺	M1,E2	0.00104 9	$\alpha=0.00104$ 9; $\alpha(\text{K})=0.00055$ 6; $\alpha(\text{L})=7.2\times 10^{-5}$ 8; $\alpha(\text{M})=1.55\times 10^{-5}$ 16; $\alpha(\text{N+..})=0.00040$ 3 $\alpha(\text{N})=3.6\times 10^{-6}$ 4; $\alpha(\text{O})=5.7\times 10^{-7}$ 6; $\alpha(\text{P})=5.8\times 10^{-8}$ 7; $\alpha(\text{IPF})=0.00040$ 3
2194.9	2195	(9/2) ⁺	0.0	5/2 ⁺			
2202.9	2203	3/2 ⁺	0.0	5/2 ⁺			
2317.6	2318	5/2 ⁺	0.0	5/2 ⁺			

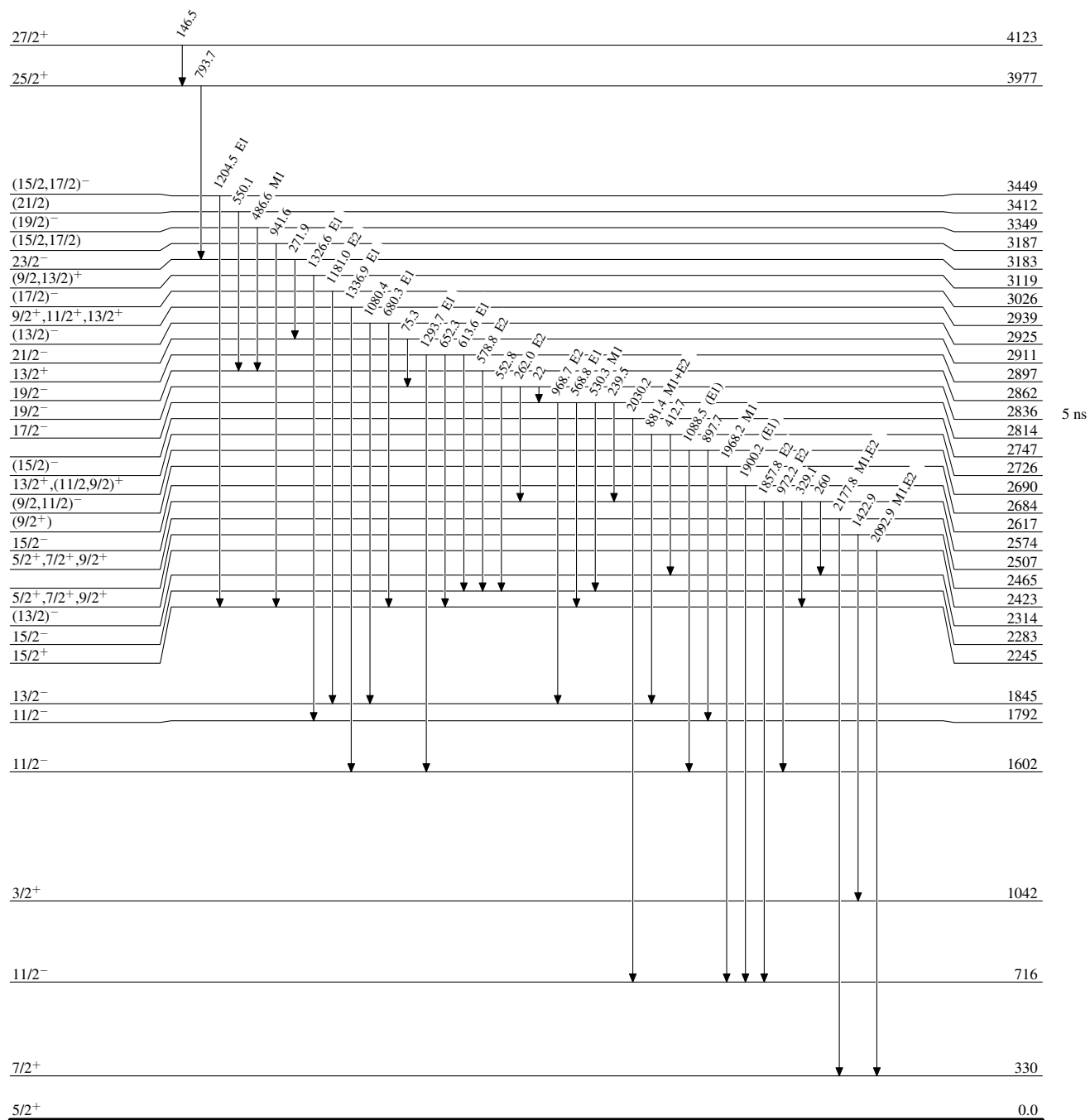
[†] Additional information 1.

[‡] From ce data.

Adopted value. M1 not compatible with ΔJ .

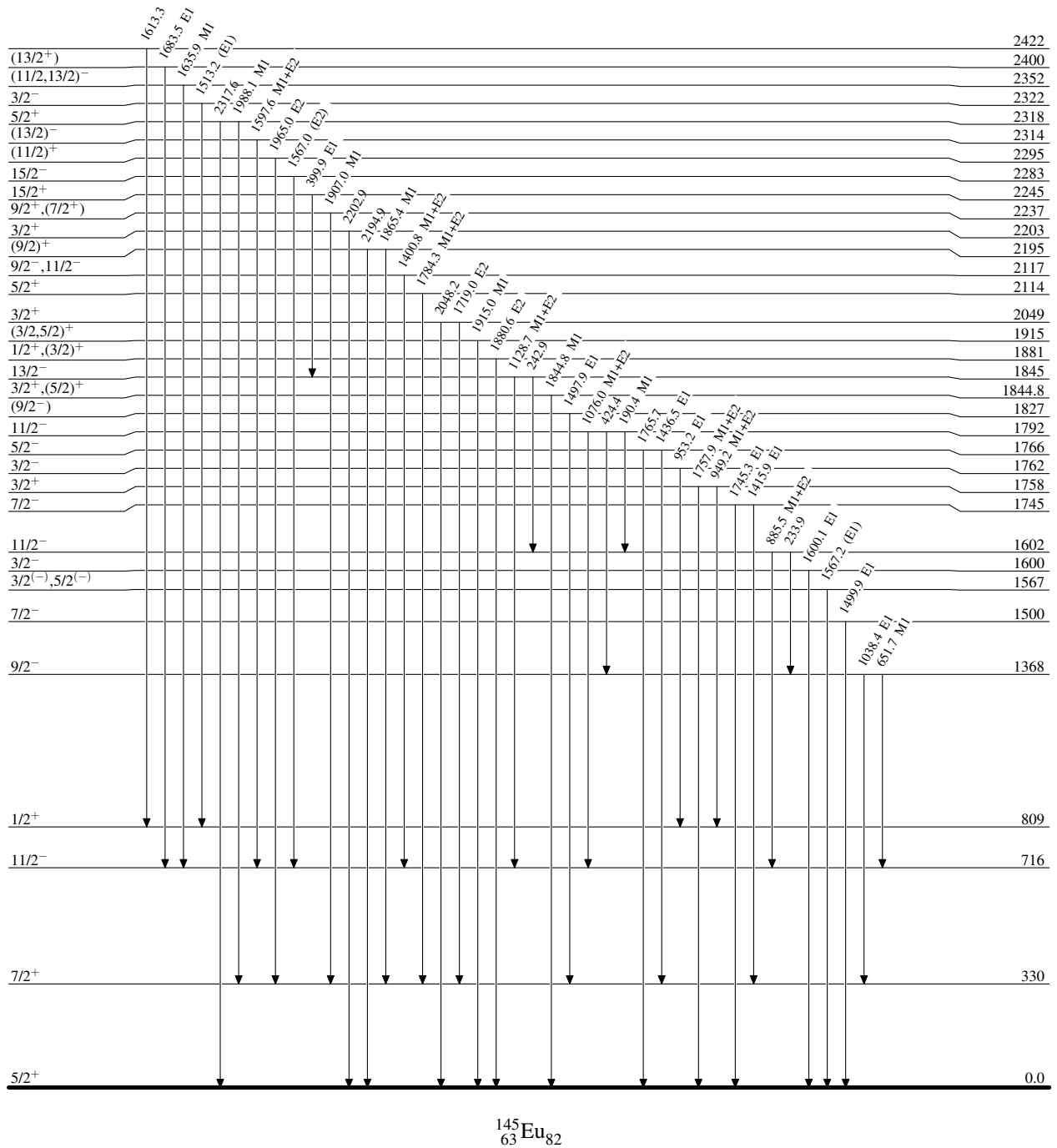
$^{144}\text{Sm}(d,n\gamma),(t,2n\gamma)$ 1986RuZX

Level Scheme



$^{144}\text{Sm}(d,n\gamma),(t,2n\gamma)$ $^{1986}\text{RuZX}$

Level Scheme (continued)



$^{144}\text{Sm}(\text{d},\text{n}\gamma),(\text{t},2\text{n}\gamma)$ **1986RuZX**Level Scheme (continued)