^{149}Sm(^{31}P,4nγ) 2003Ba07,2002Zh13

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia	NDS 107, 791 (2006)	15-Sep-2005

2003Ba07: Target: ^{149}Sm. Projectile: 158 MeV and 140 MeV beam of ^{31}P. Detector: CAESAR array, comprising of six HPGe detectors, and two low energy photon spectrometer (LEPS) detectors. Two of the HPGe detectors were located at 97° to the beam axis, two at 48°, and two at 145°. Measured: Eγ, Iγ, $\gamma\gamma$ coin, DCO ratio.

2002Zh13: Target: Enriched ^{149}Sm metallic powder. Projectile: 145-160 MeV ^{31}P beam from JAERI tandem accelerator. Detector: Array of 11 HPGe′s and LOAX with BGO anti-Compton shields. Measured: Eγ, Xγ coin, $\gamma\gamma$ coin, in-band B(M1)/B(E2) ratio.

^{176}Ir Levels

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$	Comments
0.0+x[c]	(7$^+$)		
0.0+y[f]	(8$^-$)		
97.3+x[#] 2	(8$^-$)	2.8 ns 3	J$^\pi$: 97.3γ E1 to (7$^+$) state. $T_{1/2}$: From centroid shift technique (2003Ba07). Time difference spectrum constructed with gates on transitions of band 1, detected in the Ge detectors as "start", and 97 keV γ ray detected in the LEPS detectors as "stop". In 2003Ba07 the half life is attributed to the head of band 1, however it is possible that the bandhead actually decays by unobserved transitions to another level that emits 97γ according to authors.
131.0+y[f] 2	(9$^-$)		
150.3+x[c] 2	(8$^+$)		
151.9+y[f]	(10$^-$)		
180.0+x[&]	(5$^+$)		
218.2+x[#] 3	(9$^-$)		
247.6+x[&] 6	(6$^+$)		
269.7+x?[b]	(5$^+$)		
305.0+y[d]			
319.4+x[c] 2	(9$^+$)		
342.8+x[&] 5	(7$^+$)		
346.0+x[@] 0			
348.1+x[b] 7	(6$^+$)		
359.0+x[#] 3	(10$^-$)		
377.4+y[f] 2	(11$^-$)		
447.3+y[f] 3	(12$^-$)		
450.2+x?[b] 7	(7$^+$)		
469.1+x[&] 5	(8$^+$)		
506.6+x[c] 2	(10$^+$)		
520.2+x[#] 3	(11$^-$)		
572.0+x[b] 6	(8$^+$)		
583.5+x[@]			
588.1+y[d] 3			
625.6+x[&] 5	(9$^+$)		
705.8+x[#] 4	(12$^-$)		
708.0+x[c] 2	(11$^+$)		
711.0+x?[b] 6	(9$^+$)		
730.5+y[f] 3	(13$^-$)		
811.1+x[&] 5	(10$^+$)		
817.5+x[@]			

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^{149}Sm(^{31}P,4nγ) 2003Ba07,2002Zh13 (continued)

^{176}Ir Levels (continued)

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
863.0+y[e]		1427.0+y[f] 4	(16⁻)	2732.8+x[a] 4	(20⁺)	4070.0+x[c]	(23⁺)
865.5+x?[b] 6	(10⁺)	1591.0+x[a] 3	(15⁺)	2748.1+y[f] 6	(20⁻)	4197.8+y[d] 17	
882.6+y[f] 3	(14⁻)	1644.6+x[#] 4	(16⁻)	2778.5+x[c] 4	(19⁺)	4290.9+x[#] 10	(24⁻)
891.1+x 10		1648.1+x[c] 3	(15⁺)	2849.0+x[#]	(20⁻)	4318.8+y[g] 14	(25⁻)
912.3+x[#] 4	(13⁻)	1681.2+y[e] 5		2892.2+y[d] 14		4322.9+x[a] 7	(25⁺)
923.3+x[c] 2	(12⁺)	1738.9+y[f] 4	(17⁻)	2955.0+y[g]	(21⁻)	4413.0+x[c]	(24⁺)
926.7+y[d] 4		1768.0+x[a] 3	(16⁺)	3032.4+x[a] 4	(21⁺)	4563.0+y[e]	(26⁻)
1013.3+x[&] 5	(11⁺)	1797.7+y[d] 13		3050.4+y[f] 8	(21⁻)	4673.2+x[a]	(26⁺)
1022.7+x[a] 5	(11⁺)	1913.2+x[c] 4	(16⁺)	3087.7+x[c]	(20⁺)	4686.3+x[#] 14	(25⁻)
1043.5+x?[b] 13	(11⁺)	1922.6+x[#] 4	(17⁻)	3188.3+x[#] 6	(21⁻)	4930.0+y[d] 19	
1055.1+x[@]		2000.4+x[a] 3	(17⁺)	3253.0+y[e]	(22⁻)	5059.9+x[a] 11	(27⁺)
1059.5+y 8		2050.9+y[f] 4	(18⁻)	3317.5+x[a] 4	(22⁺)	5076.2+y?[g] 18	(27⁻)
1061.0+x 0		2156.1+y[e] 5		3406.0+x[c]	(21⁺)	5089.6+x[#] 16	(26⁻)
1122.2+x[a] 4	(12⁺)	2190.8+x[c] 4	(17⁺)	3481.7+y[f] 8	(22⁻)	5294.2+y[e] 11	(28⁻)
1138.8+x[#] 4	(14⁻)	2214.5+x[a] 3	(18⁺)	3518.0+y[d]		5439.9+x[a] 11	(28⁺)
1151.6+x[c] 3	(13⁺)	2216.0+x[#] 5	(18⁻)	3541.7+x[#] 7	(22⁻)	5505.7+x[#] 23	(27⁻)
1188.7+y[f] 3	(15⁻)	2318.9+y[d] 14		3611.3+y[g] 9	(23⁻)	5715+y[d] 3	
1258.0+y[e]		2346.2+y[g] 5	(19⁻)	3646.6+x[a]	(23⁺)	5856.3+x[a] 19	(29⁺)
1263.3+x[a] 3	(13⁺)	2360.0+y[f]	(19⁻)	3734.8+x[c] 7	(22⁺)	5935+x[#] 3	(28⁻)
1337.7+y[d] 5		2479.0+x[c]	(18⁺)	3767.2+y[f] 10	(23⁻)	6263.6+x[a] 17	(30⁺)
1383.2+x[#] 4	(15⁻)	2482.4+x[a] 4	(19⁺)	3883.0+y[e]	(24⁻)	6710.0+x[a]	(31⁺)
1389.0+x[c] 3	(14⁺)	2525.4+x[#] 5	(19⁻)	3909.0+x[#]	(23⁻)	6817+x[#] 4	(30⁻)
1405.5+x[a] 3	(14⁺)	2672.4+y[e] 6	(20⁻)	3965.3+x[a] 5	(24⁺)	7140+x[a] 3	(32⁺)

† Level energies labeled by evaluator with +x and +Y relative to the (7⁺) head of band 6 and (8⁻) head of band 9, respectively.
‡ From rotational band structure, similar level spacings, decay patterns of neighboring nuclei, and systematics.
[#] Band 1:π9/2[514]⊗ν7/2[633].
[@] Band 2.
[&] Band 3:π1/2[541]⊗ν5/2[512].
[a] Band 4:π1/2[660]⊗ν7/2[633].
[b] Band 5:π9/2[514]⊗ν1/2[521].
[c] Band 6:π9/2[514]⊗ν5/2[512].
[d] Band 7.
[e] Band 8.
[f] Band 9:π1/2[541]⊗ν7/2[633].
[g] Band 10.

γ(^{176}Ir)

R(DCO) from 2003Ba07. Gated on stretched quadrupole transition.

E_γ†	E_i(level)
[x]53.04‡ 2	
[x]55.49‡ 2	

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^{149}Sm(^{31}P,4nγ) 2003Ba07,2002Zh13 (continued)

$\gamma(^{176}Ir)$ (continued)

E_γ[†]	I_γ[@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	Comments
[x]56.77[‡] *2*							
[x]61.53[‡] *2*							
67.0 *10*		247.6+x	(6$^+$)	180.0+x	(5$^+$)		
69.17[#] *5*	<5	447.3+y	(12$^-$)	377.4+y	(11$^-$)		
[x]69.42[‡] *1*							
78.4 *10*		348.1+x	(6$^+$)	269.7+x?	(5$^+$)		
78.5 *10*	0.2 *1*	1122.2+x	(12$^+$)	1043.5+x?	(11$^+$)		
95.12 *4*	7.2 *7*	342.8+x	(7$^+$)	247.6+x	(6$^+$)		
97.26[#] *3*		97.3+x	(8$^-$)	0.0+x	(7$^+$)	E1	R(DCO)=0.50 *7*. Mult.: From α(exp)=0.80 *15* and DCO ratio of 0.66 *10* in 2002Zh13. Tentatively placed to feed the (7$^+$) level of band 6.
99.30 *10*	1.1 *2*	1122.2+x	(12$^+$)	1022.7+x	(11$^+$)		
102.13 *4*	0.8 *16*	450.2+x?	(7$^+$)	348.1+x	(6$^+$)		
108.92 *5*	1.2 *2*	1122.2+x	(12$^+$)	1013.3+x	(11$^+$)		E_γ: 126.0 keV in 2002Zh13.
120.74[#] *3*		218.2+x	(9$^-$)	97.3+x	(8$^-$)		
121.78 *4*	5.6 *7*	572.0+x	(8$^+$)	450.2+x?	(7$^+$)		
126.12 *4*	8.6 *6*	469.1+x	(8$^+$)	342.8+x	(7$^+$)		
129.45 *10*	2.5 *3*	346.0+x		218.2+x	(9$^-$)		
131.00[#] *3*		131.0+y	(9$^-$)	0.0+y	(8$^-$)	M1+E2	R(DCO)=0.35 *7*.
139.01 *4*	5.9 *5*	711.0+x?	(9$^+$)	572.0+x	(8$^+$)		
140.54[#] *3*	34.7 *11*	359.0+x	(10$^-$)	218.2+x	(9$^-$)	M1+E2	R(DCO)=0.62 *23*.
140.97[#] *4*	9.0 *4*	1263.3+x	(13$^+$)	1122.2+x	(12$^+$)	M1+E2	R(DCO)=0.35 *16*, doublet of 140.97γ and 141.87γ.
141.87[#] *4*	6.8 *3*	1405.5+x	(14$^+$)	1263.3+x	(13$^+$)	M1+E2	R(DCO)=0.35 *16*, doublet of 140.97γ and 141.87γ.
150.18[#] *3*		150.3+x	(8$^+$)	0.0+x	(7$^+$)	(M1+E2)	R(DCO)=1.06 *13*. Mult.: From level scheme. DCO ratio implies E2.
151.95[#] *4*		151.9+y	(10$^-$)	0.0+y	(8$^-$)	E2	R(DCO)=1.10 *20*.
152.03 *18*	1.2 *2*	882.6+y	(14$^-$)	730.5+y	(13$^-$)		
154.47 *4*	7.2 *4*	865.5+x?	(10$^+$)	711.0+x?	(9$^+$)		
156.15 *4*	8.9 *4*	625.6+x	(9$^+$)	469.1+x	(8$^+$)		
157.17 *6*	3.3 *2*	1022.7+x	(11$^+$)	865.5+x?	(10$^+$)		
160.88[#] *3*	32.1 *10*	520.2+x	(11$^-$)	359.0+x	(10$^-$)	M1+E2	R(DCO)=0.68 *13*.
168.84[#] *3*	40.4 *14*	319.4+x	(9$^+$)	150.3+x	(8$^+$)		
176.85[#] *3*	16.8 *6*	1768.0+x	(16$^+$)	1591.0+x	(15$^+$)		
178.0 *20*	3.9 *3*	1043.5+x?	(11$^+$)	865.5+x?	(10$^+$)		
185.19[#] *3*	17.4 *6*	1591.0+x	(15$^+$)	1405.5+x	(14$^+$)		
185.26 *5*	4.9 *4*	811.1+x	(10$^+$)	625.6+x	(9$^+$)	M1+E2	R(DCO)=0.39 *14*.
185.36[#] *3*	29.5 *10*	705.8+x	(12$^-$)	520.2+x	(11$^-$)		
187.03[#] *3*	33.0 *11*	506.6+x	(10$^+$)	319.4+x	(9$^+$)	(M1+E2)	R(DCO)=1.13 *15*. Mult.: From level scheme. DCO ratio implies E2.
201.18[#] *3*	24.6 *8*	708.0+x	(11$^+$)	506.6+x	(10$^+$)		
201.80[#] *7*	4.5 *2*	1591.0+x	(15$^+$)	1389.0+x	(14$^+$)		
201.98 *5*	5.3 *3*	1013.3+x	(11$^+$)	811.1+x	(10$^+$)		
206.27[#] *3*	25.1 *8*	912.3+x	(13$^-$)	705.8+x	(12$^-$)	M1+E2	R(DCO)=0.80 *18*.
213.93[#] *4*	11.6 *4*	2214.5+x	(18$^+$)	2000.4+x	(17$^+$)	M1+E2	R(DCO)=0.81 *24*.
215.18[#] *3*	23.1 *8*	923.3+x	(12$^+$)	708.0+x	(11$^+$)	(M1+E2)	R(DCO)=1.03 *17*. Mult.: From level scheme. DCO ratio implies E2.
221.62 *10*	3.3 *4*	469.1+x	(8$^+$)	247.6+x	(6$^+$)		
224.3 *10*	0.9 *3*	572.0+x	(8$^+$)	348.1+x	(6$^+$)		
225.18[#] *4*	12.1 *7*	377.4+y	(11$^-$)	151.9+y	(10$^-$)	M1+E2	R(DCO)=0.7 *5*.

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^{149}Sm(^{31}P,4nγ) 2003Ba07,2002Zh13 (continued)

$\gamma(^{176}Ir)$ (continued)

E_γ[†]	I_γ[@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	Comments
226.24[#] *3*	19.7 *6*	1138.8+x	(14$^-$)	912.3+x	(13$^-$)		
228.04[#] *4*	14.8 *5*	1151.6+x	(13$^+$)	923.3+x	(12$^+$)	M1+E2	R(DCO)=0.54 *11*.
232.20[#] *3*	16.3 *6*	2000.4+x	(17$^+$)	1768.0+x	(16$^+$)	M1+E2	R(DCO)=0.42 *16*.
233.88 *8*	3.5 *3*	817.5+x		583.5+x			
237.0		1427.0+y	(16$^-$)	1188.7+y	(15$^-$)		E_γ,I_γ: Not reported in TABLE I. (2003Ba07).
237.17 *12*	4.5 *4*	583.5+x		346.0+x			
237.46[#] *4*	8.6 *3*	1389.0+x	(14$^+$)	1151.6+x	(13$^+$)		
237.76 *20*	1.5 *2*	1055.1+x		817.5+x			
240.98[#] *10*	3.3 *2*	1263.3+x	(13$^+$)	1022.7+x	(11$^+$)		E_γ: Eγ=267.5 keV in 2002Zh13.
243.53 *12*	3.4 *2*	1061.0+x		817.5+x			
244.16[#] *3*	16.5 *6*	1383.2+x	(15$^-$)	1138.8+x	(14$^-$)		
246.15[#] *6*	5.5 *4*	377.4+y	(11$^-$)	131.0+y	(9$^-$)		
248.64 *12*	3.5 *4*	346.0+x		97.3+x	(8$^-$)		
250.38[#] *4*	7.2 *3*	2732.8+x	(20$^+$)	2482.4+x	(19$^+$)		
253.82[#] *4*	11.8 *4*	1405.5+x	(14$^+$)	1151.6+x	(13$^+$)		
259.42[#] *4*	7.5 *4*	1648.1+x	(15$^+$)	1389.0+x	(14$^+$)		
260.80 *20*	3.9 *4*	711.0+x?	(9$^+$)	450.2+x?	(7$^+$)		
260.92[#] *4*	10.5 *4*	1644.6+x	(16$^-$)	1383.2+x	(15$^-$)		
261.97[#] *5*	10.0 *5*	359.0+x	(10$^-$)	97.3+x	(8$^-$)		
265.15[#] *5*	5.2 *3*	1913.2+x	(16$^+$)	1648.1+x	(15$^+$)		
267.82[#] *4*	12.5 *4*	2482.4+x	(19$^+$)	2214.5+x	(18$^+$)	M1+E2	R(DCO)=0.29 *10*.
277.37[#] *8*	3.3 *2*	2190.8+x	(17$^+$)	1913.2+x	(16$^+$)		
277.70[#] *4*	8.4 *3*	1922.6+x	(17$^-$)	1644.6+x	(16$^-$)		
282.88 *5*		588.1+y		305.0+y			
283.11 *4*	13.5 *7*	625.6+x	(9$^+$)	342.8+x	(7$^+$)		
283.18[#] *4*	15.8 *6*	730.5+y	(13$^-$)	447.3+y	(12$^-$)	M1+E2	R(DCO)=0.41 *9*.
283.6[#] *3*	5.6 *3*	1405.5+x	(14$^+$)	1122.2+x	(12$^+$)		
284.76 *5*	5.3 *3*	3317.5+x	(22$^+$)	3032.4+x	(21$^+$)		
288.43[#] *6*	4.2 *2*	2479.0+x	(18$^+$)	2190.8+x	(17$^+$)		
293.30[#] *5*	6.2 *3*	2216.0+x	(18$^-$)	1922.6+x	(17$^-$)		
294.2 *3*	2.3 *3*	865.5+x?	(10$^+$)	572.0+x	(8$^+$)		
295.64[#] *3*	66.9 *23*	447.3+y	(12$^-$)	151.9+y	(10$^-$)		R(DCO)=0.79 *9*.
295.88 *9*	3.1 *2*	2346.2+y	(19$^-$)	2050.9+y	(18$^-$)		
298.80[#] *8*	3.7 *2*	2778.5+x	(19$^+$)	2479.0+x	(18$^+$)		
299.32 *5*	6.5 *3*	3032.4+x	(21$^+$)	2732.8+x	(20$^+$)		
302.13[#] *4*	10.8 *4*	520.2+x	(11$^-$)	218.2+x	(9$^-$)		
306.01[#] *4*	8.9 *4*	1188.7+y	(15$^-$)	882.6+y	(14$^-$)	M1+E2	R(DCO)=0.42 *12*. E_γ: Table in 2003Ba07 shows the transition from (15$^-$) level at 1288.7 keV to (14$^-$) level at 982.6 keV, which probably a mistake, instead it should be from (15$^-$) level at 1188.7 keV to (14$^-$) level at 882.6 keV.
309.25[#] *5*	5.5 *3*	2525.4+x	(19$^-$)	2216.0+x	(18$^-$)		
309.46 *10*	2.2 *2*	2360.0+y	(19$^-$)	2050.9+y	(18$^-$)		
309.63 *8*	3.0 *2*	3087.7+x	(20$^+$)	2778.5+x	(19$^+$)		
311.79[#] *5*	5.0 *3*	1738.9+y	(17$^-$)	1427.0+y	(16$^-$)		
311.84 *10*	4.9 *3*	1022.7+x	(11$^+$)	711.0+x?	(9$^+$)		
319.62 *9*	3.1 *3*	3406.0+x	(21$^+$)	3087.7+x	(20$^+$)		
319.69[#] *4*	21.2 *9*	319.4+x	(9$^+$)	0.0+x	(7$^+$)		
323.48[#] *6*	4.2 *2*	2849.0+x	(20$^-$)	2525.4+x	(19$^-$)		

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^{149}Sm(^{31}P,4nγ) 2003Ba07,2002Zh13 (continued)

$\gamma(^{176}Ir)$ (continued)

E_γ[†]	I_γ[@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	Comments
327.98[#] *4*	18.6 *7*	1591.0+x	(15$^+$)	1263.3+x	(13$^+$)	E2	R(DCO)=1.1 *5*.
329.31 *13*	1.9 *2*	3734.8+x	(22$^+$)	3406.0+x	(21$^+$)		
338.53 *5*	5.0 *2*	926.7+y		588.1+y			
339.20[#] *9*	2.9 *2*	3188.3+x	(21$^-$)	2849.0+x	(20$^-$)		
341.99 *7*	6.6 *5*	811.1+x	(10$^+$)	469.1+x	(8$^+$)		
346.79[#] *4*	20.9 *8*	705.8+x	(12$^-$)	359.0+x	(10$^-$)		
353.38[#] *7*	5.9 *4*	730.5+y	(13$^-$)	377.4+y	(11$^-$)		
356.42[#] *3*	33.3 *11*	506.6+x	(10$^+$)	150.3+x	(8$^+$)	E2	R(DCO)=1.02 *16*.
362.49[#] *3*	25.3 *8*	1768.0+x	(16$^+$)	1405.5+x	(14$^+$)	E2	R(DCO)=1.20 *24*.
379.01[#] *4*	13.1 *5*	1768.0+x	(16$^+$)	1389.0+x	(14$^+$)		
387.85 *4*	11.9 *6*	1013.3+x	(11$^+$)	625.6+x	(9$^+$)		
388.76[#] *3*	35.0 *12*	708.0+x	(11$^+$)	319.4+x	(9$^+$)	(E2)	R(DCO)=0.74 *12*. Mult.: From level scheme. DCO ratio implies M1+E2.
392.12[#] *4*	21.3 *7*	912.3+x	(13$^-$)	520.2+x	(11$^-$)	E2	R(DCO)=1.5 *5*.
395.35 *6*	3.3 *3*	1258.0+y		863.0+y			
397.23 *4*	9.2 *5*	1022.7+x	(11$^+$)	625.6+x	(9$^+$)		
409.51[#] *3*	28.6 *10*	2000.4+x	(17$^+$)	1591.0+x	(15$^+$)		
411.06 *5*	12.8 *6*	1337.7+y		926.7+y			
416.79[#] *3*	43.5 *14*	923.3+x	(12$^+$)	506.6+x	(10$^+$)		
422.53 *7*	4.6 *4*	1681.2+y		1258.0+y			
433.00[#] *3*	27.3 *9*	1138.8+x	(14$^-$)	705.8+x	(12$^-$)		
435.24[#] *3*	47.9 *16*	882.6+y	(14$^-$)	447.3+y	(12$^-$)	E2	R(DCO)=1.28 *15*.
443.50[#] *3*	36.0	1151.6+x	(13$^+$)	708.0+x	(11$^+$)		
446.65[#] *3*	37.4 *12*	2214.5+x	(18$^+$)	1768.0+x	(16$^+$)	E2	R(DCO)=0.88 *17*.
458.20[#] *5*	12.8 *5*	1188.7+y	(15$^-$)	730.5+y	(13$^-$)		
460.00 *20*	9.6 *4*	1797.7+y		1337.7+y			
465.72[#] *3*	29.5 *10*	1389.0+x	(14$^+$)	923.3+x	(12$^+$)		
470.94[#] *4*	27.4 *9*	1383.2+x	(15$^-$)	912.3+x	(13$^-$)		
474.71 *7*		2156.1+y		1681.2+y			
479.4[a] *10*	9.7 *5*	926.7+y		447.3+y	(12$^-$)		R(DCO)=0.9 *3*. Depopulating level energy shown in Table (2003Ba07) as 1026.7 keV, which is a typo, it would be 926.7 keV.
481.97[#] *4*	25.9 *9*	2482.4+x	(19$^+$)	2000.4+x	(17$^+$)	E2	R(DCO)=0.77 *15*.
482.33[#] *4*	25.6 *9*	1405.5+x	(14$^+$)	923.3+x	(12$^+$)		
496.49[#] *4*	17.4 *7*	1648.1+x	(15$^+$)	1151.6+x	(13$^+$)	E2	R(DCO)=0.99 *18*.
505.95[#] *4*	28.6 *10*	1644.6+x	(16$^-$)	1138.8+x	(14$^-$)	E2	R(DCO)=0.84 *20*.
516.25 *7*	4.1 *3*	2672.4+y	(20$^-$)	2156.1+y			
518.44[#] *3*	36.0 *12*	2732.8+x	(20$^+$)	2214.5+x	(18$^+$)	E2	R(DCO)=0.99 *13*.
521.16 *6*	8.6 *4*	2318.9+y		1797.7+y			
523.96[#] *6*	10.0 *4*	1913.2+x	(16$^+$)	1389.0+x	(14$^+$)		
539.41[#] *4*	23.6 *8*	1922.6+x	(17$^-$)	1383.2+x	(15$^-$)		
542.82[#] *5*	14.8 *6*	2190.8+x	(17$^+$)	1648.1+x	(15$^+$)		
544.40[#] *3*	30.1 *10*	1427.0+y	(16$^-$)	882.6+y	(14$^-$)	E2	R(DCO)=1.06 *11*.
544.69 *21*	5.7 *6*	891.1+x		346.0+x			
549.97[#] *4*	22.7 *8*	3032.4+x	(21$^+$)	2482.4+x	(19$^+$)		
550.19[#] *5*	12.3 *5*	1738.9+y	(17$^-$)	1188.7+y	(15$^-$)		
566.04[#] *6*	10.6 *5*	2479.0+x	(18$^+$)	1913.2+x	(16$^+$)		
571.34[#] *4*	21.9	2216.0+x	(18$^-$)	1644.6+x	(16$^-$)		

Continued on next page (footnotes at end of table)

^{149}Sm(^{31}P,4nγ) 2003Ba07,2002Zh13 (continued)

$\gamma(^{176}Ir)$ (continued)

E_γ [†]	I_γ [@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	Comments
573.34 *7*	7.7 *4*	2892.2+y		2318.9+y			
581.39 *5*	8.6 *4*	3253.0+y	(22$^-$)	2672.4+y	(20$^-$)		
584.90[#] *4*	24.1 *8*	3317.5+x	(22$^+$)	2732.8+x	(20$^+$)		
587.88[#] *6*	11.9 *5*	2778.5+x	(19$^+$)	2190.8+x	(17$^+$)		
602.73[#] *4*	21.8 *8*	2525.4+x	(19$^-$)	1922.6+x	(17$^-$)		
606.88 *9*	7.0 *4*	2346.2+y	(19$^-$)	1738.9+y	(17$^-$)		
608.51[#] *6*	11.3 *5*	3087.7+x	(20$^+$)	2479.0+x	(18$^+$)		
608.75 *7*	9.1 *5*	2955.0+y	(21$^-$)	2346.2+y	(19$^-$)		
612.16 *12*	7.9 *6*	1059.5+y		447.3+y	(12$^-$)		
614.20[#] *4*	18.1 *7*	3646.6+x	(23$^+$)	3032.4+x	(21$^+$)		
621.47 *8*	5.9 *4*	2672.4+y	(20$^-$)	2050.9+y	(18$^-$)		
621.95[#] *6*	13.5 *7*	2360.0+y	(19$^-$)	1738.9+y	(17$^-$)		
624.01[#] *4*	21.2 *8*	2050.9+y	(18$^-$)	1427.0+y	(16$^-$)	E2	R(DCO)=0.92 *9*.
626.31 *7*	7.3 *4*	3518.0+y		2892.2+y			
627.70[#] *7*	8.8 *4*	3406.0+x	(21$^+$)	2778.5+x	(19$^+$)		
629.80 *6*	8.0 *4*	3883.0+y	(24$^-$)	3253.0+y	(22$^-$)		
633.15[#] *5*	15.0 *6*	2849.0+x	(20$^-$)	2216.0+x	(18$^-$)		
646.36 *9*	6.3 *4*	3734.8+x	(22$^+$)	3087.7+x	(20$^+$)		
647.72[#] *5*	13.3 *5*	3965.3+x	(24$^+$)	3317.5+x	(22$^+$)		
656.36 *10*	3.8 *3*	3611.3+y	(23$^-$)	2955.0+y	(21$^-$)		
663.36[#] *7*	8.6 *4*	3188.3+x	(21$^-$)	2525.4+x	(19$^-$)		
663.51 *22*	2.3 *3*	4070.0+x	(23$^+$)	3406.0+x	(21$^+$)		
676.29[#] *8*	7.2 *4*	4322.9+x	(25$^+$)	3646.6+x	(23$^+$)		
678.98 *12*	3.4 *3*	4413.0+x	(24$^+$)	3734.8+x	(22$^+$)		
679.22 *11*	3.8 *3*	4197.8+y		3518.0+y			
680.30 *8*	4.4 *3*	4563.0+y	(26$^-$)	3883.0+y	(24$^-$)		
689.74 *10*	4.2 *4*	3050.4+y	(21$^-$)	2360.0+y	(19$^-$)		E_γ: Eγ=705.0 keV in 2002Zh13.
692.67[#] *7*	7.8 *4*	3541.7+x	(22$^-$)	2849.0+x	(20$^-$)		
697.14[#] *7*	6.8 *4*	2748.1+y	(20$^-$)	2050.9+y	(18$^-$)		
707.46 *18*	1.9 *3*	4318.8+y	(25$^-$)	3611.3+y	(23$^-$)		
707.93[#] *7*	7.7 *4*	4673.2+x	(26$^+$)	3965.3+x	(24$^+$)		
716.75 *9*	4.8 *3*	3767.2+y	(23$^-$)	3050.4+y	(21$^-$)		
721.23[#] *8*	6.7 *4*	3909.0+x	(23$^-$)	3188.3+x	(21$^-$)		
730.52 *14*	4.1 *3*	5294.2+y	(28$^-$)	4563.0+y	(26$^-$)		
732.29 *13*	2.6 *2*	4930.0+y		4197.8+y			
733.65[#] *9*	4.8 *3*	3481.7+y	(22$^-$)	2748.1+y	(20$^-$)		
737.06 *14*	3.8 *3*	5059.9+x	(27$^+$)	4322.9+x	(25$^+$)		
749.25 *9*	5.0 *3*	4290.9+x	(24$^-$)	3541.7+x	(22$^-$)		
757.42[a] *19*	1.8 *2*	5076.2+y?	(27$^-$)	4318.8+y	(25$^-$)		
766.74 *13*	3.8	5439.9+x	(28$^+$)	4673.2+x	(26$^+$)		
776.71 *14*	3.4 *3*	4686.3+x	(25$^-$)	3909.0+x	(23$^-$)		
785.4 *3*	1.2 *2*	5715+y		4930.0+y			
796.38 *24*	1.9 *2*	5856.3+x	(29$^+$)	5059.9+x	(27$^+$)		
798.60 *16*	2.7 *3*	5089.6+x	(26$^-$)	4290.9+x	(24$^-$)		
819.7 *3*	1.1 *2*	5505.7+x	(27$^-$)	4686.3+x	(25$^-$)		
823.67 *22*	2.1 *2*	6263.6+x	(30$^+$)	5439.9+x	(28$^+$)		
845.0[a] *4*	0.4 *2*	5935+x	(28$^-$)	5089.6+x	(26$^-$)		
853.7 *10*	0.1 *2*	6710.0+x	(31$^+$)	5856.3+x	(29$^+$)		
876.6 *4*		7140+x	(32$^+$)	6263.6+x	(30$^+$)		
883.00[a] *22*		6817+x	(30$^-$)	5935+x	(28$^-$)		

Continued on next page (footnotes at end of table)

^{149}Sm(^{31}P,4nγ) 2003Ba07,2002Zh13 (continued)

$\gamma(^{176}Ir)$ (continued)

† From 2003Ba07, unless otherwise specified. Uncertainties are statistical only. Systematic uncertainty is 0.2 keV.
‡ Transition placed below the (8^-) level of band 9.
# Observed both in 2003Ba07 and 2002Zh13.
@ From 2003Ba07. The coincidence intensities were deduced from the recoil-into-vacuum γ-γ matrix using code ESCL8R.
& Assigned by evaluator from DCO ratio, except otherwise noted.
[a] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

^{149}Sm(^{31}P,4nγ) 2003Ba07,2002Zh13

Level Scheme

Intensities: Relative I_γ

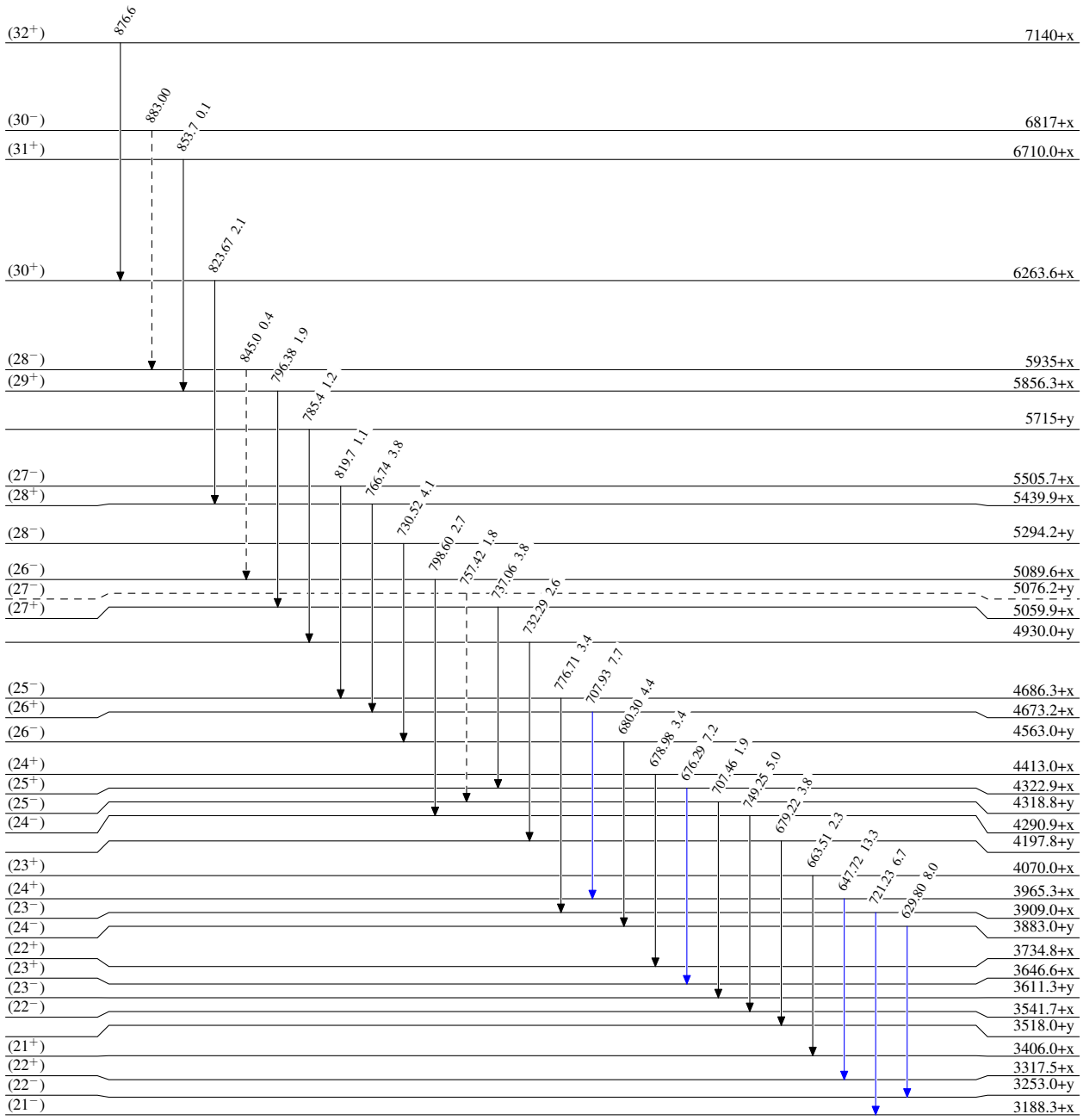
Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$

γ Decay (Uncertain)



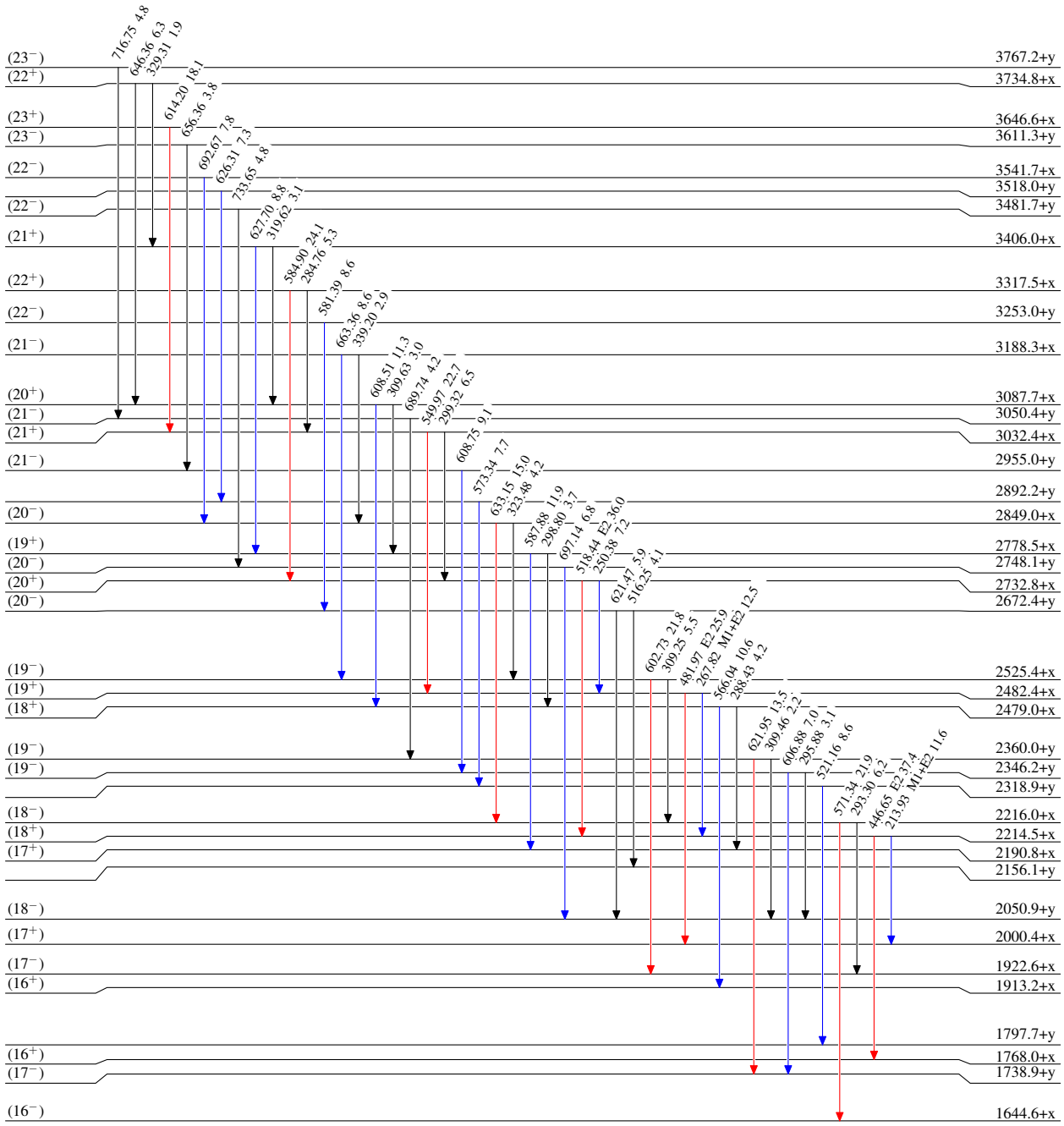
$^{176}_{77}Ir_{99}$

^{149}Sm(^{31}P,4nγ) 2003Ba07,2002Zh13

Level Scheme (continued)

Intensities: Relative I_γ

Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$



$^{176}_{77}Ir_{99}$

^{149}Sm(^{31}P,4nγ) 2003Ba07,2002Zh13

Level Scheme (continued)

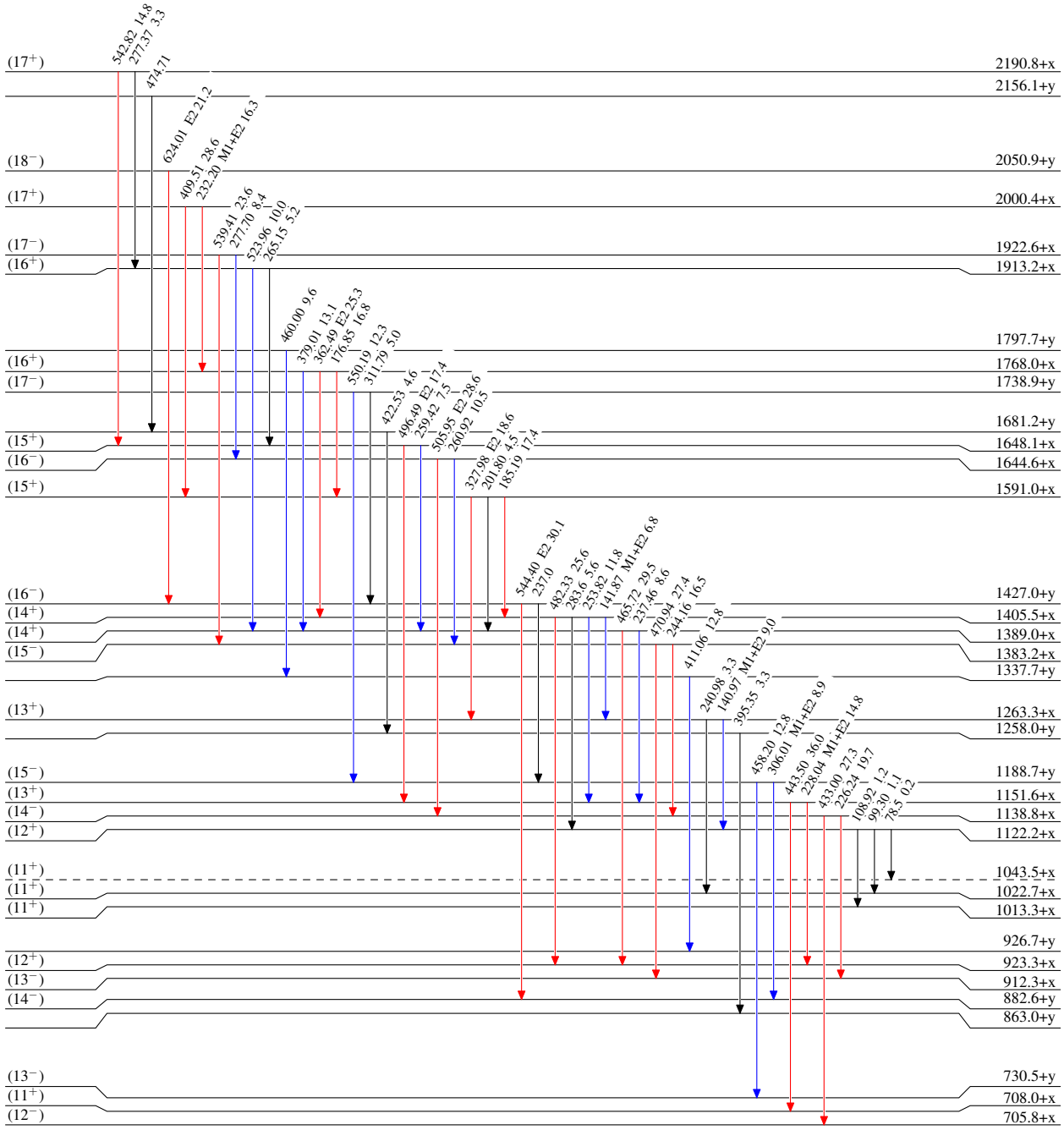
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$

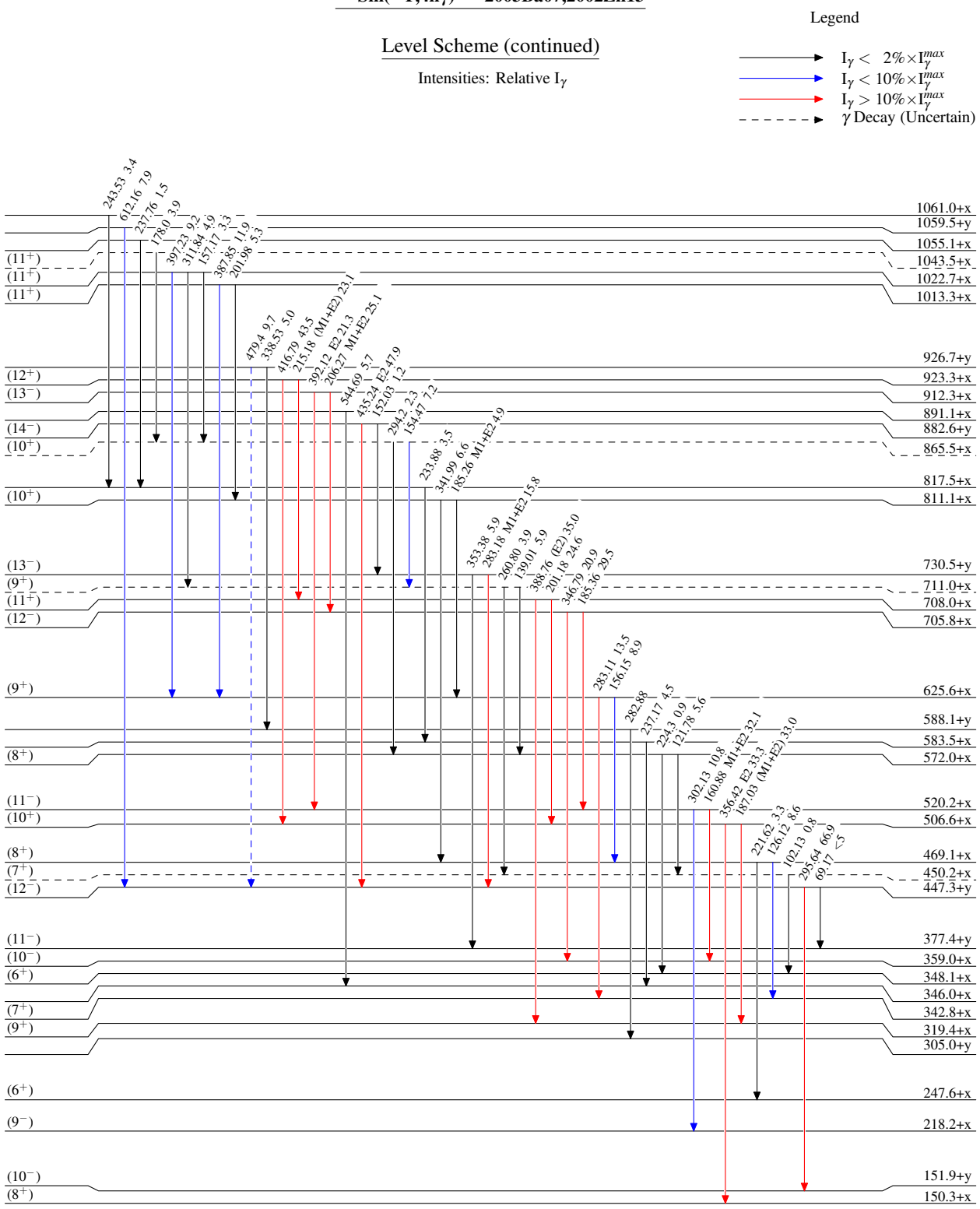


$^{176}_{77}Ir_{99}$

$^{149}Sm(^{31}P,4n\gamma)$ 2003Ba07,2002Zh13

Level Scheme (continued)

Intensities: Relative I_γ

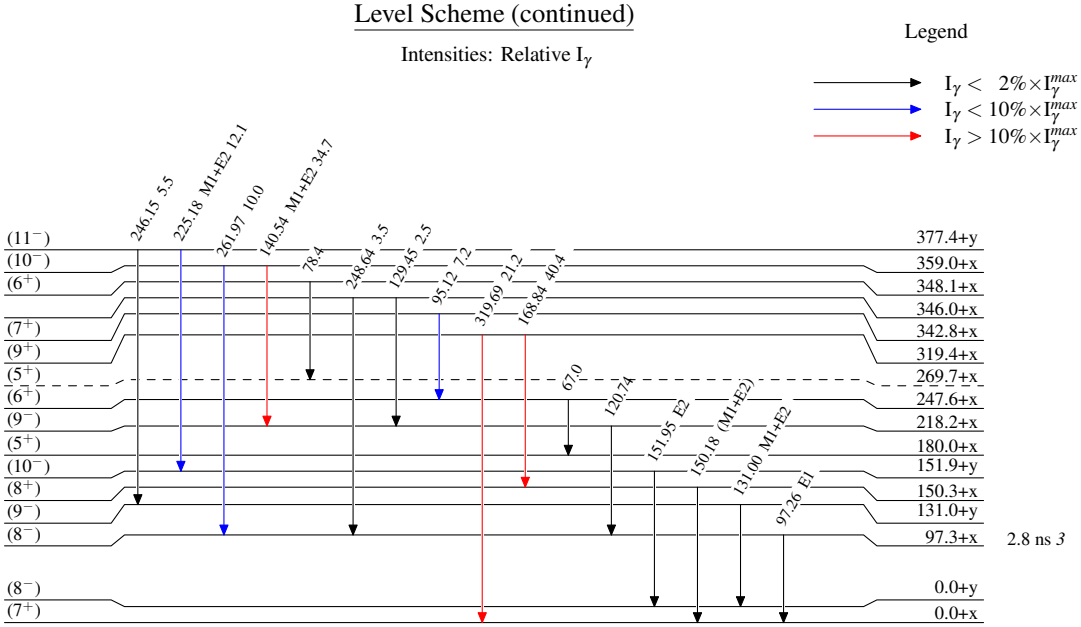


$^{176}_{77}Ir_{99}$

^{149}Sm(^{31}P,4nγ) 2003Ba07,2002Zh13

Level Scheme (continued)

Intensities: Relative I_γ



$^{176}_{77}Ir_{99}$