Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. Kumar(a), J. Chen(b) and F. G. Kondev	NDS 137, 1 (2016)	31-May-2016

Q(β^-)=−8536 *7*; S(n)=11877 *8*; S(p)=1470 *8*; Q(α)=965 *12* 2012Wa38

^{109}Sb Levels

Cross Reference (XREF) Flags

A	^{109}Te ε decay
B	^{113}I α decay
C	^{54}Fe(^{58}Ni,3pγ)

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$	XREF	Comments
0[e]	(5/2$^+$)	17.2 s *5*	ABC	%ε+%β^+=100 J$^\pi$: from analogy to ^{111}Sb,^{113}Sb. $T_{1/2}$: using Limitation of Relative Statistical Weight method and values of 18.3 s *5* (using 925.4γ(t) in 1976Ox01), 16.67 s *15* (γ(t) in 1982Jo03), and 17.3 *5* (using 545γ(t) and 925γ(t) in 2002Re14). configuration: $\pi d_{5/2}$.
402.0 *4*	(1/2$^+$)		A	J$^\pi$: from systematics of similar states in odd-A Sb isotopes; in agreement with shell model calculations (2002Re28). configuration: $\pi d_{5/2}\otimes 2^+$ multiplet.
752.3 *4*	(3/2$^+$)		A	J$^\pi$: 752.3γ to (5/2$^+$); in agreement with shell model calculations (2002Re28). configuration: $\pi d_{5/2}\otimes 2^+$ multiplet.
832.21[f] *21*	(7/2$^+$)		A C	J$^\pi$: 832.2γ D+Q to (5/2$^+$), systematics of similar states in odd-A Sb isotopes. configuration: $\pi g_{7/2}$, possibly with $\pi d_{5/2}\otimes 2^+$ admixtures.
1100.76[e] *21*	(9/2$^+$)		A C	J$^\pi$: 1100.7γ E2 to (5/2$^+$), band assignment. configuration: $\pi d_{5/2}\otimes 2^+$ multiplet.
1330.8 *4*	(3/2,5/2,7/2)		A	J$^\pi$: 1330.8γ to (5/2$^+$); direct population in in ^{109}Te ec decay (J^π=5/2$^+$).
1341.04[f] *21*	(9/2$^+$)		C	J$^\pi$: 1341.1γ (E2) to (5/2$^+$); band assignment.
1500.9[h] *4*	(11/2$^-$)		C	J$^\pi$: 400.2γ E1 to (9/2$^+$), band assignment.
1591.8 *6*	(3/2,5/2$^+$)		A	J$^\pi$: 1189.8γ to (1/2$^+$); direct population in in ^{109}Te ec decay (J^π=5/2$^+$).
1619.5? *4*	(3/2,5/2,7/2)		A	J$^\pi$: 1619.5γ to (5/2$^+$); direct population in in ^{109}Te ec decay (J^π=5/2$^+$).
1837.4 *4*	(3/2,5/2$^+$)		A	J$^\pi$: 1435.4γ to (1/2$^+$); direct population in in ^{109}Te ec decay (J^π=5/2$^+$).
1854.66[f] *23*	(11/2$^+$)		C	J$^\pi$: 513.4γ M1+E2 to (9/2$^+$), band assignment.
1969.1 *5*			A	
2019?			A	
2045.5? *4*			A	
2092.1[e] *3*	(13/2$^+$)		C	J$^\pi$: 991.4γ E2 to (9/2$^+$), band assignment.
2106.3 *5*			A	
2193.89[f] *25*	(13/2$^+$)		C	J$^\pi$: 852.9γ E2 to (9/2$^+$), 339.1γ M1+E2 to (11/2$^+$), band assignment.
2271.6[f] *3*	(15/2$^+$)		C	J$^\pi$: 179.5γ M1 to (13/2$^+$), 416.7γ (E2) to (11/2$^+$); band assignment.
2580.6[h] *4*	(15/2$^-$)		C	J$^\pi$: 1079.7γ E2 to (11/2$^-$); band assignment.
2650.5[f] *4*	(17/2$^+$)		C	J$^\pi$: 379.1γ M1(+E2) to (15/2$^+$), band assignment.
2820.9[c] *7*	(17/2$^+$)		C	J$^\pi$: 241γ to (15/2$^-$), 549γ to (15/2$^+$); band assignment.
2826.7 *8*	(17/2$^-$)		C	J$^\pi$: 1417γ from (21/2$^-$), 176γ to (17/2$^+$).
3214.7[c] *7*	(19/2$^+$)		C	J$^\pi$: 394γ to (17/2$^+$); band assignment.
3300.9[e] *4*	(17/2$^+$)		C	J$^\pi$: 1029.4γ to (15/2$^+$),1208.8γ to (13/2$^+$); band assignment.
3377.4 *4*	(19/2$^+$)		C	J$^\pi$: 1105.6γ (E2) to (15/2$^+$).
3487.9[h] *4*	(19/2$^-$)		C	J$^\pi$: 907.4γ E2 to (15/2$^-$), 837.3γ D to (17/2$^+$); band assignment.
3534.7[c] *7*	(21/2$^+$)		C	J$^\pi$: 320.1γ M1(+E2) to (19/2$^+$); band assignment.

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Adopted Levels, Gammas (continued)

^{109}Sb Levels (continued)

E(level)[†]	J^π[‡]	$T_{1/2}$	XREF	Comments
3589.3 9	(19/2$^-$)		C	J^π: 1009γ to (15/2$^-$).
3750.4[g] 4	(21/2$^-$)		C	J^π: 262.5γ M1+E2 to (19/2$^-$), 371.1γ E1 to (19/2$^+$), band assignment.
3761.7 4	(21/2$^+$)		C	J^π: 1111.3γ (E2) to (17/2$^+$), 384.1γ to (19/2$^+$).
3805.3 9	(19/2$^-$)		C	J^π: 1224γ to (15/2$^-$).
3873.6[c] 7	(23/2$^+$)		C	J^π: 338.9γ (M1+E2) to (21/2$^+$), 658.8γ to (19/2$^+$); band assignment.
3930.3[g] 4	(23/2$^-$)	84 ps 7	C	J^π: 179.9γ (M1) to (21/2$^-$); band assignment. $T_{1/2}$: from Recoil Distance method (1994Is01).
4067.5 5	(19/2$^-$)		C	J^π: 176.3γ from (21/2$^-$).
4234.0[c] 8	(25/2$^+$)		C	J^π: 360.5γ M1(+E2) to (23/2$^+$), 699.4γ to (21/2$^+$); band assignment.
4243.8 4	(21/2$^-$)		C	J^π: 756.0γ (M1+E2) to (19/2$^-$).
4245.4 4	(21/2$^-$)		C	J^π: 757.4γ (M1+E2) to (19/2$^-$).
4456.0 7	(23/2$^-$)		C	J^π: 968γ to (19/2$^-$), 706γ to (21/2$^-$); proposed by 1998LaZU in ^{54}Fe(^{58}Ni,3pγ) based on angular correlation.
4484.2[g] 5	(25/2$^-$)		C	J^π: 554.0γ (M1+E2) to (23/2$^-$); band assignment.
4487.0[d] 5	(23/2$^-$)		C	J^π: 241.5γ and 243.4γ M1(+E2) to (21/2$^-$); band assignment.
4600.8 12	(27/2$^-$)		C	J^π: 2030γ from (31/2$^-$); proposed by 1996Sc29 in ^{54}Fe(^{58}Ni,3pγ).
4626.4[c] 8	(27/2$^+$)		C	J^π: 392.4γ M1(+E2) to (25/2$^+$), 752.6γ to (23/2$^+$); band assignment.
4684.1 9	(23/2$^-$)		C	J^π: 878γ to (19/2$^-$); proposed by 1998LaZU in ^{54}Fe(^{58}Ni,3pγ) based on angular correlation data.
4805.8[d] 5	(25/2$^-$)		C	J^π: 318.4γ M1(+E2) to (23/2$^-$).
4959.5 7	(25/2$^-$)		C	J^π: 275γ to (23/2$^-$); proposed by 1998LaZU in ^{54}Fe(^{58}Ni,3pγ) based on angular correlation data.
4980.4[g] 5	(27/2$^-$)		C	J^π: 1050.0γ E2 to (23/2$^-$), 496.3γ to (25/2$^-$); band assignment.
5043.4[c] 8	(29/2$^+$)		C	J^π: 416.9γ (M1+E2) to (27/2$^+$),809.4γ to (25/2$^+$); band assignment.
5165.2[d] 5	(27/2$^-$)		C	J^π: 359.1γ M1(+E2) to (25/2$^-$), 678.5γ to (23/2$^-$); band assignment.
5189.7 9	(27/2$^-$)		C	J^π: 384γ to (25/2$^-$); proposed by 1998LaZU in ^{54}Fe(^{58}Ni,3pγ) based on angular correlation data.
5487.9 8	(31/2$^+$)		C	J^π: 444.5γ to (29/2$^+$), 862γ to (27/2$^+$); proposed by 1996Sc29 in ^{54}Fe(^{58}Ni,3pγ).
5488.1[g] 5	(29/2$^-$)		C	J^π: 1003.8γ (E2) to (25/2$^-$), 508γ to (27/2$^-$); band assignment.
5505.4[c] 10	(31/2$^+$)		C	J^π: 462γ to (29/2$^+$), 879γ to (27/2$^+$); band assignment.
5561.7 9	(27/2$^-$)		C	J^π: 756γ to (25/2$^-$); proposed by 1998LaZU in ^{54}Fe(^{58}Ni,3pγ) based on angular correlation data.
5568.9[d] 5	(29/2$^-$)		C	J^π: 403.6γ (M1+E2) to (27/2$^-$), 763γ to (25/2$^-$); band assignment.
5716.8 12			C	Additional information 1.
5798.8 12			C	Additional information 2.
5824.0[g] 5	(31/2$^-$)		C	J^π: 843.7γ to (27/2$^-$); band assignment.
5892.6 7	(29/2$^-$)		C	J^π: 331γ to (27/2$^-$), 933γ to (25/2$^-$); proposed by 1998LaZU in ^{54}Fe(^{58}Ni,3pγ) based on angular correlation data.
5976.1 9	(31/2$^-$)		C	J^π: 407γ to (29/2$^-$); proposed by 1998LaZU in ^{54}Fe(^{58}Ni,3pγ) based on angular correlation data.
5983.4[c] 11	(33/2$^+$)		C	J^π: 478γ to (31/2$^+$), 940γ to (29/2$^+$); band assignment.
5985.2 8	(33/2$^+$)		C	J^π: 497γ to (31/2$^+$), 942γ to (29/2$^+$); proposed by 1996Sc29 in ^{54}Fe(^{58}Ni,3pγ).
5997.1[d] 5	(31/2$^-$)		C	J^π: 428.2γ (M1+E2) to (29/2$^-$), 832.1γ to (27/2$^-$); band assignment.
6157.3 9	(31/2$^-$)		C	J^π: 1177γ to (27/2$^-$); proposed by 1998LaZU in ^{54}Fe(^{58}Ni,3pγ) based on angular correlation data.
6335.6[g] 5	(33/2$^-$)		C	J^π: 511.6γ to (31/2$^-$); band assignment.
6451.6[d] 6	(33/2$^-$)		C	J^π: 454.4γ to (31/2$^-$), 882.4γ to (29/2$^-$); band assignment.
6508.4[c] 12	(35/2$^+$)		C	J^π: 525γ to (33/2$^+$), 1003γ to (31/2$^+$); band assignment.
6511.1 9	(35/2$^+$)		C	J^π: 526γ to (33/2$^+$), 1023γ to (31/2$^+$); proposed by 1996Sc29 in ^{54}Fe(^{58}Ni,3pγ).
6570.2 13			C	
6630.9 7	(31/2$^-$)		C	J^π: 738γ to (29/2$^-$), 2030γ to (27/2$^-$); from 1996Sc29 and 1998LaZU in ^{54}Fe(^{58}Ni,3pγ).
6668.1[g] 10	(35/2$^-$)		C	J^π: 844γ to (31/2$^-$); band assignment.

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Adopted Levels, Gammas (continued)

^{109}Sb Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$	XREF	Comments
6840.2 *14*	(31/2⁻)		C	Jπ: proposed by 1996Sc29 in ^{54}Fe(^{58}Ni,3pγ).
6844.2 *10*	(31/2⁻)		C	Jπ: proposed by 1998LaZU in ^{54}Fe(^{58}Ni,3pγ).
6915.3[d] *6*	(35/2⁻)		C	Jπ: 463.3γ to (33/2⁻), 918.6γ to (31/2⁻); band assignment.
6949.2 *13*			C	
7041.4[c] *13*	(37/2⁺)		C	Jπ: 533γ to (35/2⁺), 1058γ to (33/2⁺); band assignment.
7349.6[g] *12*	(37/2⁻)		C	Jπ: 1014γ to (33/2⁻); band assignment.
7437.3[#] *7*	(35/2⁻)		C	Jπ: 806γ to (31/2⁻); band assignment.
7465.3 *14*	(35/2⁻)		C	Jπ: 1308γ to (31/2⁻); proposed by 1998LaZU in ^{54}Fe(^{58}Ni,3pγ) based on angular correlation data.
7482.5[d] *9*	(37/2⁻)		C	Jπ: 567γ to (35/2⁻), 1031γ to (33/2⁻); band assignment.
7606.2 *10*	(35/2⁻)		C	Jπ: 762γ to (31/2⁻); proposed by 1998LaZU in ^{54}Fe(^{58}Ni,3pγ) based on angular correlation data.
7683.8[d] *10*	(39/2⁻)		C	Jπ: 1015.7γ to (35/2⁻); band assignment.
8228.2[#] *10*	(39/2⁻)	449 fs *+61−49*	C	Jπ: 791γ to (35/2⁻); band assignment.
9089.2[#] *15*	(43/2⁻)	283 fs *+32−23*	C	Jπ: 861γ to (39/2⁻); band assignment.
9089.2+x[@]	(43/2⁺)		C	Additional information 3. Jπ: band assignment.
10058.0+x[@] *10*	(47/2⁺)		C	Jπ: 968γ to (43/2⁺); band assignment.
10066.2[#] *18*	(47/2⁻)	175 fs *+22−19*	C	Jπ: 977γ to (43/2⁻); band assignment.
10066.2+w[b]	(49/2⁻)		C	Additional information 4. Jπ: band assignment.
10066.2+y[&]	(49/2⁺)		C	Additional information 5. Jπ: band assignment.
11093.0+x[@] *15*	(51/2⁺)		C	Jπ: 1035γ to (47/2⁺); band assignment.
11159.2[#] *20*	(51/2⁻)	103 fs *10*	C	Jπ: 1093γ to (47/2⁻); band assignment.
11169.0+y[&] *10*	(53/2⁺)		C	Jπ: 1102γ to (49/2⁺); band assignment.
11350.0+w[b] *10*	(53/2⁻)		C	Jπ: 1283γ to (49/2⁻); band assignment.
12216.0+x[@] *18*	(55/2⁺)		C	Jπ: 1123γ to (51/2⁺); band assignment.
12362.3[#] *23*	(55/2⁻)	74 fs *+8−10*	C	Jπ: 1203γ to (51/2⁻); band assignment.
12362.3+z[a]	(59/2⁺)		C	Additional information 6. Jπ: band assignment.
12394.0+y[&] *15*	(57/2⁺)		C	Jπ: 1225γ to (53/2⁺); band assignment.
12879.0+w[b] *15*	(57/2⁻)		C	Jπ: 1529γ to (53/2⁻); band assignment.
13439.0+x[@] *20*	(59/2⁺)		C	Jπ: 1223γ to (55/2⁺); band assignment.
13688.3[#] *25*	(59/2⁻)	43 fs *+4−6*	C	Jπ: 1326γ to (55/2⁻); band assignment.
13704.0+z[a] *10*	(63/2⁺)		C	Jπ: 1341γ to (59/2⁺); band assignment.
13708.0+y[&] *18*	(61/2⁺)		C	Jπ: 1314γ to (57/2⁺); band assignment.
14640.0+w[b] *18*	(61/2⁻)		C	Jπ: 1761γ to (57/2⁻); band assignment.
14781.0+x[@] *23*	(63/2⁺)		C	Jπ: 1342γ to (59/2⁺); band assignment.
15114.0+y[&] *20*	(65/2⁺)		C	Jπ: 1406γ to (61/2⁺); band assignment.
15164[#] *3*	(63/2⁻)	35 fs *6*	C	Jπ: 1476γ to (59/2⁻); band assignment.
15233.0+z[a] *15*	(67/2⁺)		C	Jπ: 1529γ to (63/2⁺); band assignment.
16284.0+x[@] *25*	(67/2⁺)		C	Jπ: 1503γ to (63/2⁺); band assignment.
16577.1+w[b] *20*	(65/2⁻)		C	Jπ: 1937γ to (61/2⁻); band assignment.
16624.0+y[&] *23*	(69/2⁺)		C	Jπ: 1510γ to (65/2⁺); band assignment.
16812[#] *3*	(67/2⁻)	21 fs *5*	C	Jπ: 1648γ to (63/2⁻); band assignment.
16957.0+z[a] *18*	(71/2⁺)		C	Jπ: 1724γ to (67/2⁺); band assignment.
17962+x[@] *3*	(71/2⁺)		C	Jπ: 1678γ to (67/2⁺); band assignment.

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Adopted Levels, Gammas (continued)

^{109}Sb Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$	XREF	Comments
18273.1+y[&] 25	(73/2+)		C	J^{π}: 1649γ to (69/2+); band assignment.
18637.1+w[b] 23	(69/2−)		C	J^{π}: 2060γ to (65/2−); band assignment.
18661[#] 3	(71/2−)	20 fs 5	C	J^{π}: 1849γ to (67/2−); band assignment.
18886.1+z[a] 20	(75/2+)		C	J^{π}: 1929γ to (71/2+); band assignment.
19842+x[@] 3	(75/2+)		C	J^{π}: 1880γ to (71/2+); band assignment.
20124+y[&] 3	(77/2+)		C	J^{π}: 1851γ to (73/2+); band assignment.
20758[#] 4	(75/2−)	13 fs +4−3	C	J^{π}: 2097γ to (71/2−); band assignment.
21044.1+z[a] 23	(79/2+)		C	J^{π}: 2158γ to (75/2+); band assignment.
21958+x[@] 3	(79/2+)		C	J^{π}: 2116γ to (75/2+); band assignment.
22242+y[&] 3	(81/2+)		C	J^{π}: 2118γ to (77/2+); band assignment.
23143[#] 4	(75/2−)		C	J^{π}: 2385γ to (71/2−); band assignment.
23504.1+z[a] 25	(83/2+)		C	J^{π}: 2460γ to (79/2+); band assignment.
24374+x[@] 4	(83/2+)		C	J^{π}: 2416γ to (79/2+); band assignment.
24662+y[&] 3	(85/2+)		C	J^{π}: 2420γ to (81/2+); band assignment.
25880[#] 4	(83/2−)		C	J^{π}: 2737γ to (79/2−); band assignment.
26314+z[a] 3	(87/2+)		C	J^{π}: 2810γ to (83/2+); band assignment.
27196+x[@] 4	(87/2+)		C	J^{π}: 2822γ to (83/2+); band assignment.
27394+y[&] 4	(89/2+)		C	J^{π}: 2732γ to (85/2+); band assignment.

† From a least-squares fit to Eγ.

‡ From deduced γ-ray multipolarities, decay pattern and apparent band structures.

Band(A): Band 1; Configuration=$\pi(h_{11/2})^{+1}[(d_{5/2}g_{7/2})^{+2}(g_{9/2})^{-2}]$, at high spin $\pi(h_{11/2})^{+1}[(d_{5/2}g_{7/2})^{+2}(g_{9/2})^{-2}]\otimes\nu[(h_{11/2})^2(d_{5/2}g_{7/2})^6]$; Terminating state J^{π}=(83/2−).

@ Band(B): Band 2, α=−1/2; Configuration=$\pi(h_{11/2})^{+1}[(d_{5/2}g_{7/2})^{+2}(g_{9/2})^{-2}]\otimes\nu[(h_{11/2})^{+3}(g_{7/2}d_{5/2})^{+5}]$.

& Band(C): Band 3, α=+1/2; Configuration=$\pi(h_{11/2})^{+1}[(d_{5/2}g_{7/2})^{+2}(g_{9/2})^{-2}]\otimes\nu[(h_{11/2})^{+3}(g_{7/2}d_{5/2})^{+5}]$.

a Band(D): Band 4; Configuration=$\pi[(h_{11/2})^{+2}(d_{5/2}g_{7/2})^{+1}(g_{9/2})^{-2}]\otimes\nu[(h_{11/2})^{+2}(d_{5/2}g_{7/2})^{+6}]$; Terminating state J^{π}=(87/2+).

b Band(E): Band 5; Configuration=$\pi[(h_{11/2})^{+1}(d_{5/2}g_{7/2})^{+1}(g_{9/2})^{-1}]\otimes\nu[(h_{11/2})^{+2}(g_{7/2}d_{5/2})^{+6}]$.

c Band(F): Band 6; Configuration=$\pi[(d_{5/2}g_{7/2})^{+2}(g_{9/2})^{-1}]$.

d Band(G): Band 7; Configuration=$\pi[(d_{5/2}g_{7/2})^{+2}(g_{9/2})^{-1}]\otimes J^{\pi-}$, where $J^{\pi-}$= 5− or 7− are the two-neutron states of the ^{108}Sn core.

e Band(H): Band 8; Configuration=$\pi d^{+1}_{5/2}\otimes J^{\pi}$(^{108}Sn core).

f Band(I): Band 9; Configuration=$\pi g^{+1}_{7/2}\otimes J^{\pi}$(^{108}Sn core).

g Band(J): band 10.

h Band(K): Band 11; Configuration=$\pi h^{+1}_{11/2}\otimes J^{\pi}$(^{108}Sn core).

Adopted Levels, Gammas (continued)

$\gamma(^{109}Sb)$

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[#]	δ[#&]	α[@]	Comments
402.0	(1/2$^+$)	402.0[‡] *4*	100[‡]	0	(5/2$^+$)				
752.3	(3/2$^+$)	752.3[‡] *4*	100[‡]	0	(5/2$^+$)				
832.21	(7/2$^+$)	832.2 *3*	100	0	(5/2$^+$)	D+Q	≈−0.1		Mult.: A_2/A_0=−0.34 *5*, A_4/A_0=0.02 *9* (1994Is01), both for 832.1γ and 832.2γ.
1100.76	(9/2$^+$)	268.6 *3*	3 *1*	832.21	(7/2$^+$)	(M1)		0.0417	α(K)=0.0361 *6*; α(L)=0.00452 *7*; α(M)=0.000894 *13* α(N)=0.0001726 *25*; α(O)=1.710×10^{-5} *25* Mult.: A_2/A_0=−0.19 *8*, A_4/A_0=0.15 *12* (1994Is01).
		1100.7 *3*	100	0	(5/2$^+$)	E2		1.11×10^{-3}	α(K)=0.000961 *14*; α(L)=0.0001183 *17*; α(M)=2.33×10^{-5} *4* α(N)=4.49×10^{-6} *7*; α(O)=4.42×10^{-7} *7*; α(IPF)=4.74×10^{-7} *9* Mult.: A_2/A_0=0.27 *2*, A_4/A_0=−0.08 *4* (1994Is01), Electric Multipole (from Polarization anisotropy 1994Is01).
1330.8	(3/2,5/2,7/2)	1330.8[‡] *4*	100[‡]	0	(5/2$^+$)				
1341.04	(9/2$^+$)	508.6 *3*	21 *7*	832.21	(7/2$^+$)				
		1341.1 *3*	100 *31*	0	(5/2$^+$)	(E2)		7.67×10^{-4}	α(K)=0.000639 *9*; α(L)=7.74×10^{-5} *11*; α(M)=1.523×10^{-5} *22* α(N)=2.94×10^{-6} *5*; α(O)=2.91×10^{-7} *4*; α(IPF)=3.19×10^{-5} *5* Mult.: A_2/A_0=0.25 *8*, A_4/A_0=−0.20 *12* (1994Is01).
1500.9	(11/2$^-$)	400.2 *3*	100	1100.76	(9/2$^+$)	E1		0.00431	α(K)=0.00375 *6*; α(L)=0.000455 *7*; α(M)=8.94×10^{-5} *13* α(N)=1.718×10^{-5} *25*; α(O)=1.679×10^{-6} *24* Mult.: A_2/A_0=−0.22 *3*, A_4/A_0=+0.05 *7* (1994Is01), Electric Multipole (from Polarization anisotropy 1994Is01).
1591.8	(3/2,5/2$^+$)	1189.8[‡] *4*	100[‡]	402.0	(1/2$^+$)				
		1592[‡a]	≤91[‡]	0	(5/2$^+$)				
1619.5?	(3/2,5/2,7/2)	1619.5[‡] *4*	100[‡]	0	(5/2$^+$)				
1837.4	(3/2,5/2$^+$)	1085.0[‡] *4*	≤67[‡]	752.3	(3/2$^+$)				
		1435.4[‡] *4*	100[‡] *60*	402.0	(1/2$^+$)				
1854.66	(11/2$^+$)	513.4 *3*	100 *33*	1341.04	(9/2$^+$)	M1+E2	≈+0.28	≈0.00803	α(K)≈0.00696; α(L)≈0.000862; α(M)≈0.0001700 α(N)≈3.28×10^{-5}; α(O)≈3.25×10^{-6} Mult.: A_2/A_0=0.15 *3*, A_4/A_0=+0.04 *7* (1994Is01), Magnetic Multipole (from Polarization anisotropy 1994Is01).
		753.6 *3*	27 *13*	1100.76	(9/2$^+$)				
		1022.6 *3*	33 *13*	832.21	(7/2$^+$)				
1969.1		1136.9[‡] *4*	100[‡] *24*	832.21	(7/2$^+$)				
		1969[‡a]	≤48[‡]	0	(5/2$^+$)				

$^{109}_{51}Sb_{58}$-5

$\gamma(^{109}Sb)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[#]	δ[#&]	α[@]	Comments
2019?		918[‡][a]	≤100[‡]	1100.76	(9/2$^+$)				
		1186[‡][a]	100[‡] *30*	832.21	(7/2$^+$)				
2045.5?		2045.5[‡][a] *4*	100[‡]	0	(5/2$^+$)				
2092.1	(13/2$^+$)	237[a]		1854.66	(11/2$^+$)				
		991.4 *3*	100	1100.76	(9/2$^+$)	E2		1.39×10^{-3}	α(K)=0.001206 *17*; α(L)=0.0001498 *21*; α(M)=2.95×10^{-5} *5* α(N)=5.69×10^{-6} *8*; α(O)=5.57×10^{-7} *8* Mult.: A_2/A_0=0.29 *3*, A_4/A_0=−0.10 *7* (1994Is01), Electric Multipole (from Polarization anisotropy 1994Is01).
2106.3		1274.1[‡][a] *4*	100[‡]	832.21	(7/2$^+$)				
2193.89	(13/2$^+$)	339.1 *3*	100 *30*	1854.66	(11/2$^+$)	M1+E2	≈+0.1	≈0.0228	α(K)≈0.0198; α(L)≈0.00247; α(M)≈0.000487 α(N)≈9.41×10^{-5}; α(O)≈9.33×10^{-6} Mult.: A_2/A_0=−0.10 *3*, A_4/A_0=0.04 *7* (1994Is01), both for 338.9γ and 339.1γ, Magnetic Multipole (from Polarization anisotropy 1994Is01).
		852.9 *3*	100 *10*	1341.04	(9/2$^+$)	E2		0.00196	α(K)=0.001694 *24*; α(L)=0.000214 *3*; α(M)=4.22×10^{-5} *6* α(N)=8.12×10^{-6} *12*; α(O)=7.91×10^{-7} *11* Mult.: A_2/A_0=0.26 *5*, A_4/A_0=−0.02 *9* (1994Is01), Electric Multipole (from Polarization anisotropy 1994Is01).
		1093.3 *3*	80 *15*	1100.76	(9/2$^+$)	(E2)		1.12×10^{-3}	α(K)=0.000975 *14*; α(L)=0.0001200 *17*; α(M)=2.37×10^{-5} *4* α(N)=4.56×10^{-6} *7*; α(O)=4.48×10^{-7} *7* Mult.: A_2/A_0=0.11 *8*, A_4/A_0=−0.01 *12* (1994Is01).
2271.6	(15/2$^+$)	77.8 *3*	90 *25*	2193.89	(13/2$^+$)	(M1)		1.267 *23*	α(K)=1.092 *20*; α(L)=0.141 *3*; α(M)=0.0279 *5* α(N)=0.00539 *10*; α(O)=0.000530 *10* Mult.: A_2/A_0=−0.21 *3*, A_4/A_0=0.04 *7* (1994Is01).
		179.5 *3*	100 *30*	2092.1	(13/2$^+$)	(M1)		0.1219	α(K)=0.1053 *16*; α(L)=0.01338 *20*; α(M)=0.00265 *4* α(N)=0.000511 *8*; α(O)=5.05×10^{-5} *8* Mult.: A_2/A_0=−0.27 *3*, A_4/A_0=−0.02 *7* (1994Is01) both for 179.5γ and 179.9γ.
		416.7 *3*	20 *5*	1854.66	(11/2$^+$)	(E2)		0.01322	α(K)=0.01122 *16*; α(L)=0.001608 *23*; α(M)=0.000321 *5* α(N)=6.09×10^{-5} *9*; α(O)=5.64×10^{-6} *8* Mult.: A_2/A_0=−0.12 *3*, A_4/A_0=0.07 *7* (1994Is01) both for 416.7γ and 416.9γ.
2580.6	(15/2$^-$)	488.6 *3*	9 *4*	2092.1	(13/2$^+$)				
		1079.7 *3*	100 *7*	1500.9	(11/2$^-$)	E2		1.15×10^{-3}	α(K)=0.001002 *14*; α(L)=0.0001234 *18*; α(M)=2.43×10^{-5} *4* α(N)=4.69×10^{-6} *7*; α(O)=4.61×10^{-7} *7* Mult.: A_2/A_0=0.29 *2*, A_4/A_0=−0.06 *4* (1994Is01), Electric Multipole (from Polarization anisotropy 1994Is01).

$^{109}_{51}Sb_{58}$-6

Adopted Levels, Gammas (continued)

γ(^{109}Sb) (continued)

E_i(level)	J^{π}_i	E_γ[†]	I_γ[†]	E_f	J^{π}_f	Mult.[#]	δ[#&]	α[@]	Comments
2650.5	(17/2+)	379.1 *3*	100	2271.6	(15/2+)	M1(+E2)	≈−0.1	≈0.01719	α(K)≈0.01490; α(L)≈0.00185; α(M)≈0.000366 α(N)≈7.06×10^{-5}; α(O)≈7.00×10^{-6} Mult.: A_2/A_0=−0.29 *3*, A_4/A_0=0.04 *4* (1994Is01), Magnetic Multipole (from Polarization anisotropy 1994Is01).
2820.9	(17/2+)	241 *1*		2580.6	(15/2−)				
		549 *1*		2271.6	(15/2+)				
2826.7	(17/2−)	176 *1*	100	2650.5	(17/2+)				
3214.7	(19/2+)	394 *1*		2820.9	(17/2+)				
		564 *1*		2650.5	(17/2+)				
3300.9	(17/2+)	1029.4 *3*	33 *17*	2271.6	(15/2+)				
		1208.8 *3*	100	2092.1	(13/2+)				
3377.4	(19/2+)	727.1 *3*	7 *3*	2650.5	(17/2+)				
		1105.6 *3*	100 *10*	2271.6	(15/2+)	(E2)		1.10×10^{-3}	α(K)=0.000952 *14*; α(L)=0.0001171 *17*; α(M)=2.31×10^{-5} *4* α(N)=4.45×10^{-6} *7*; α(O)=4.38×10^{-7} *7*; α(IPF)=5.66×10^{-7} *10* Mult.: A_2/A_0=0.30 *3*, A_4/A_0=−0.21 *7* (1994Is01).
3487.9	(19/2−)	187.0 *3*	15.4 *26*	3300.9	(17/2+)				
		837.3 *3*	18 *5*	2650.5	(17/2+)	(E1)			Mult.: A_2/A_0=−0.18 *8*, A_4/A_0=+0.16 *12* (1994Is01).
		907.4 *3*	100 *21*	2580.6	(15/2−)	E2		1.70×10^{-3}	α(K)=0.001469 *21*; α(L)=0.000184 *3*; α(M)=3.64×10^{-5} *5* α(N)=7.00×10^{-6} *10*; α(O)=6.83×10^{-7} *10* Mult.: A_2/A_0=0.31 *5*, A_4/A_0=−0.16 *9* (1994Is01), Electric Multipole (from Polarization anisotropy 1994Is01).
3534.7	(21/2+)	320.1 *3*		3214.7	(19/2+)	M1(+E2)	≈+0.1	≈0.0265	α(K)≈0.0229; α(L)≈0.00287; α(M)≈0.000566 α(N)≈0.0001094; α(O)≈1.083×10^{-5} Mult.: A_2/A_0=−0.10 *3*, A_4/A_0=0.07 *7* (1994Is01), both for 318.4γ and 320.1γ , Magnetic Multipole (from Polarization anisotropy 1994Is01).
		714 *1*		2820.9	(17/2+)				
3589.3	(19/2−)	1009 *1*	100	2580.6	(15/2−)				
3750.4	(21/2−)	262.5 *3*	100 *6*	3487.9	(19/2−)	M1+E2	≈−0.1	≈0.0444	α(K)≈0.0384; α(L)≈0.00484; α(M)≈0.000956 α(N)≈0.000185; α(O)≈1.82×10^{-5} Mult.: A_2/A_0=−0.35 *3*, A_4/A_0=0.04 *7* (1994Is01), Magnetic Multipole (from Polarization anisotropy 1994Is01).
		373.1 *3*	55 *6*	3377.4	(19/2+)	E1		0.00513	α(K)=0.00446 *7*; α(L)=0.000543 *8*; α(M)=0.0001067 *15* α(N)=2.05×10^{-5} *3*; α(O)=2.00×10^{-6} *3* Mult.: A_2/A_0=−0.21 *3*, A_4/A_0=0.03 *7* (1994Is01), Electric Multipole (from Polarization anisotropy 1994Is01).
		1100[a]		2650.5	(17/2+)				
3761.7	(21/2+)	384.1 *3*	17 *17*	3377.4	(19/2+)				
		1111.3 *3*	100 *50*	2650.5	(17/2+)	(E2)		1.09×10^{-3}	α(K)=0.000942 *14*; α(L)=0.0001158 *17*; α(M)=2.28×10^{-5} *4* α(N)=4.40×10^{-6} *7*; α(O)=4.33×10^{-7} *6*; α(IPF)=6.91×10^{-7} *12* Mult.: A_2/A_0=0.25 *8*, A_4/A_0=−0.25 *12* (1994Is01).
3805.3	(19/2−)	1224 *1*	100	2580.6	(15/2−)				
3873.6	(23/2+)	338.9 *3*	100 *31*	3534.7	(21/2+)	(M1+E2)	≈+0.1	≈0.0229	α(K)≈0.0198; α(L)≈0.00247; α(M)≈0.000488

$^{109}_{51}Sb_{58}$-7

$\gamma(^{109}Sb)$ (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.#	δ#&	α@	Comments
									α(N)≈9.43×10^{-5}; α(O)≈9.34×10^{-6} Mult.: A_2/A_0=−0.10 *3*, A_4/A_0=0.04 *7* (1994Is01), both for 338.9γ and 339.1γ.
3873.6	(23/2$^+$)	658.8 *3*	19 *6*	3214.7	(19/2$^+$)				
3930.3	(23/2$^-$)	168.6 *3*	9.1 *22*	3761.7	(21/2$^+$)	[E1]		0.0433	α(K)=0.0376 *6*; α(L)=0.00468 *7*; α(M)=0.000919 *14* α(N)=0.000175 *3*; α(O)=1.669×10^{-5} *25* B(E1)(W.u.)=5.5×10^{-5} *21*
		179.9 *3*	100 *30*	3750.4	(21/2$^-$)	(M1)		0.1212	α(K)=0.1047 *16*; α(L)=0.01330 *20*; α(M)=0.00263 *4* α(N)=0.000508 *8*; α(O)=5.02×10^{-5} *8* B(M1)(W.u.)=0.037 *16* Mult.: A_2/A_0=−0.27 *3*, A_4/A_0=0.02 *7* (1994Is01), for both 179.5γ and 179.9γ, mixed Multipole (from Polarization anisotropy 1994Is01).
4234.0	(25/2$^+$)	360.5 *3*	100 *30*	3873.6	(23/2$^+$)	M1(+E2)	≈+0.1	≈0.0195	α(K)≈0.01692; α(L)≈0.00211; α(M)≈0.000416 α(N)≈8.04×10^{-5}; α(O)≈7.97×10^{-6} Mult.: A_2/A_0=−0.10 *3*, A_4/A_0=0.06 *7* (1994Is01), both for 359.1- and 360.5 γ , Magnetic Multipole (from Polarization anisotropy 1994Is01).
		699.4 *3*	29 *12*	3534.7	(21/2$^+$)				
4243.8	(21/2$^-$)	176.3 *3*	29 *14*	4067.5	(19/2$^-$)				
		756.0 *3*	100 *43*	3487.9	(19/2$^-$)	(M1+E2)	≈−0.1	≈0.00321	α(K)≈0.00279; α(L)≈0.000338; α(M)≈6.67×10^{-5} α(N)≈1.289×10^{-5}; α(O)≈1.286×10^{-6} Mult.: A_2/A_0=−0.42 *5*, A_4/A_0=0.04 *9* (1994Is01) both for 756.0γ and 757.4γ.
		1417 *1*		2826.7	(17/2$^-$)				
4245.4	(21/2$^-$)	757.4 *3*	100	3487.9	(19/2$^-$)	(M1+E2)		0.00320	α(K)=0.00278 *4*; α(L)=0.000337 *5*; α(M)=6.65×10^{-5} *10* α(N)=1.285×10^{-5} *18*; α(O)=1.282×10^{-6} *18* Mult.: A_2/A_0=−0.42 *5*, A_4/A_0=0.04 *9* (1994Is01) for both 756.0γ and 757.4γ.
4456.0	(23/2$^-$)	706 *1*		3750.4	(21/2$^-$)				
		968 *1*		3487.9	(19/2$^-$)				
4484.2	(25/2$^-$)	554.0 *3*	100	3930.3	(23/2$^-$)	(M1+E2)	≈−0.1	≈0.00672	α(K)≈0.00583; α(L)≈0.000715; α(M)≈0.0001411 α(N)≈2.73×10^{-5}; α(O)≈2.71×10^{-6} Mult.: A_2/A_0=−0.42 *5*, A_4/A_0=0.04 *9* (1994Is01), mixed Multipole (from Polarization anisotropy 1994Is01).
4487.0	(23/2$^-$)	241.5 *3*	75 *13*	4245.4	(21/2$^-$)	M1(+E2)	≈+0.1	≈0.0553	α(K)≈0.0478; α(L)≈0.00605; α(M)≈0.001196 α(N)≈0.000231; α(O)≈2.28×10^{-5} Mult.: A_2/A_0=−0.07 *3*, A_4/A_0=0.04 *7* (1994Is01) , for both 241.5γ and 243.3γ , Magnetic Multipole (from Polarization anisotropy 1994Is01).
		243.3 *3*	100 *13*	4243.8	(21/2$^-$)	M1(+E2)	≈+0.1	≈0.0542	α(K)≈0.0469; α(L)≈0.00593; α(M)≈0.001172 α(N)≈0.000226; α(O)≈2.23×10^{-5} Mult.: A_2/A_0=−0.07 *3*, A_4/A_0=0.04 *7* (1994Is01), for both 241.5γ

$^{109}_{51}Sb_{58}$-8

γ(^{109}Sb) (continued)

E_i(level)	J^π_i	E_γ †	I_γ †	E_f	J^π_f	Mult.#	δ#&	α@	Comments
									and 243.3γ, Magnetic Multipole (from Polarization anisotropy 1994Is01).
4626.4	(27/2$^+$)	392.4 *3*	100 *20*	4234.0	(25/2$^+$)	M1(+E2)	≈+0.1	≈0.01576	α(K)≈0.01366; α(L)≈0.001695; α(M)≈0.000335 α(N)≈6.47×10^{-5}; α(O)≈6.42×10^{-6} Mult.: A_2/A_0=−0.14 *5*, A_4/A_0=0.14 *9* (1994Is01), Magnetic Multipole (from Polarization anisotropy 1994Is01).
		752.6 *3*	27 *13*	3873.6	(23/2$^+$)				
4684.1	(23/2$^-$)	878 *1*		3805.3	(19/2$^-$)				
		1095 *1*		3589.3	(19/2$^-$)				
4805.8	(25/2$^-$)	318.4 *3*	100	4487.0	(23/2$^-$)	M1(+E2)	≈+0.1	≈0.0268	α(K)≈0.0232; α(L)≈0.00291; α(M)≈0.000574 α(N)≈0.0001109; α(O)≈1.098×10^{-5} Mult.: A_2/A_0=−0.10 *3*, A_4/A_0=0.07 *7* (1994Is01), for both 318.4- and 320.1 γ , Magnetic Multipole (from Polarization anisotropy 1994Is01).
4959.5	(25/2$^-$)	275 *1*		4684.1	(23/2$^-$)				
		504 *1*		4456.0	(23/2$^-$)				
		1029 *1*		3930.3	(23/2$^-$)				
4980.4	(27/2$^-$)	496.3 *3*	4 *4*	4484.2	(25/2$^-$)				
		1050.0 *3*	100 *15*	3930.3	(23/2$^-$)	E2		1.23×10^{-3}	α(K)=0.001064 *15*; α(L)=0.0001314 *19*; α(M)=2.59×10^{-5} *4* α(N)=4.99×10^{-6} *7*; α(O)=4.90×10^{-7} *7* Mult.: A_2/A_0=0.35 *3*, A_4/A_0=−0.18 *7* (1994Is01), Electric Multipole (from Polarization anisotropy 1994Is01).
5043.4	(29/2$^+$)	416.9 *3*	100 *30*	4626.4	(27/2$^+$)	(M1+E2)	≈+0.1	≈0.01354	α(K)≈0.01174; α(L)≈0.001453; α(M)≈0.000287 α(N)≈5.54×10^{-5}; α(O)≈5.50×10^{-6} Mult.: A_2/A_0=−0.12 *3*, A_4/A_0=0.07 *7* (1994Is01) for both 416.7γ and 416.9γ.
		809.4 *3*	50 *20*	4234.0	(25/2$^+$)				
5165.2	(27/2$^-$)	359.1 *3*	100 *29*	4805.8	(25/2$^-$)	M1(+E2)	≈+0.1	≈0.0197	α(K)≈0.01709; α(L)≈0.00213; α(M)≈0.000420 α(N)≈8.12×10^{-5}; α(O)≈8.05×10^{-6} Mult.: A_2/A_0=−0.10 *3*, A_4/A_0=0.06 *7* (1994Is01), for both 359.1γ and 360.5γ, Magnetic Multipole (from Polarization anisotropy 1994Is01).
		678.5 *3*	18 *6*	4487.0	(23/2$^-$)				
5189.7	(27/2$^-$)	384 *1*	100	4805.8	(25/2$^-$)				
5487.9	(31/2$^+$)	444.5 *3*	100	5043.4	(29/2$^+$)				
		862 *1*		4626.4	(27/2$^+$)				
5488.1	(29/2$^-$)	508 *1*		4980.4	(27/2$^-$)				
		1003.8 *3*	100	4484.2	(25/2$^-$)	(E2)		1.35×10^{-3}	α(K)=0.001173 *17*; α(L)=0.0001456 *21*; α(M)=2.87×10^{-5} *4* α(N)=5.53×10^{-6} *8*; α(O)=5.42×10^{-7} *8* Mult.: A_2/A_0=0.28 *8*, A_4/A_0=0.12 *12* (1994Is01).
5505.4	(31/2$^+$)	462 *1*		5043.4	(29/2$^+$)				
		879 *1*		4626.4	(27/2$^+$)				
5561.7	(27/2$^-$)	756 *1*	100	4805.8	(25/2$^-$)				

$\gamma(^{109}Sb)$ (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.#	δ#&	α@	Comments
5568.9	(29/2⁻)	403.6 3	100 17	5165.2	(27/2⁻)	(M1+E2)	≈+0.1	≈0.01468	α(K)≈0.01273; α(L)≈0.001578; α(M)≈0.000311 α(N)≈6.02×10^{-5}; α(O)≈5.97×10^{-6} Mult.: A_2/A_0=−0.08 5, A_4/A_0=−0.01 9 (1994Is01).
		763.0 3	42 17	4805.8	(25/2⁻)				
5824.0	(31/2⁻)	843.7 3	100	4980.4	(27/2⁻)				
5892.6	(29/2⁻)	331 1		5561.7	(27/2⁻)				
		703 1		5189.7	(27/2⁻)				
		912 1		4980.4	(27/2⁻)				
		933 1		4959.5	(25/2⁻)				
5976.1	(31/2⁻)	407 1	100	5568.9	(29/2⁻)				
5983.4	(33/2⁺)	478 1		5505.4	(31/2⁺)				
		940 1		5043.4	(29/2⁺)				
5985.2	(33/2⁺)	497 1		5488.1	(29/2⁻)				
		942 1		5043.4	(29/2⁺)				
5997.1	(31/2⁻)	428.2 3	100 29	5568.9	(29/2⁻)	(M1+E2)	≈+0.1	≈0.01266	α(K)≈0.01098; α(L)≈0.001358; α(M)≈0.000268 α(N)≈5.18×10^{-5}; α(O)≈5.14×10^{-6} Mult.: A_2/A_0=−0.05 5, A_4/A_0=0.03 9 (1994Is01).
		832.1 3	57 29	5165.2	(27/2⁻)				
6157.3	(31/2⁻)	1177 1	100	4980.4	(27/2⁻)				
6335.6	(33/2⁻)	511.6 3	80 40	5824.0	(31/2⁻)				
		847.5 3	100 40	5487.9	(31/2⁺)				
6451.6	(33/2⁻)	454.4 3	100 40	5997.1	(31/2⁻)				
		882.4 3	60 20	5568.9	(29/2⁻)				
6508.4	(35/2⁺)	525 1		5983.4	(33/2⁺)				
		1003 1		5505.4	(31/2⁺)				
6511.1	(35/2⁺)	526 1		5985.2	(33/2⁺)				
		1023 1		5487.9	(31/2⁺)				
6630.9	(31/2⁻)	738 1		5892.6	(29/2⁻)				
		832 1		5798.8					
		914 1		5716.8					
		1143 1		5488.1	(29/2⁻)				
		1650 1		4980.4	(27/2⁻)				
		2030 1		4600.8	(27/2⁻)				
6668.1	(35/2⁻)	844 1	100	5824.0	(31/2⁻)				
6915.3	(35/2⁻)	463.3 3	100 33	6451.6	(33/2⁻)				
		918.6 3	100 33	5997.1	(31/2⁻)				
7041.4	(37/2⁺)	533 1		6508.4	(35/2⁺)				
		1058 1		5983.4	(33/2⁺)				
7349.6	(37/2⁻)	1014 1	100	6335.6	(33/2⁻)				
7437.3	(35/2⁻)	488 1		6949.2					
		593 1		6844.2	(31/2⁻)				
		806 1		6630.9	(31/2⁻)				
		867 1		6570.2					

Adopted Levels, Gammas (continued)

$\gamma(^{109}Sb)$ (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.#	α@	Comments
7437.3	(35/2⁻)	1280 *1*		6157.3	(31/2⁻)			
		1440 *1*		5997.1	(31/2⁻)			
		1461 *1*		5976.1	(31/2⁻)			
		1614 *1*		5824.0	(31/2⁻)			
7465.3	(35/2⁻)	1308 *1*	100	6157.3	(31/2⁻)			
7482.5	(37/2⁻)	567 *1*		6915.3	(35/2⁻)			
		1031 *1*		6451.6	(33/2⁻)			
7606.2	(35/2⁻)	762 *1*		6844.2	(31/2⁻)			
		766 *1*		6840.2	(31/2⁻)			
		938 *1*		6668.1	(35/2⁻)			
7683.8	(39/2⁻)	1015.7 *3*	100	6668.1	(35/2⁻)			
8228.2	(39/2⁻)	622 *1*		7606.2	(35/2⁻)			
		791 *1*	100	7437.3	(35/2⁻)	[E2]	0.00234	α(K)=0.00202 *3*; α(L)=0.000258 *4*; α(M)=5.09×10^{-5} *8* α(N)=9.78×10^{-6} *14*; α(O)=9.49×10^{-7} *14* B(E2)(W.u.)=131 *+16−15*
9089.2	(43/2⁻)	861 *1*	100	8228.2	(39/2⁻)	[E2]	0.00192	B(E2)(W.u.)=136 *+12−13* α(K)=0.001657 *24*; α(L)=0.000209 *3*; α(M)=4.13×10^{-5} *6* α(N)=7.94×10^{-6} *12*; α(O)=7.73×10^{-7} *11*
10058.0+x	(47/2⁺)	968 *1*	100	9089.2+x	(43/2⁺)			
10066.2	(47/2⁻)	977 *1*	100	9089.2	(43/2⁻)	[E2]	1.44×10^{-3}	α(K)=0.001245 *18*; α(L)=0.0001549 *22*; α(M)=3.06×10^{-5} *5* α(N)=5.88×10^{-6} *9*; α(O)=5.76×10^{-7} *9* B(E2)(W.u.)=117 *+15−13*
11093.0+x	(51/2⁺)	1035 *1*	100	10058.0+x	(47/2⁺)			
11159.2	(51/2⁻)	1093 *1*	100	10066.2	(47/2⁻)	[E2]	1.12×10^{-3}	α(K)=0.000976 *14*; α(L)=0.0001201 *17*; α(M)=2.37×10^{-5} *4* α(N)=4.56×10^{-6} *7*; α(O)=4.49×10^{-7} *7* B(E2)(W.u.)=114 *11*
11169.0+y	(53/2⁺)	1102 *1*	100	10066.2+y	(49/2⁺)			
11350.0+w	(53/2⁻)	1283 *1*	100	10066.2+w	(49/2⁻)			
12216.0+x	(55/2⁺)	1123 *1*	100	11093.0+x	(51/2⁺)			
12362.3	(55/2⁻)	1203 *1*	100	11159.2	(51/2⁻)	[E2]	9.25×10^{-4}	α(K)=0.000798 *12*; α(L)=9.74×10^{-5} *14*; α(M)=1.92×10^{-5} *3* α(N)=3.70×10^{-6} *6*; α(O)=3.65×10^{-7} *6*; α(IPF)=7.19×10^{-6} *16* B(E2)(W.u.)=98 *+15−10*
12394.0+y	(57/2⁺)	1225 *1*	100	11169.0+y	(53/2⁺)			
12879.0+w	(57/2⁻)	1529 *1*	100	11350.0+w	(53/2⁻)			
13439.0+x	(59/2⁺)	1223 *1*	100	12216.0+x	(55/2⁺)			
13688.3	(59/2⁻)	1326 *1*	100	12362.3	(55/2⁻)	[E2]	7.80×10^{-4}	α(K)=0.000654 *10*; α(L)=7.92×10^{-5} *12*; α(M)=1.559×10^{-5} *22* α(N)=3.01×10^{-6} *5*; α(O)=2.98×10^{-7} *5*; α(IPF)=2.84×10^{-5} *5* B(E2)(W.u.)=104 *+15−10*
13704.0+z	(63/2⁺)	1341 *1*	100	12362.3+z	(59/2⁺)			
13708.0+y	(61/2⁺)	1314 *1*	100	12394.0+y	(57/2⁺)			
14640.0+w	(61/2⁻)	1761 *1*	100	12879.0+w	(57/2⁻)			
14781.0+x	(63/2⁺)	1342 *1*	100	13439.0+x	(59/2⁺)			
15114.0+y	(65/2⁺)	1406 *1*	100	13708.0+y	(61/2⁺)			

$^{109}_{51}Sb_{58}$-11

γ(^{109}Sb) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[#]	α[@]	Comments
15164	(63/2⁻)	1476 *1*	100	13688.3	(59/2⁻)	[E2]	6.79×10^{-4}	α(K)=0.000528 *8*; α(L)=6.36×10^{-5} *9*; α(M)=1.251×10^{-5} *18* α(N)=2.41×10^{-6} *4*; α(O)=2.39×10^{-7} *4*; α(IPF)=7.23×10^{-5} *11* B(E2)(W.u.)=75 *13*
15233.0+z	(67/2⁺)	1529 *1*	100	13704.0+z	(63/2⁺)			
16284.0+x	(67/2⁺)	1503 *1*	100	14781.0+x	(63/2⁺)			
16577.1+w	(65/2⁻)	1937 *1*	100	14640.0+w	(61/2⁻)			
16624.0+y	(69/2⁺)	1510 *1*	100	15114.0+y	(65/2⁺)			
16812	(67/2⁻)	1648 *1*	100	15164	(63/2⁻)	[E2]	6.28×10^{-4}	α(K)=0.000427 *6*; α(L)=5.11×10^{-5} *8*; α(M)=1.004×10^{-5} *15* α(N)=1.94×10^{-6} *3*; α(O)=1.93×10^{-7} *3*; α(IPF)=0.0001381 *20* B(E2)(W.u.)=72 *17*
16957.0+z	(71/2⁺)	1724 *1*	100	15233.0+z	(67/2⁺)			
17962+x	(71/2⁺)	1678 *1*	100	16284.0+x	(67/2⁺)			
18273.1+y	(73/2⁺)	1649 *1*	100	16624.0+y	(69/2⁺)			
18637.1+w	(69/2⁻)	2060 *1*	100	16577.1+w	(65/2⁻)			
18661	(71/2⁻)	1849 *1*	100	16812	(67/2⁻)	[E2]	6.22×10^{-4}	α(K)=0.000344 *5*; α(L)=4.09×10^{-5} *6*; α(M)=8.03×10^{-6} *12* α(N)=1.552×10^{-6} *22*; α(O)=1.546×10^{-7} *22*; α(IPF)=0.000228 *4* B(E2)(W.u.)=42 *11*
18886.1+z	(75/2⁺)	1929 *1*	100	16957.0+z	(71/2⁺)			
19842+x	(75/2⁺)	1880 *1*	100	17962+x	(71/2⁺)			
20124+y	(77/2⁺)	1851 *1*	100	18273.1+y	(73/2⁺)			
20758	(75/2⁻)	2097 *1*	100	18661	(71/2⁻)	[E2]	6.59×10^{-4}	α(K)=0.000273 *4*; α(L)=3.23×10^{-5} *5*; α(M)=6.34×10^{-6} *9* α(N)=1.225×10^{-6} *18*; α(O)=1.223×10^{-7} *18*; α(IPF)=0.000346 *5* B(E2)(W.u.)=35 *+10−8*
21044.1+z	(79/2⁺)	2158 *1*	100	18886.1+z	(75/2⁺)			
21958+x	(79/2⁺)	2116 *1*	100	19842+x	(75/2⁺)			
22242+y	(81/2⁺)	2118 *1*	100	20124+y	(77/2⁺)			
23143	(75/2⁻)	2385 *1*	100	20758	(75/2⁻)			
23504.1+z	(83/2⁺)	2460 *1*	100	21044.1+z	(79/2⁺)			
24374+x	(83/2⁺)	2416 *1*	100	21958+x	(79/2⁺)			
24662+y	(85/2⁺)	2420 *1*	100	22242+y	(81/2⁺)			
25880	(83/2⁻)	2737 *1*	100	23143	(75/2⁻)			
26314+z	(87/2⁺)	2810 *1*	100	23504.1+z	(83/2⁺)			
27196+x	(87/2⁺)	2822 *1*	100	24374+x	(83/2⁺)			
27394+y	(89/2⁺)	2732 *1*	100	24662+y	(85/2⁺)			

† From ^{54}Fe(^{58}Ni,3pγ), unless otherwise stated.

‡ From ^{109}Te ε decay.

\# From ^{54}Fe(^{58}Ni,3pγ), based on $\gamma(\theta)$, γ-linear polarization (1994Is01) and the apparent band structures.

@ Additional information 7.

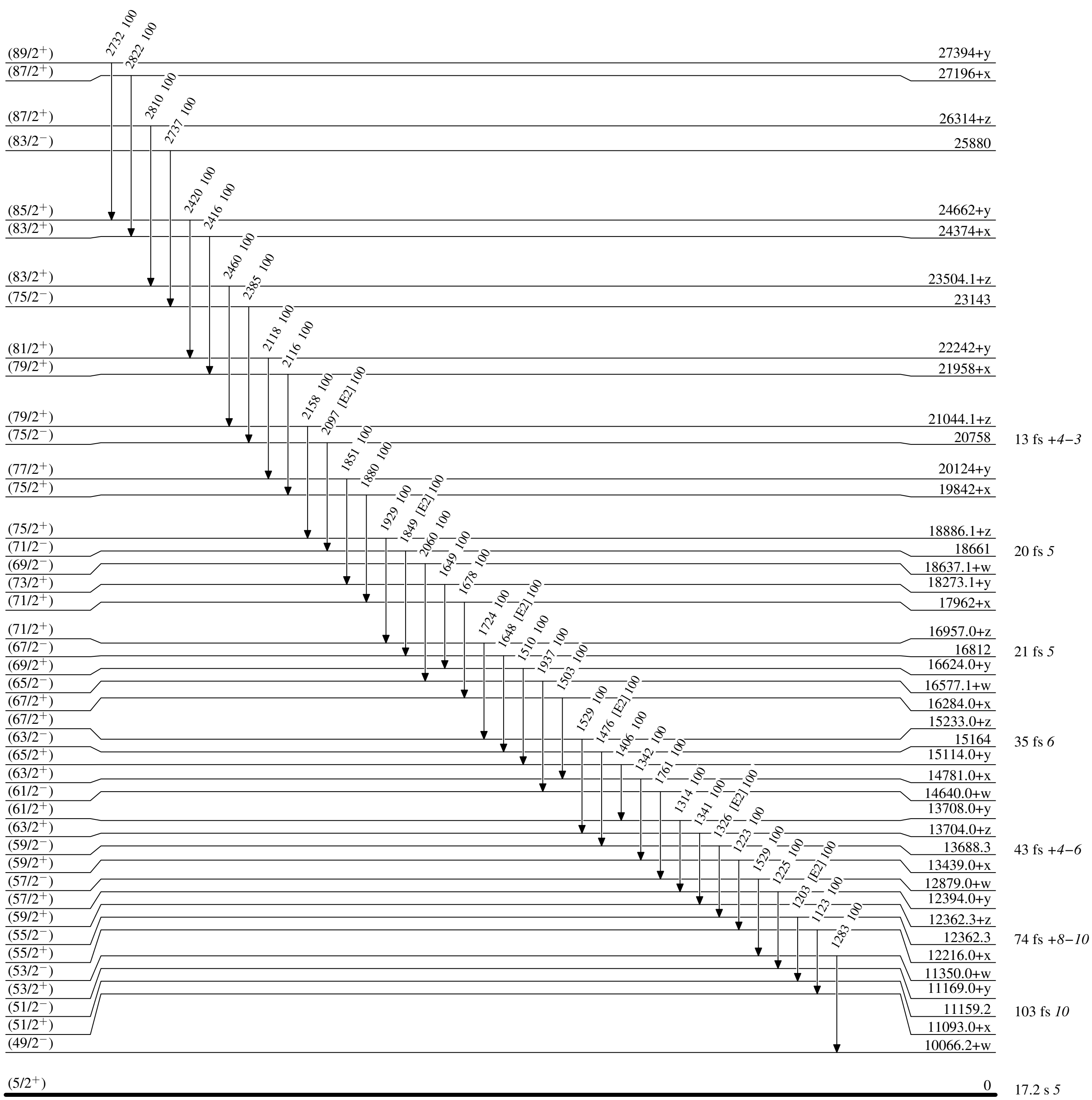
& If No value given it was assumed δ=0.00 for E2/M1, δ=1.00 for E3/M2 and δ=0.10 for the other multipolarities.

a Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

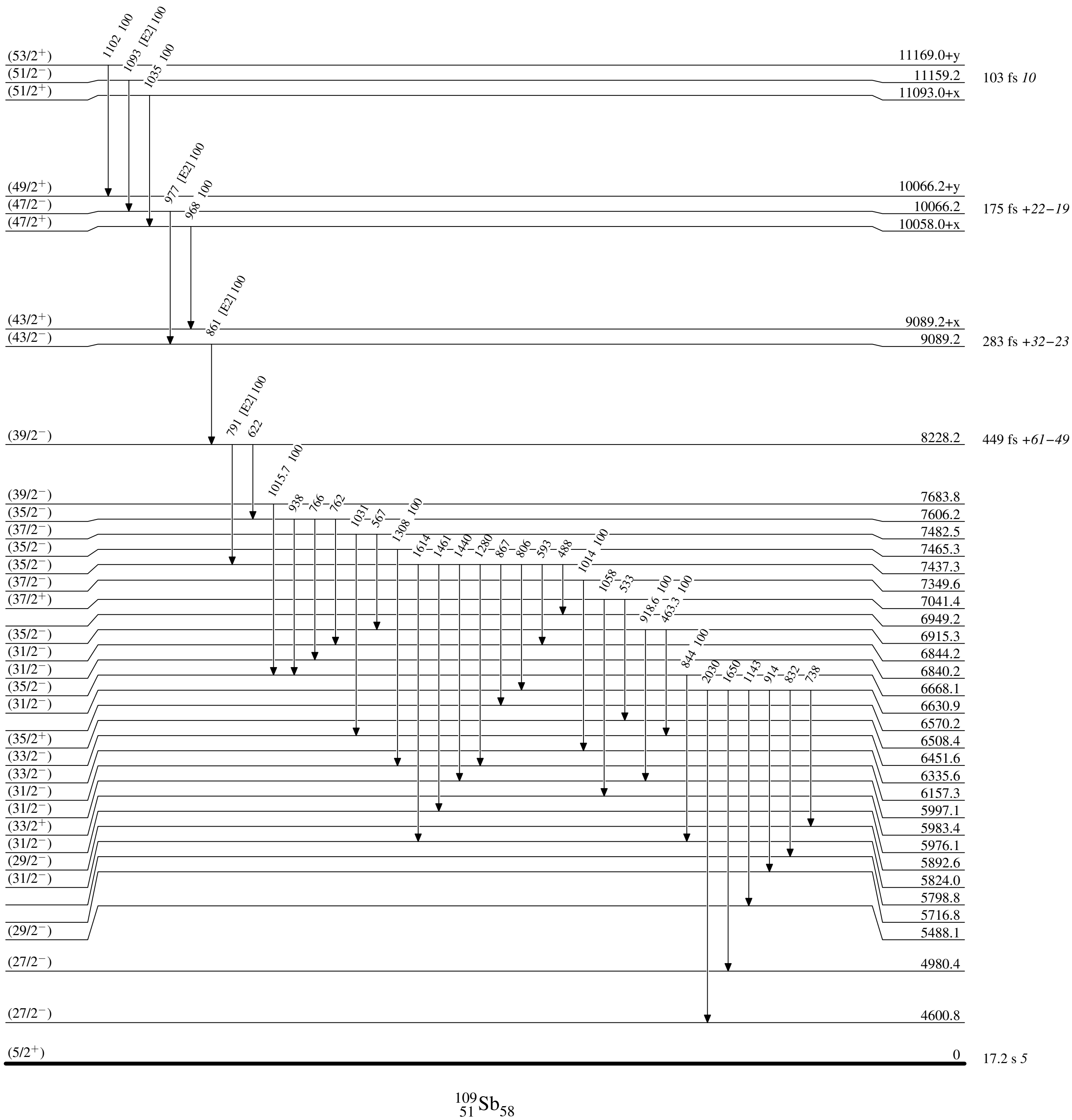


$^{109}_{51}Sb_{58}$

Adopted Levels, Gammas

Level Scheme (continued)

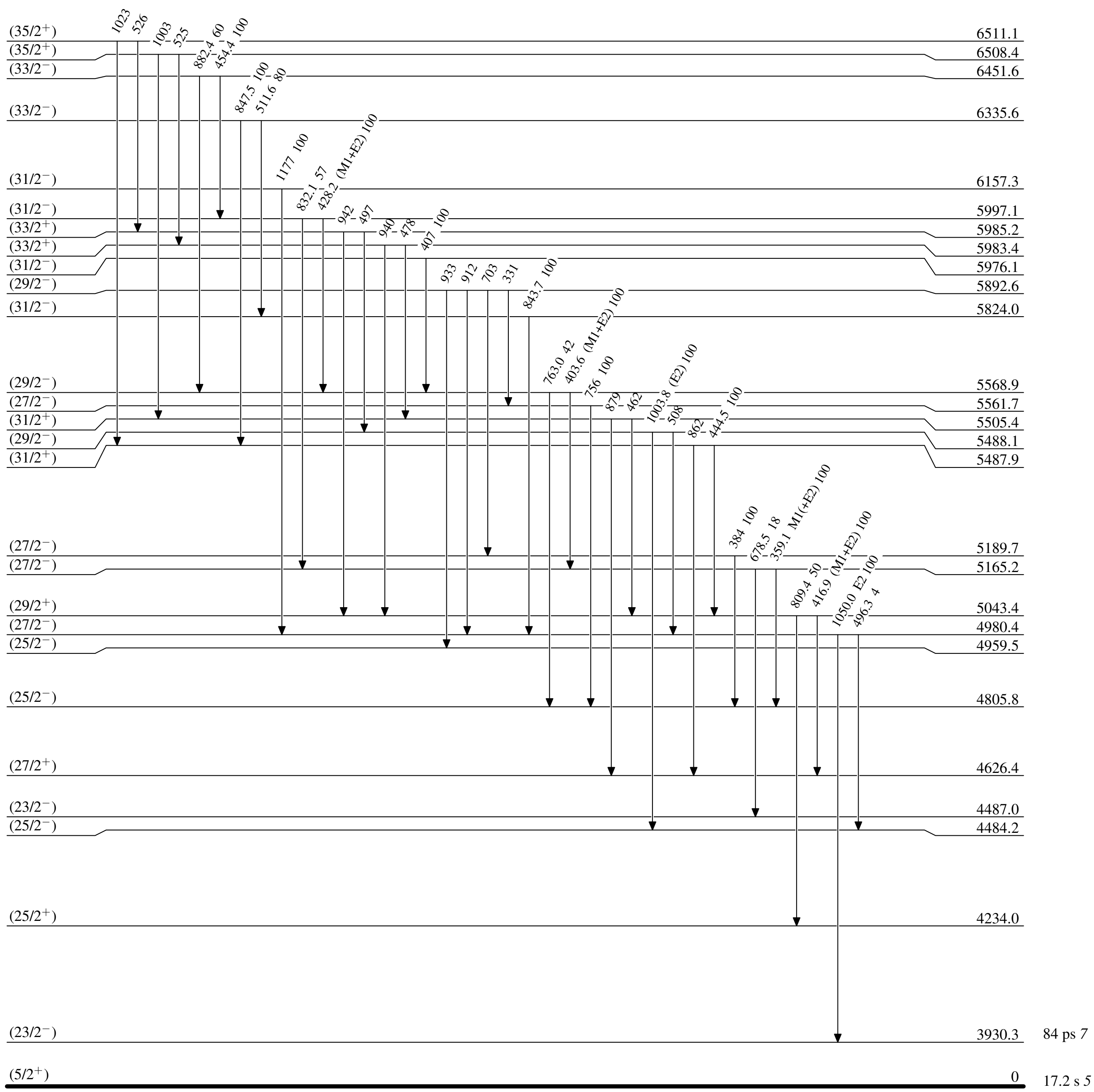
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{109}_{51}Sb_{58}$

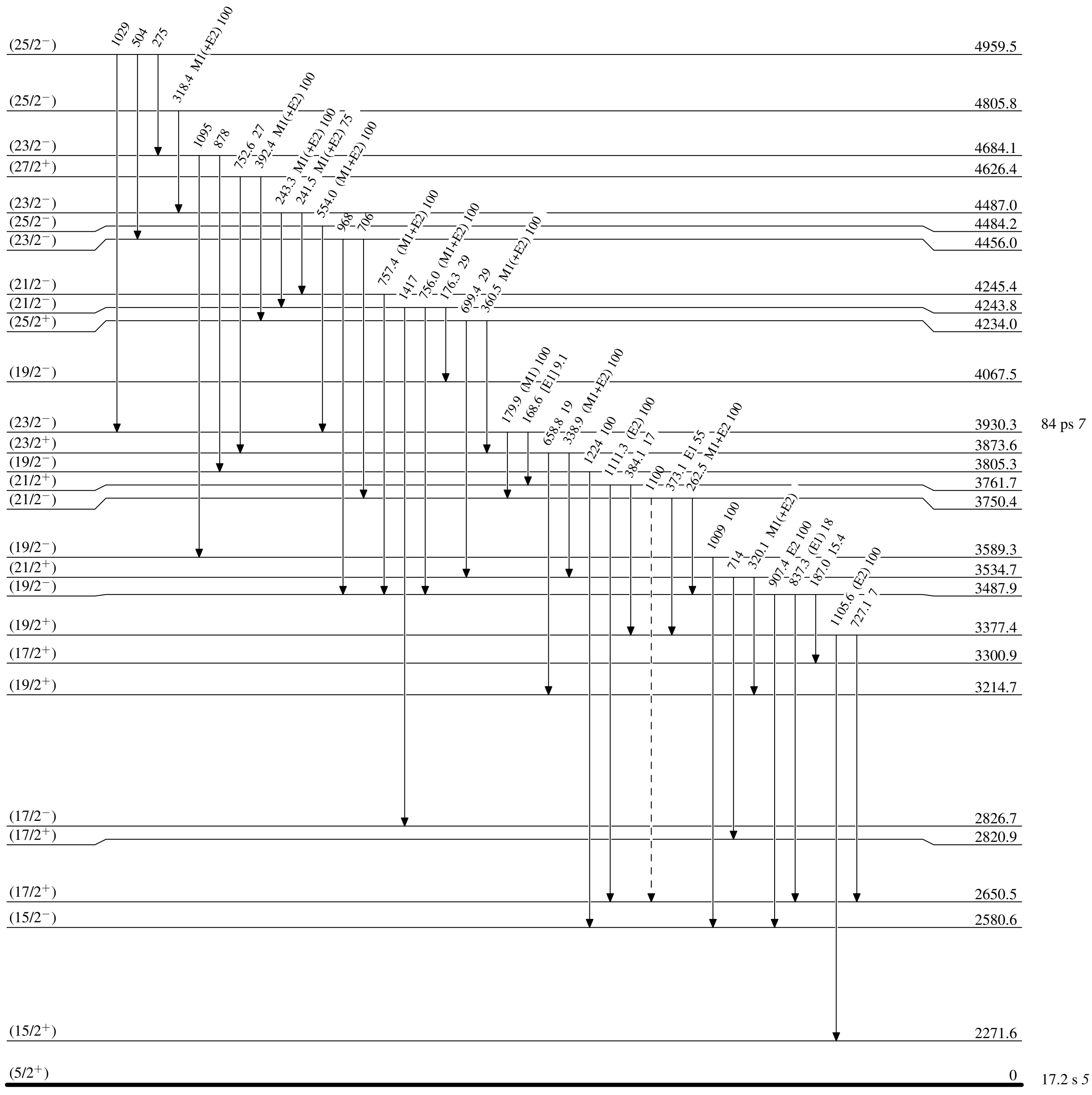
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

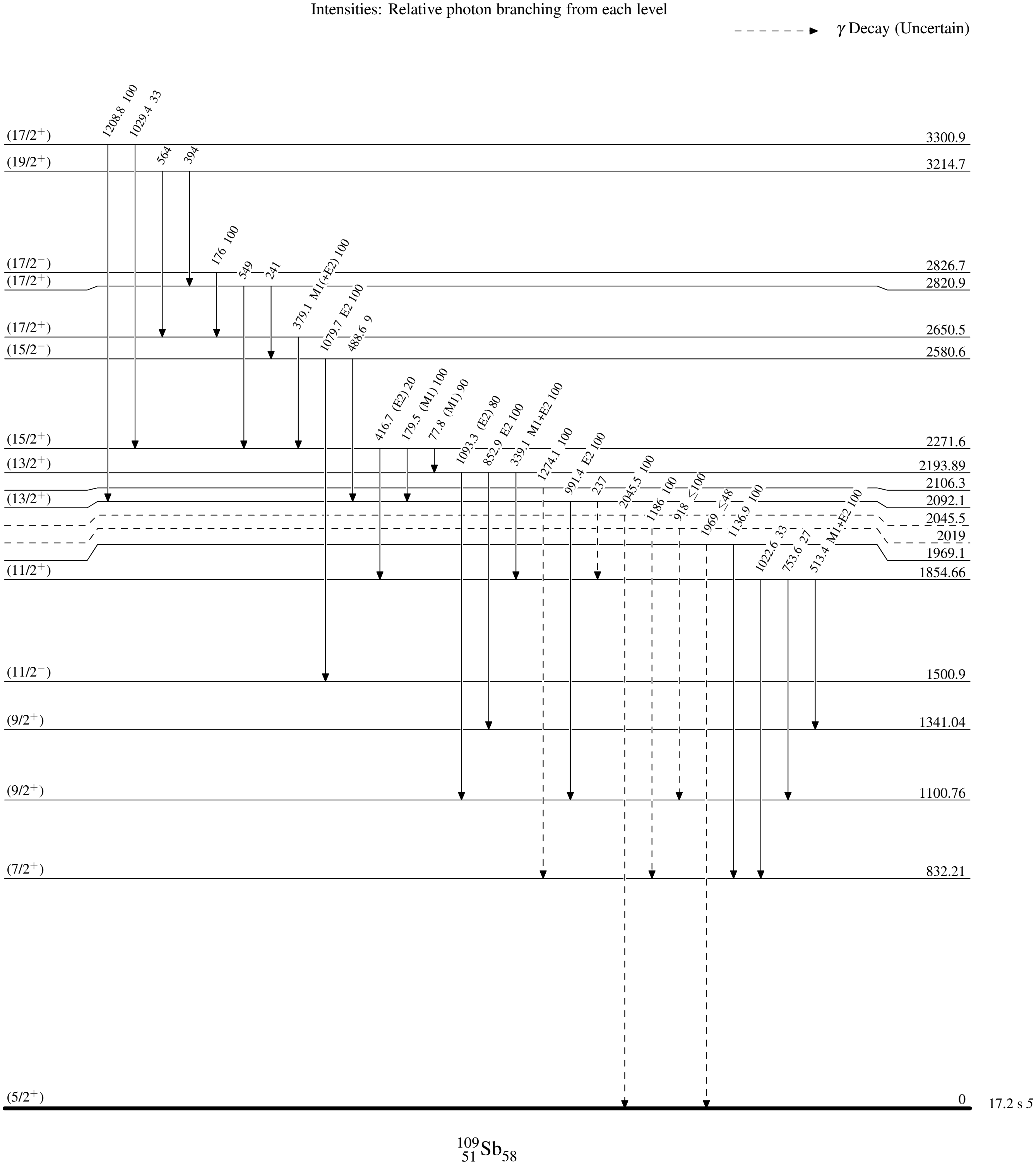


$^{109}_{51}Sb_{58}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

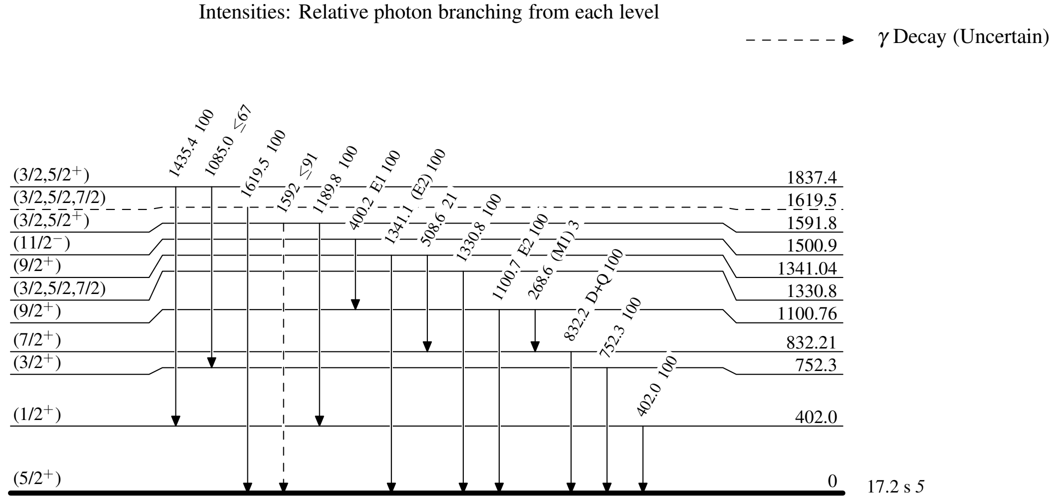


Adopted Levels, Gammas

Legend

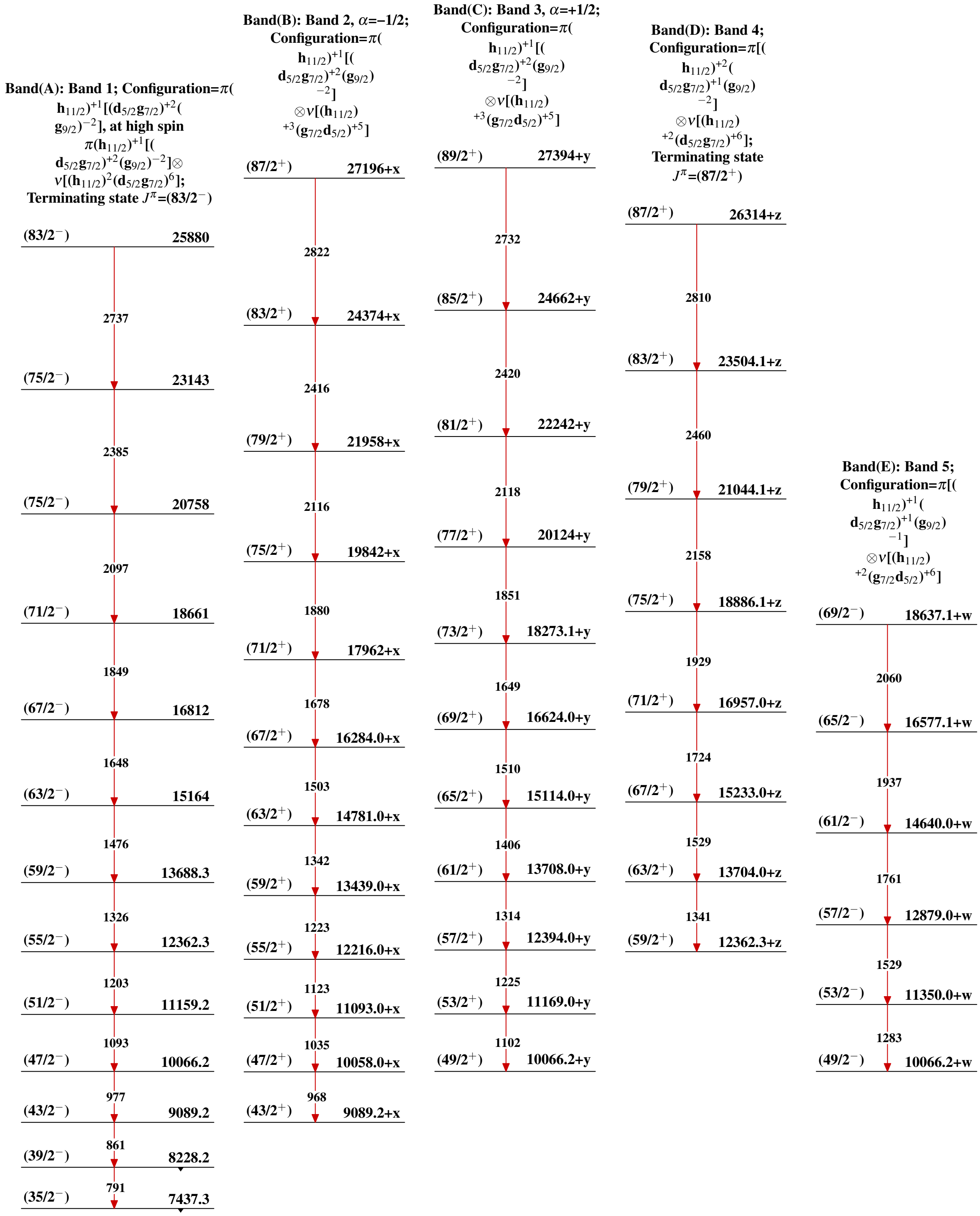
Level Scheme (continued)

Intensities: Relative photon branching from each level



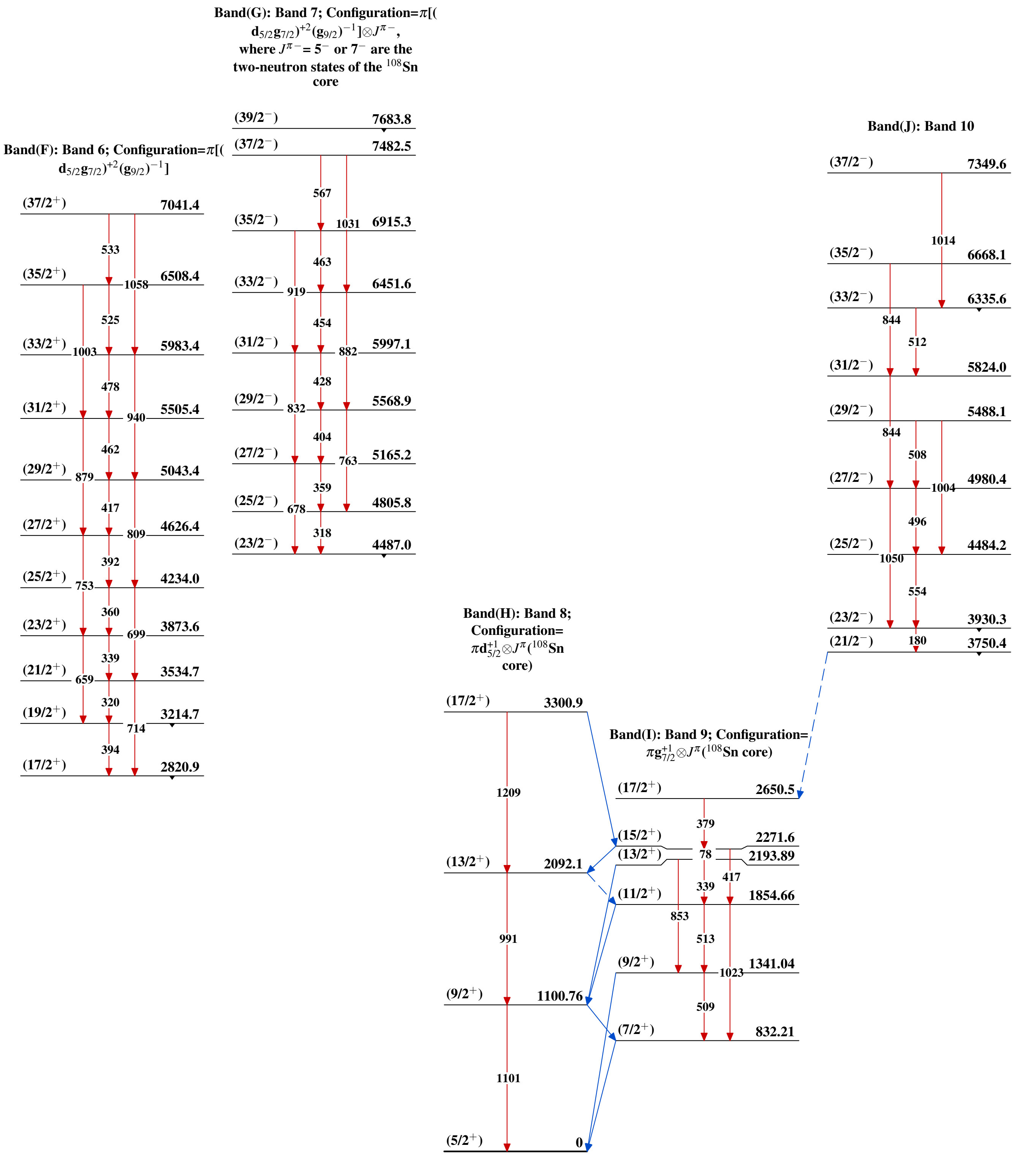
$^{109}_{51}Sb_{58}$

Adopted Levels, Gammas



$^{109}_{51}Sb_{58}$

Adopted Levels, Gammas (continued)



$^{109}_{51}Sb_{58}$

Adopted Levels, Gammas (continued)