^{150}Sm(^{29}Si,4nγ) 1990Fa02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 102, 719 (2004)	1-Jun-2004

Enriched target. Projectile: E(^{28}Si)=147 MeV. Measured Eγ, Iγ, γγ coin, γ(θ) at 0°, 33°, 57°, and 90°. Multiplicity filter.

^{175}Os Levels

E(level)[†]	J^{π}[‡]	$T_{1/2}$	Comments
0.0[#]	(5/2$^-$)	1.4 min *1*	J^{π}: The assignment of the ground-state configuration to 5/2[512] is based on the values of g_K-g_R determined from crossover-cascade branching ratios. $T_{1/2}$: From 1972Be89.
90.32[#] *14*	(7/2$^-$)		
102.3[@] *4*	(1/2$^-$)		
105.7[&] *2*	(7/2$^+$)	10 ns *2*	$T_{1/2}$: from γγ(t). J^{π}: 105.7γ (E1) and assigned from 7/2[633] Nilsson configuration as such bands present throughout the odd Os isotopes at low spin levels.
147.8[&] *3*	(9/2$^+$)		
175.60[@] *17*	(3/2$^-$)		
193.76[@] *15*	(5/2$^-$)		
207.56[#] *15*	(9/2$^-$)		
218.3[&] *3*	(11/2$^+$)		
279.1[&] *3*	(13/2$^+$)		
346.56[#] *17*	(11/2$^-$)		
355.86[@] *22*	(7/2$^-$)		
381.56[@] *21*	(9/2$^-$)		
443.7[&] *3*	(15/2$^+$)		
504.77[#] *19*	(13/2$^-$)		
523.9[&] *3*	(17/2$^+$)		
614.8[@] *3*	(11/2$^-$)		
644.51[@] *25*	(13/2$^-$)		
679.89[#] *21*	(15/2$^-$)		
783.9[&] *3*	(19/2$^+$)		
869.25[#] *22*	(17/2$^-$)		
890.0[&] *3*	(21/2$^+$)		
940.4[@] *3*	(15/2$^-$)		
970.2[@] *3*	(17/2$^-$)		
1072.87[#] *23*	(19/2$^-$)		
1210.9[&] *3*	(23/2$^+$)		
1288.79[#] *24*	(21/2$^-$)		
1327.0[@] *4*	(19/2$^-$)		
1350.6[&] *4*	(25/2$^+$)		
1352.0[@] *3*	(21/2$^-$)		
1517.65[#] *25*	(23/2$^-$)		
1708.2[&] *4*	(27/2$^+$)		
1757.1[#] *3*	(25/2$^-$)		
1770.9[@] *4*	(23/2$^-$)		
1785.9[@] *3*	(25/2$^-$)		

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^{150}Sm(^{29}Si,4nγ) 1990Fa02 (continued)

^{175}Os Levels (continued)

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
1881.4& 4	(29/2+)	2815.8@ 5	(31/2−)	3741.1# 4	(39/2−)	4771.8?# 7	(45/2−)
2010.9# 3	(27/2−)	2833.3# 3	(33/2−)	3814.5& 5	(41/2+)	5064.9& 7	(47/2+)
2265.7@ 3	(29/2−)	2886.1& 4	(35/2+)	3992.5@ 5	(41/2−)	5115.2# 7	(47/2−)
2267.9& 4	(31/2+)	3116.2& 4	(37/2+)	4059.1@ 6	(39/2−)	5352.5& 7	(49/2+)
2268.2@ 5	(27/2−)	3125.8# 4	(35/2−)	4085.8# 4	(41/2−)	5391.2@ 5	(49/2−)
2274.5# 3	(29/2−)	3368.8@ 4	(37/2−)	4288.9& 5	(43/2+)	5880.9?& 9	(51/2+)
2471.2& 4	(33/2+)	3410.2@ 5	(35/2−)	4404.2# 5	(43/2−)	6170.5& 9	(53/2+)
2548.7# 3	(31/2−)	3438.0# 4	(37/2−)	4563.5& 5	(45/2+)	6172.2?@ 7	(53/2−)
2794.7@ 4	(33/2−)	3560.3& 5	(39/2+)	4667.3@ 5	(45/2−)	7007.5?& 10	(57/2+)

† Deduced by evaluator from a least-squares fit to γ-ray energies.
‡ Spin and parity assignments are based on rotational structure, γ-ray decay patterns, γ(θ) and systematics of neighboring odd Os nuclei. In particular, the (1/2−) state can be associated with the 1/2[521] configuration on the basis of its decoupling parameter.
# 5/2(512) band.
@ 1/2(521) band.
& 7/2(633) band : strongly mixed by Coriolis coupling with the other members of the i13/2 intruder orbital.

γ(^{175}Os)

Eγ	Iγ†	Ei(level)	Jπi	Ef	Jπf	Mult.‡	α b	Comments
42.1 2	92 22	147.8	(9/2+)	105.7	(7/2+)			
61.0 5	43@ 26	279.1	(13/2+)	218.3	(11/2+)			
71.0 5	59& 40	218.3	(11/2+)	147.8	(9/2+)			
73.0 5	26& 8	175.60	(3/2−)	102.3	(1/2−)			
80.3 2	64 6	523.9	(17/2+)	443.7	(15/2+)			A_2=−0.67 15.
90.3 2	72 11	90.32	(7/2−)	0.0	(5/2−)			A_2=−0.44 9.
91.3 2	30 11	193.76	(5/2−)	102.3	(1/2−)			
102.0 5	≈10	102.3	(1/2−)	0.0	(5/2−)			
103.5 2	32 7	193.76	(5/2−)	90.32	(7/2−)			
105.7 2	1000	105.7	(7/2+)	0.0	(5/2−)	(E1)#	0.343	α(K)= 0.279; α(L)= 0.0497; α(M)= 0.0114; α(N+..)= 0.00340 A_2=−0.13 2 A_4=+0.07 2.
106.1 2	52 7	890.0	(21/2+)	783.9	(19/2+)			
112.6 2	53 7	218.3	(11/2+)	105.7	(7/2+)			A_2=+0.20 5.
117.2 2	144 3	207.56	(9/2−)	90.32	(7/2−)			A_2=−0.62 3 A_4=−0.07 2.
131.3 2	129 3	279.1	(13/2+)	147.8	(9/2+)	Q		A_2=+0.28 4.
139.0 2	106 18	346.56	(11/2−)	207.56	(9/2−)			A_2=−0.65 16.
139.7 2	41 13	1350.6	(25/2+)	1210.9	(23/2+)			
158.2 2	148 15	504.77	(13/2−)	346.56	(11/2−)			
162.0 5	30 5	355.86	(7/2−)	193.76	(5/2−)			
164.6 2	336 6	443.7	(15/2+)	279.1	(13/2+)			A_2=−0.87 3 A_4=+0.07 4.
173.2 2	51 2	1881.4	(29/2+)	1708.2	(27/2+)			A_2=−0.38 9.
175.1 2	75 17	679.89	(15/2−)	504.77	(13/2−)			A_2=−0.57 4 A_4=+0.08 5.
175.7 2	87 17	175.60	(3/2−)	0.0	(5/2−)			
180.3 2	69 3	355.86	(7/2−)	175.60	(3/2−)			A_2=+0.20 9.
187.8 2	255 7	381.56	(9/2−)	193.76	(5/2−)	Q		A_2=+0.30 5.
189.4 2	157 6	869.25	(17/2−)	679.89	(15/2−)			A_2=−0.33 6 A_4=+0.08 8.
193.7 2	55 7	193.76	(5/2−)	0.0	(5/2−)			

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^{150}Sm(^{29}Si,4nγ) 1990Fa02 (continued)

γ(^{175}Os) (continued)

Eγ	Iγ[†]	Ei(level)	Jπi	Ef	Jπf	Mult.[‡]	Comments
203.3 2	13 4	2471.2	(33/2+)	2267.9	(31/2+)		A2=−0.38 9.
203.7 2	76 4	1072.87	(19/2−)	869.25	(17/2−)		
207.6 2	60 7	207.56	(9/2−)	0.0	(5/2−)		
216.1 2	110 7	1288.79	(21/2−)	1072.87	(19/2−)		A2=−0.71 9 A4=+0.23 11.
225.4 2	323 4	443.7	(15/2+)	218.3	(11/2+)	Q	A2=+0.30 2 A4=−0.11 2.
228.9 2	64 2	1517.65	(23/2−)	1288.79	(21/2−)		A2=−0.61 6.
230.0 5	8 3	3116.2	(37/2+)	2886.1	(35/2+)		
233.0 5	25 5	614.8	(11/2−)	381.56	(9/2−)		
239.4 2	67 3	1757.1	(25/2−)	1517.65	(23/2−)		A2=−0.58 14.
244.7 2	515 5	523.9	(17/2+)	279.1	(13/2+)	Q	A2=+0.29 2 A4=−0.04 3.
253.8 2	54 19	2010.9	(27/2−)	1757.1	(25/2−)		
254.0 5	≈5	3814.5	(41/2+)	3560.3	(39/2+)		
256.2 2	176 3	346.56	(11/2−)	90.32	(7/2−)		A2=+0.26 A4=−0.04 3.
259.0 2	70 8	614.8	(11/2−)	355.86	(7/2−)		A2=+0.12 12 A4=−0.19 12.
260.0 2	200 50	783.9	(19/2+)	523.9	(17/2+)		
263.0 2	327 11	644.51	(13/2−)	381.56	(9/2−)		
263.4 2	42 11	2274.5	(29/2−)	2010.9	(27/2−)		
274.0 5	44 5	2548.7	(31/2−)	2274.5	(29/2−)		
275.0[d] 5	≈5	4563.5	(45/2+)	4288.9	(43/2+)		
285.0 5	13 8	2833.3	(33/2−)	2548.7	(31/2−)		
292.0 5	≈25	3125.8	(35/2−)	2833.3	(33/2−)		
296.0[d] 5	≈2	940.4	(15/2−)	644.51	(13/2−)		
297.2 2	251 5	504.77	(13/2−)	207.56	(9/2−)	Q	A2=+0.28 4 A4=−0.13 6.
312.0 5	≈18	3438.0	(37/2−)	3125.8	(35/2−)		
321.0 2	108 3	1210.9	(23/2+)	890.0	(21/2+)		A2=−0.64 5 A4=−0.07 5.
325.6 2	74 10	940.4	(15/2−)	614.8	(11/2−)		A2=−0.33 2 A4=−0.15 2.
325.7 2	324 10	970.2	(17/2−)	644.51	(13/2−)		
333.3 2	280 7	679.89	(15/2−)	346.56	(11/2−)		
340.1 2	394 20	783.9	(19/2+)	443.7	(15/2+)	Q	A2=+0.31 2 A4=−0.06 2.
357.4 2	82 4	1708.2	(27/2+)	1350.6	(25/2+)		A2=−0.77 9.
364.5 2	302 5	869.25	(17/2−)	504.77	(13/2−)	Q	A2=+0.31 3 A4=−0.19 4.
366.1 2	734 11	890.0	(21/2+)	523.9	(17/2+)	Q	A2=+0.32 3.
381.9 2	327 10	1352.0	(21/2−)	970.2	(17/2−)	Q	A2=+0.31 5.
386.5 2	75 10	2267.9	(31/2+)	1881.4	(29/2+)		
386.6 2	75 10	1327.0	(19/2−)	940.4	(15/2−)		
[x]390.8 2	75[a] 10						
392.9 2	272 7	1072.87	(19/2−)	679.89	(15/2−)	Q	A2=+0.34 5 A4=−0.18 6.
415.0 5	26 9	2886.1	(35/2+)	2471.2	(33/2+)		
419.5 2	300 30	1288.79	(21/2−)	869.25	(17/2−)	Q	A2=+0.33 1 A4=−0.10 1.
427.1 2	388 7	1210.9	(23/2+)	783.9	(19/2+)	Q	A2=+0.29 4 A4=−0.09 4.
433.9 2	317 8	1785.9	(25/2−)	1352.0	(21/2−)		A2=+0.22 5 A4=−0.11 7.
443.9 2	79 10	1770.9	(23/2−)	1327.0	(19/2−)		
444.0 5	≈5	3560.3	(39/2+)	3116.2	(37/2+)		
444.6 2	293 10	1517.65	(23/2−)	1072.87	(19/2−)	Q	A2=+0.28 4 A4=−0.15 5.
460.6 2	708 42	1350.6	(25/2+)	890.0	(21/2+)		A2=+0.38 3 A4=−0.17 2.
468.4 2	297 5	1757.1	(25/2−)	1288.79	(21/2−)		A2=+0.41 3 A4=−0.20 3.
475.0[d] 5	≈5	4288.9	(43/2+)	3814.5	(41/2+)		
479.8 2	217 4	2265.7	(29/2−)	1785.9	(25/2−)		A2=+0.41 4 A4=−0.19 4.
488.7 2	97 21	2274.5	(29/2−)	1785.9	(25/2−)		A2=+0.23 3 A4=−0.09 4.
[x]489.7 2	73[a] 9						
493.2 2	315 4	2010.9	(27/2−)	1517.65	(23/2−)		A2=+0.34 2 A4=−0.13 2.
497.3[c] 2	364[c] 40	1708.2	(27/2+)	1210.9	(23/2+)	Q	A2=+0.34 2 A4=−0.11 2.
497.3[c] 2	65[c] 40	2268.2	(27/2−)	1770.9	(23/2−)	Q	A2=+0.34 2 A4=−0.11 2.
508.6 2	119 15	2265.7	(29/2−)	1757.1	(25/2−)		

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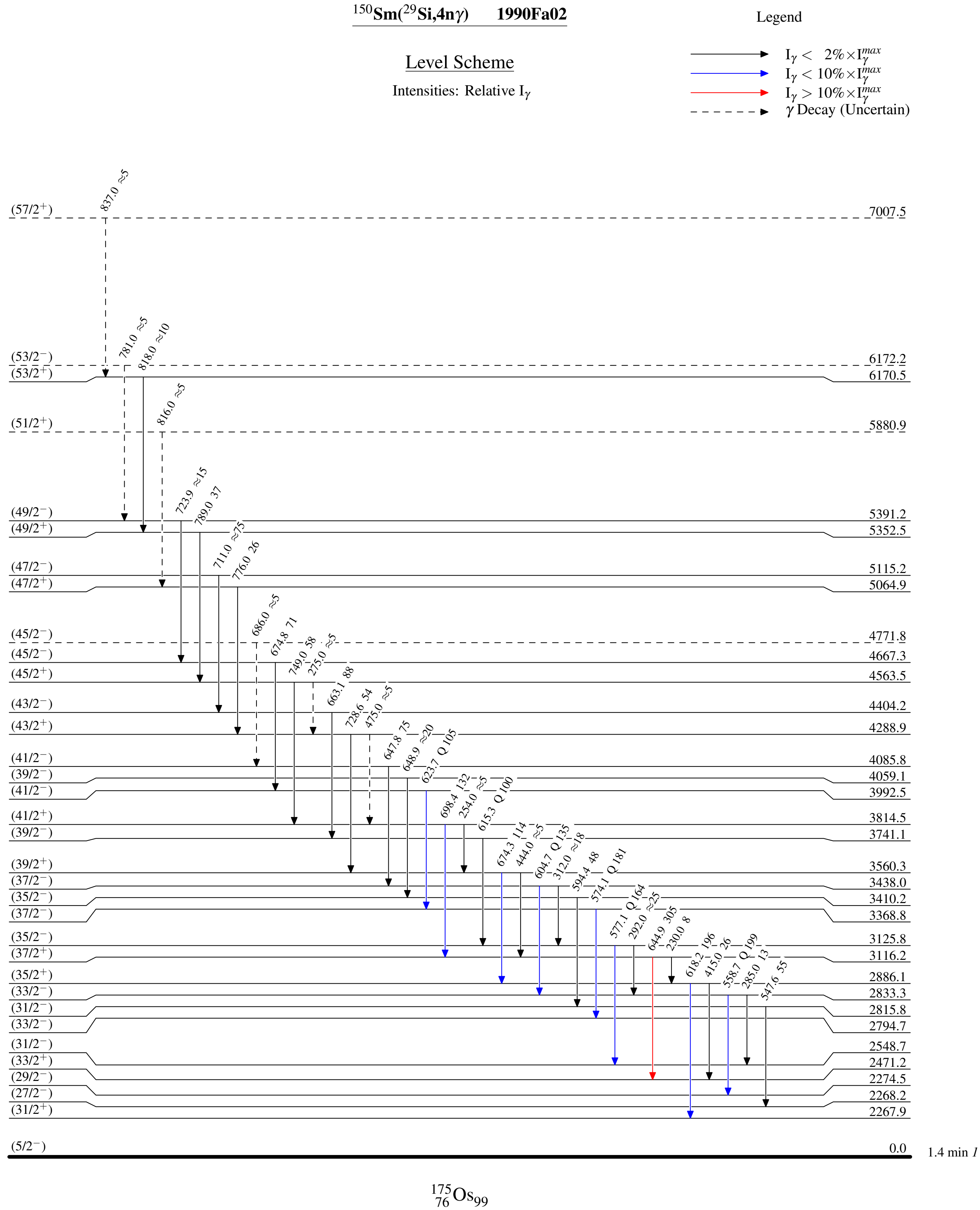
$^{150}Sm(^{29}Si,4n\gamma)$ **1990Fa02 (continued)**

$\gamma(^{175}Os)$ (continued)

E_γ	I_γ[†]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[‡]	Comments
517.5 *2*	216 *6*	2274.5	(29/2⁻)	1757.1	(25/2⁻)	Q	A_2=+0.29 *6*.
529.0 *2*	220 *4*	2794.7	(33/2⁻)	2265.7	(29/2⁻)	Q	A_2=+0.29 *3* A_4=−0.18 *4*.
530.9 *2*	597 *25*	1881.4	(29/2⁺)	1350.6	(25/2⁺)	Q	A_2=+0.27 *2*.
537.9 *2*	267 *50*	2548.7	(31/2⁻)	2010.9	(27/2⁻)		A_2=+0.44 *17*.
547.6 *2*	55 *4*	2815.8	(31/2⁻)	2268.2	(27/2⁻)		
558.7 *2*	199 *10*	2833.3	(33/2⁻)	2274.5	(29/2⁻)	Q	A_2=+0.31 *7* A_4=−0.19 *11*.
559.7 *2*	303 *18*	2267.9	(31/2⁺)	1708.2	(27/2⁺)		
[x]562.5 *2*	75[a] *15*						
[x]566.4 *2*	77[a] *14*						
574.1 *2*	181 *5*	3368.8	(37/2⁻)	2794.7	(33/2⁻)	Q	A_2=+0.25 *4* A_4=−0.13 *5*.
577.1 *2*	164 *37*	3125.8	(35/2⁻)	2548.7	(31/2⁻)	Q	A_2=+0.25 *3* A_4=−0.10 *4*.
589.8 *2*	446 *21*	2471.2	(33/2⁺)	1881.4	(29/2⁺)		
594.4 *2*	48 *6*	3410.2	(35/2⁻)	2815.8	(31/2⁻)		
[x]604.7 *2*	80 *14*						
604.7 *2*	135 *40*	3438.0	(37/2⁻)	2833.3	(33/2⁻)	Q	A_2=+0.27 *5* A_4=−0.12 *6*.
615.3 *2*	100 *15*	3741.1	(39/2⁻)	3125.8	(35/2⁻)	Q	A_2=+0.32 *6* A_4=−0.15 *7*.
618.2 *2*	196 *4*	2886.1	(35/2⁺)	2267.9	(31/2⁺)		A_2=+0.41 *4* A_4=−0.17 *7*.
623.7 *2*	105 *4*	3992.5	(41/2⁻)	3368.8	(37/2⁻)	Q	A_2=+0.29 *6* A_4=−0.19 *8*.
644.9 *2*	305 *10*	3116.2	(37/2⁺)	2471.2	(33/2⁺)		A_2=+0.09 *3* A_4=−0.08 *6*.
647.8 *2*	75 *9*	4085.8	(41/2⁻)	3438.0	(37/2⁻)		
648.9 *2*	≈20	4059.1	(39/2⁻)	3410.2	(35/2⁻)		
663.1 *2*	88 *7*	4404.2	(43/2⁻)	3741.1	(39/2⁻)		A_2=+0.04 *18*.
674.3 *5*	114 *20*	3560.3	(39/2⁺)	2886.1	(35/2⁺)		
674.8 *2*	71 *20*	4667.3	(45/2⁻)	3992.5	(41/2⁻)		
686.0[d] *5*	≈5	4771.8?	(45/2⁻)	4085.8	(41/2⁻)		
698.4 *2*	132 *5*	3814.5	(41/2⁺)	3116.2	(37/2⁺)		
711.0 *5*	≈75	5115.2	(47/2⁻)	4404.2	(43/2⁻)		
723.9 *2*	≈15	5391.2	(49/2⁻)	4667.3	(45/2⁻)		
728.6 *2*	54 *4*	4288.9	(43/2⁺)	3560.3	(39/2⁺)		
749.0 *2*	58 *10*	4563.5	(45/2⁺)	3814.5	(41/2⁺)		
776.0 *5*	26 *10*	5064.9	(47/2⁺)	4288.9	(43/2⁺)		
781.0[d] *5*	≈5	6172.2?	(53/2⁻)	5391.2	(49/2⁻)		
789.0 *5*	37 *10*	5352.5	(49/2⁺)	4563.5	(45/2⁺)		
816.0[d] *5*	≈5	5880.9?	(51/2⁺)	5064.9	(47/2⁺)		
818.0 *5*	≈10	6170.5	(53/2⁺)	5352.5	(49/2⁺)		
837.0[d] *5*	≈5	7007.5?	(57/2⁺)	6170.5	(53/2⁺)		

[†] From A0 term of angular distributions; otherwise, from coincidence rates.
[‡] Assigned by evaluator from angular distribution coefficient (A_2,A_4), except as noted.
[#] From α≈0.34, determined from intensity balance.
[@] Transition obscured by Os Kα x ray.
[&] Transition obscured by Os Kβ x ray.
[a] From coincidence rate in 105.7-keV gate.
[b] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
[c] Multiply placed with intensity suitably divided.
[d] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.



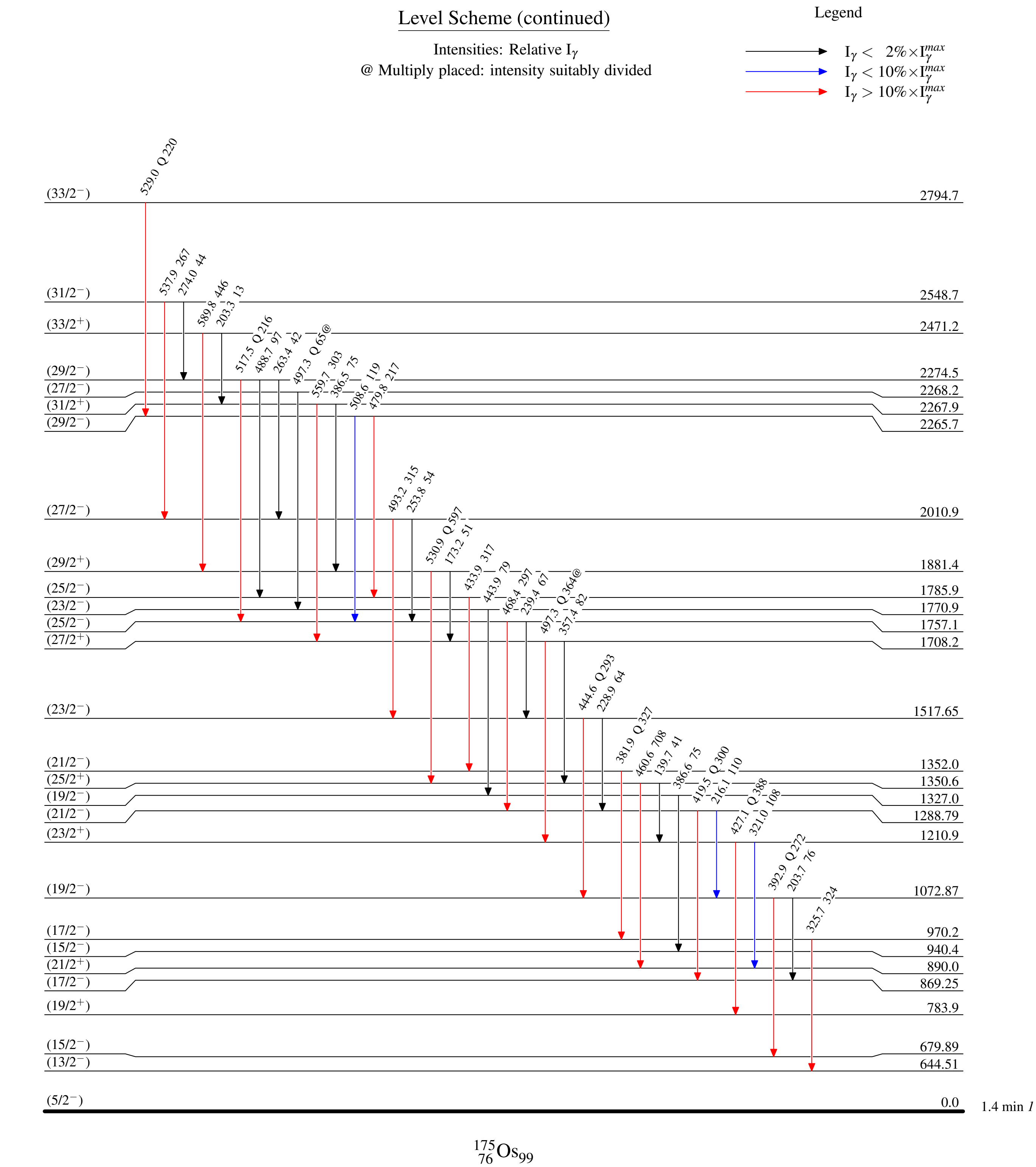
^{150}Sm(^{29}Si,4nγ) 1990Fa02
Level Scheme
Intensities: Relative Iγ
Legend
Iγ < 2%×Iγ max
Iγ < 10%×Iγ max
Iγ > 10%×Iγ max
γ Decay (Uncertain)
(57/2+) 7007.5
(53/2−) 6172.2
(53/2+) 6170.5
(51/2+) 5880.9
(49/2−) 5391.2
(49/2+) 5352.5
(47/2−) 5115.2
(47/2+) 5064.9
(45/2−) 4771.8
(45/2−) 4667.3
(45/2+) 4563.5
(43/2−) 4404.2
(43/2+) 4288.9
(41/2−) 4085.8
(39/2−) 4059.1
(41/2−) 3992.5
(41/2+) 3814.5
(39/2−) 3741.1
(39/2+) 3560.3
(37/2−) 3438.0
(35/2−) 3410.2
(37/2−) 3368.8
(35/2−) 3125.8
(37/2+) 3116.2
(35/2+) 2886.1
(33/2−) 2833.3
(31/2−) 2815.8
(33/2−) 2794.7
(31/2−) 2548.7
(33/2+) 2471.2
(29/2−) 2274.5
(27/2−) 2268.2
(31/2+) 2267.9
(5/2−) 0.0 1.4 min
837.0 ≈5
781.0 ≈5
818.0 ≈10
816.0 ≈5
723.9 ≈15
789.0 37
711.0 ≈75
776.0 26
686.0 ≈5
674.8 71
749.0 58
275.0 ≈5
663.1 88
728.6 54
475.0 ≈5
647.8 75
648.9 ≈20
623.7 Q 105
698.4 132
254.0 ≈5
615.3 Q 100
674.3 114
444.0 ≈5
604.7 Q 135
312.0 ≈18
594.4 48
574.1 Q 181
577.1 Q 164
292.0 ≈25
644.9 305
230.0 8
618.2 196
415.0 26
558.7 Q 199
285.0 13
547.6 55
$^{175}_{76}Os_{99}$

$^{150}Sm(^{29}Si,4n\gamma)$ 1990Fa02

Level Scheme (continued)

Intensities: Relative I_γ

@ Multiply placed: intensity suitably divided

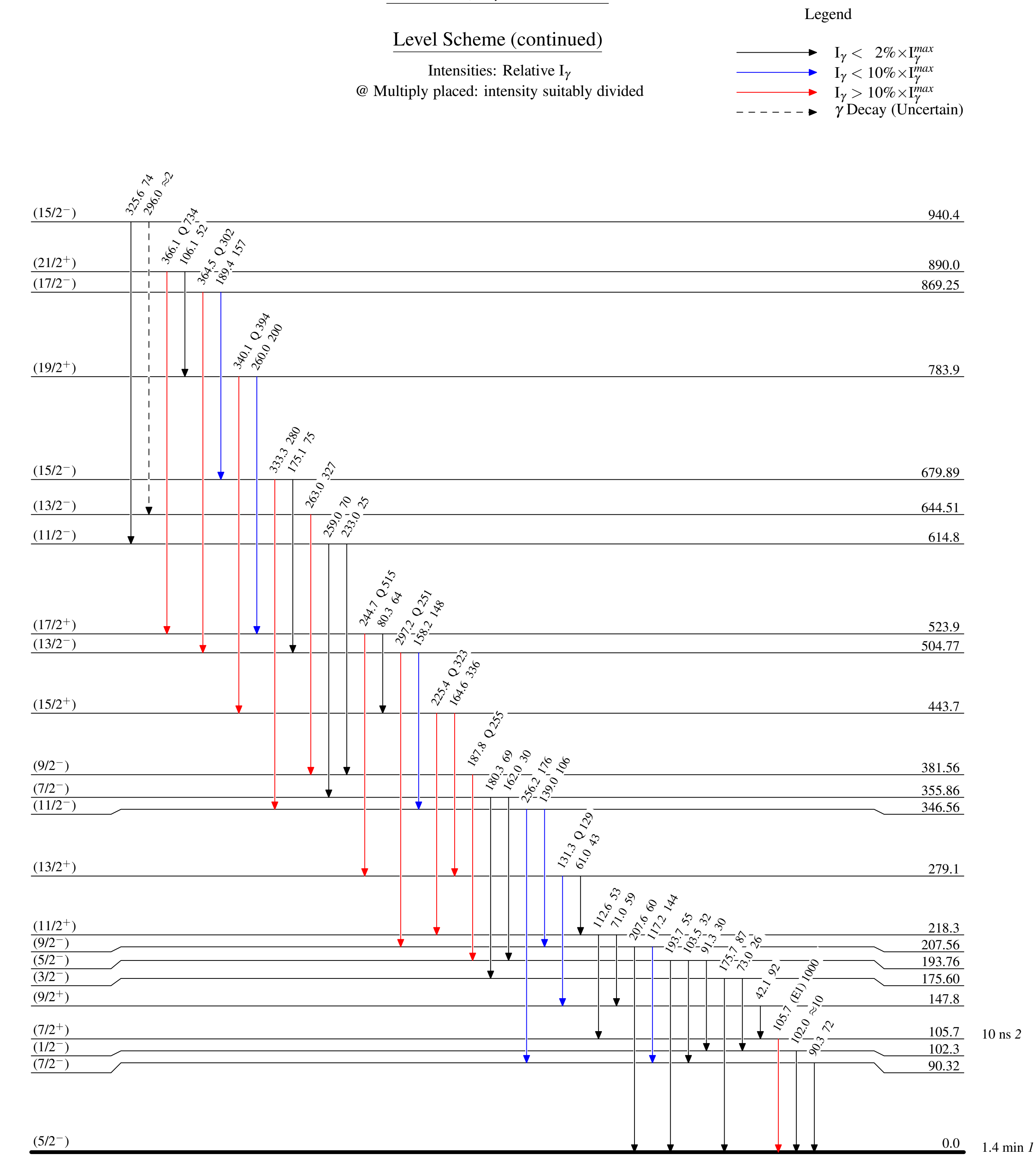


$^{150}Sm(^{29}Si,4n\gamma)$ 1990Fa02

Level Scheme (continued)

Intensities: Relative I_γ

@ Multiply placed: intensity suitably divided



$^{175}_{76}Os_{99}$