^{208}Pb(p,nγ) 2006Bo08,1971Pr02

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. J. Martin	NDS 108,1583 (2007)	1-Jun-2007

2006Bo08: E=9 MeV. Measured Eγ, Iγ, γγ, γ(θ) with two HPGE detectors with BGO anti-Compton shields. 1971Pr02: E=7-11 MeV. Measured Eγ and Iγ At 8.0 and 10.5 MeV. Other: 1973MoZG: E=9 MeV. Measured E(ce).

^{208}Bi Levels

E(level)†‡	Jπ#	E(level)†‡	Jπ#	E(level)†‡	Jπ#	E(level)†‡	Jπ#
0.0	5^+	1703.25 *9*	5^-	2436.85 *19*	3,4,5	2843.31 *22*	1,2,3
63.06 *7*	4^+	1715.59 *19*	6^-,7^-	2457.35 *11*	3^+	2869.59 *12*	3 to 6
510.21 *9*	6^+	1716.20 *25*	6^-,7^-	2478.46 *13*	2,3	2879.63 *15*	2,3,4
601.44 *7*	4^+	1802.06 *9*	1^+	2495.49 *12*	4,5	2881.32 *20*	2 to 5
628.32 *8*	5^+	1824.45 *16*	4,5,6	2501.60 *12*	2^+	2884.07 *17*	1^+
633.14 *7*	3^+	1838.98 *9*	4^-	2513.47 *11*	3,4,5	2886.72 *13*	3,4
650.50 *12*	7^+	1870.73 *10*	3^+	2544.78 *15*	1 to 4	2888.47 *16*	3 to 7
886.36 *9*	5^+	1882.12 *12*	4^+	2556.40 *11*	2,3,4	2893.73 *13*	2^-
924.76 *8*	2^+	1919.95 *9*	3^-	2564.77 *15*	3 to 6	2903.56 *16*	0^+,1^+,2^+,3^+
936.24 *7*	3^+	2077.61 *9*	2^-	2570.21 *14*	1,2,3	2932.82 *13*	1 to 5
958.97 *8*	4^+	2126.86 *10*	2^+	2586.58 *12*	3,4,5	2942.92 *17*	2 to 6
1033.23 *7*	4^+	2179.43 *20*	4 to 7	2612.59 *14*	4,5	2950.92 *12*	2,3,4
1069.10 *8*	3^+	2180.07 *21*	4 to 7	2631.02 *16*	5,6	3069.30 *13*	2,3
1095.10 *14*	6^+	2202.85 *13*	1^-,2^-,3^-	2636.32 *15*	2 to 5	3154.89 *23*	2 to 6
1469.43 *11*	5^+	2307.99 *12*	4	2657.25 *24*	1 to 4	3165.92 *15*	3^+
1529.34 *9*	3^+	2340.0 *4*	7^+	2660.6 *4*	8^+	3286.34 *10*	2,3,4
1539.37 *8*	2^+	2358.65 *20*	2 to 5	2679.38 *12*	1,2,3	3351.27 *21*	2,3,4
1563.44 *10*	4^+	2383.8 *3*	3,4,5	2693.78 *13*	2 to 5	3390.9 *4*	3
1570.8 *4*	10^-	2385.95 *15*	3,4,5	2718.53 *12*	2,3,4	3425.05 *13*	3,4,5
1624.68 *11*	6^-	2404.2 *5*	1 to 5	2732.99 *15*	2,3	3427.2 *4*	1 to 8
1657.40 *23*	8^-	2409.06 *19*	6^+	2739.49 *13*	3,4		
1666.51 *17*	7^-	2415.62 *14*	1,2,3	2838.84 *13*	1,2,3		

† From a least-squares fit to the Eγ′s.

‡ The levels are those proposed by 2006Bo08 based on extensive γγ measurements. 2006Bo08 propose 56 new levels In addition to those proposed by 1971Pr02. Levels At 1836 and 2401 proposed by 1971Pr02 and levels proposed by 1984Ro28 At 1605 and 1738 and by 1984Ro27 At 1837 based on unplaced transitions In 1971Pr02, have not been confirmed by 2006Bo08. Based on the work of 2006Bo08, the evaluator has reassigned some of the placements of 1971Pr02 and assigned some of the unplaced transitions of these authors.

Values are those given by 2006Bo08 based on the observed γ branchings and expected configurations.

^{208}Pb(p,nγ) 2006Bo08,1971Pr02 (continued)

γ(^{208}Bi)

E_i(level)	J_i^π	E_γ[@]	I_γ[&]	E_f	J_f^π	Mult.[†]	α[u]	Iγ[a]	Comments
63.06	4+	63.1 *2*		0.0	5+				
510.21	6+	447.3 *1*	7.2 *18*	63.06	4+			0.8 *1*	
		510.15 *15*	100 *9*	0.0	5+			≤30.9	Iγ: 1971Pr02 report Iγ≤29.5 *14*. The transition is not completely resolved from the annihilation radiation.
601.44	4+	538.4 *1*	54 *5*	63.06	4+			51.3 *13*	
		601.45 *8*	100 *9*	0.0	5+			121 *3*	
628.32	5+	26.91 *11*	0.41[‡] *5*	601.44	4+				
		118.2 *2*	4.2 *12*	510.21	6+	M1	6.32		
		565.23 *8*	100 *7*	63.06	4+			14.6 *5*	
633.14	3+	31.5 *2*	2.4 *6*	601.44	4+				
		570.04 *9*	100 *6*	63.06	4+			100.0 *24*	
		633.0 *2*	1.3 *2*	0.0	5+			1.3 *1*	
650.50	7+	140.09 *12*	51 *13*	510.21	6+	M1	3.90	0.4 *3*	
		650.6 *2*	100 *20*	0.0	5+			0.7 *1*	
886.36	5+	375.7[v] *3*		510.21	6+			0.3 *1*	E_γ: from 1971Pr02. The transition is not seen by 2006Bo08. Note that this transition is reported In (d,tγ) with Iγ/Iγ(886γ)=0.08 *2*.
		823.30 *14*	78 *17*	63.06	4+			7.3 *3*	
		886.4 *2*	100 *20*	0.0	5+			<8.1[c]	
924.76	2+	291.66 *9*	100 *10*	633.14	3+	M1	0.502	72.2 *21*	
		861.8 *2*	32 *6*	63.06	4+			21.4 *7*	
		925[v]		0.0	5+			<0.1	E_γ: rounded-off value from the level energy. The transition is not seen by 1971Pr02 or by 2006Bo08, but is reported In ε decay with Iγ/Iγ(292γ)=0.023 *11*.
936.24	3+	303.1 *1*	1.3 *2*	633.14	3+			1.0 *1*	
		873.3 *2*	100 *6*	63.06	4+			110 *3*	
		936.33 *2*	1.6 *4*	0.0	5+			2.0 *6*	
958.97	4+	325.74 *9*	9.1 *15*	633.14	3+			2.0 *1*	
		330.6 *2*	2.9 *10*	628.32	5+			<0.9[d]	
		896.0 *2*	100 *10*	63.06	4+			<20.9[g]	
		959.0 *2*	40 *5*	0.0	5+			<15.2[e]	
1033.23	4+	146.6 *2*	1.0 *2*	886.36	5+	M1	3.42		
		400.0 *2*	2.3 *3*	633.14	3+			0.4 *1*	Iγ: 1971Pr02 report Eγ=400.2 *3* with Iγ=0.4 *1* doubly placed from the 1033 and 1469 levels. The placement from the 1469 level is not confirmed by 2006Bo08. The evaluator assigns all the intensity of 1971Pr02 to the 1033 level.
		431.4 *2*	1.2 *3*	601.44	4+				
		970.25 *14*	45 *3*	63.06	4+			13.1 *4*	
		1033.31 *14*	100 *6*	0.0	5+			31.7 *8*	
1069.10	3+	110.0 *2*	0.6 *2*	958.97	4+	M1	7.76		
		435.7 *2*	2.4 *3*	633.14	3+			<2.0[f]	
		467.57 *16*	9.0 *7*	601.44	4+			4.8 *2*	
		1006.23 *15*	100 *6*	63.06	4+			<57.6[s]	

$^{208}_{83}Bi_{125}$-2

^{208}Pb(p,nγ) 2006Bo08,1971Pr02 (continued)

γ(^{208}Bi) (continued)

E_i(level)	J_i^π	E_γ [@]	I_γ [&]	E_f	J_f^π	Iγ [a]	Comments
1069.10	3+	1069.3 *2*	2.8 *4*	0.0	5+	1.3 *1*	
1095.10	6+	208 [v]		886.36	5+	<0.3	E_γ: rounded-off value from the level energy. The transition is not seen by 1971Pr02 or by 2006Bo08, but is reported In (d,tγ) with Iγ/Iγ(1095γ)=0.02 *1*.
		1094.9 *2*	100 *10*	0.0	5+	5.3 *2*	
1469.43	5+	435.9 *2*	18 *4*	1033.23	4+	<2.0 [f]	
		841.0 *3*	9 *6*	628.32	5+	3.3 *2*	Iγ: Iγ/Iγ(959γ)>0.20 from 1971Pr02 compared with 0.09 *6* from 2006Bo08. IT follows that not all of the intensity of the 841γ reported by 1971Pr02 can Be placed with the 1469 level.
		959.0 *2*	100 *14*	510.21	6+	<15.2 [e]	
1529.34	3+	496.1 *1*	100 *12*	1033.23	4+	8.5 *3*	
		592.9 *2*	17 *6*	936.24	3+	0.9 *2*	
		896.2 *2*	44 *8*	633.14	3+	<20.9 [g]	
		927.97 *15*	105 *11*	601.44	4+	8.3 *3*	
		1466.4 *2*	49 *7*	63.06	4+	5.3 *3*	
		1529.4 *3*	19 *5*	0.0	5+	<3.2 [h]	
1539.37	2+	470.36 *20*	3.0 *2*	1069.10	3+	2.0 *1*	
		603.03 *20*	20.3 *12*	936.24	3+	15.5 *9*	
		614.28 *12*	7.4 *5*	924.76	2+	5.4 *2*	
		906.28 *12*	100 *6*	633.14	3+	92.6 *22*	Iγ: a comparison of branchings from the 1539 level reported by 1971Pr02 suggests that about 10% of their Iγ(906γ) belongs elsewhere.
		937.9 *2*	3.0 *2*	601.44	4+	2.7 *8*	
		1476.5 *1*	12.0 *8*	63.06	4+	9.3 *4*	Iγ: 1971Pr02 report Eγ=1476.5 *1* with Iγ=9.3 *4* doubly placed from the 1539 level and a 2401 level. The 2401 level is not confirmed by 2006Bo08. The evaluator assigns all the intensity of 1971Pr02 to placement from the 1539 level.
1563.44	4+	494.1 *3*	1.7 *10*	1069.10	3+		
		529.9 *2*	25 *8*	1033.23	4+	<6.4 [i]	
		627.13 *12*	100 *20*	936.24	3+	4.5 *2*	
		677.1 *2*	3 [‡] *1*	886.36	5+	0.8 *1*	
		935.2 *2*	67 *14*	628.32	5+	<9.6 [n]	
1570.8	10−	920.3 *3*	100 *5*	650.50	7+		
1624.68	6−	530.4 *4*	4.5 *8*	1095.10	6+	<6.4 [i]	
		738.2 *2*	12 *3*	886.36	5+	1.4 [b] *1*	
		973.9 *2*	59 *12*	650.50	7+	<6.6 [j]	
		996.2 *2*	100 *20*	628.32	5+	9.5 [b] *19*	
1657.40	8−	1006.9 *2*	100	650.50	7+	<57.6 [s]	
1666.51	7−	1015.9 *2*	70 *40*	650.50	7+		
		1156.5 *2*	100 *40*	510.21	6+	1.2 [b] *1*	
1703.25	5−	233.7 *3*	0.30 *10*	1469.43	5+		
		669.9 *2*	6 *4*	1033.23	4+	3.0 *2*	Iγ: Iγ/Iγ(1640γ)=0.28 *2* from 1971Pr02 compared with 0.06 *4* from 2006Bo08 suggests that only part of Iγ from 1971Pr02 should Be placed from the 1703 level.
		744.2 *2*	25 *4*	958.97	4+	2.6 *3*	Iγ: 1971Pr02 report Eγ=744.3 *3* with Iγ=2.6 *3* doubly placed from the 1703 level and a

^{208}Pb(p,nγ) 2006Bo08,1971Pr02 (continued)

γ(^{208}Bi) (continued)

E_i(level)	J_i^π	E_γ [@]	I_γ [&]	E_f	J_f^π	Mult.[†]	α[u]	Iγ[a]	Comments
									2308 level. The 2308 level is not confirmed by 2006Bo08. The evaluator assigns all the intensity of 1971Pr02 to placement from the 1703 level.
1703.25	5⁻	1074.9 *2*	14 *3*	628.32	5⁺			1.0 *1*	
		1640.5 *1*	100 *11*	63.06	4⁺			10.8 *4*	
		1703.2 *2*	36 *5*	0.0	5⁺			3.1 *3*	
1715.59	6⁻,7⁻	1064.9 *2*	100 *50*	650.50	7⁺			1.0[b] *1*	
		1205.8 *3*	80 *40*	510.21	6⁺			<4.3[k]	
1716.20	6⁻,7⁻	621.1 *2*	100	1095.10	6⁺				
1802.06	1⁺	262.64 *9*	100 *5*	1539.37	2⁺			<68.1[l]	
		865.86 *12*	16.3 *10*	936.24	3⁺			7.8 *4*	
		877.2 *2*	17.3 *10*	924.76	2⁺			9.6 *5*	Iγ: 1971Pr02 report Eγ=877.2 *2* with Iγ=9.6 *5* doubly placed from the 1802 level and an 1836 level. The 1836 level is not confirmed by 2006Bo08. The evaluator assigns all the intensity of 1971Pr02 to placement from the 1802 level.
		1169.04 *12*	6.8 *4*	633.14	3⁺			3.6 *2*	
1824.45	4,5,6	354.9 *2*	100 *8*	1469.43	5⁺			0.7[b] *1*	
		1761.5 *2*	87 *8*	63.06	4⁺				
1838.98	4⁻	135.6 *2*	51 *13*	1703.25	5⁻	M1	4.27		
		805.6 *2*	13 *8*	1033.23	4⁺				
		879.9 *2*	33 *11*	958.97	4⁺			1.1[b] *2*	
		902.9 *3*	50 *15*	936.24	3⁺			2.8[b] *2*	
		952.5 *3*	20 *9*	886.36	5⁺			0.4[b] *1*	
		1205.9 *2*	58 *15*	633.14	3⁺			<4.3[k]	
		1210.9 *2*	10 *8*	628.32	5⁺			1.1[b] *1*	
		1775.7 *3*	100 *20*	63.06	4⁺			6.4[b] *4*	
1870.73	3⁺	307.0 *2*	7.5 *18*	1563.44	4⁺			1.1 *1*	Iγ: placed by 1971Pr02 from the 936 level. This placement is not confirmed by 2006Bo08 who place the 307γ from the 1870 level.
		331.0 *2*	5.5 *17*	1539.37	2⁺			<0.9[d]	
		837.7 *2*	100 *10*	1033.23	4⁺			<10.2[m]	
		934.7 *2*	70 *30*	936.24	3⁺			<9.6[n]	
		946.0 *2*	15 *3*	924.76	2⁺			<4.4[o]	
1882.12	4⁺	412.5 *2*	25 *4*	1469.43	5⁺				
		812.9 *2*	18.2 *11*	1069.10	3⁺				
		849.0 *2*	3.6 *18*	1033.23	4⁺				
		923.3 *3*	6 *2*	958.97	4⁺				
		946.0 *2*	100 *10*	936.24	3⁺			<4.4[o]	
1919.95	3⁻	80.7 *2*	5 *2*	1838.98	4⁻	M1	3.57		
		390.2 *2*	7.3 *10*	1529.34	3⁺			1.3 *1*	
		886.7 *2*	3 *5*	1033.23	4⁺			<8.1[c]	
		960.8 *2*	8.7 *14*	958.97	4⁺			1.8 *2*	
		983.7 *2*	49 *4*	936.24	3⁺			8.1 *3*	

$^{208}_{83}Bi_{125}$-4

^{208}Pb(p,nγ) 2006Bo08,1971Pr02 (continued)

γ(^{208}Bi) (continued)

E_i(level)	J_i^π	E_γ[@]	I_γ[&]	E_f	J_f^π	Mult.[†]	α[u]	Iγ[a]	Comments
1919.95	3⁻	995.1 *2*	100 *7*	924.76	2⁺			15.4 *20*	
		1287.0 *3*	5.0 *12*	633.14	3⁺			0.9 *1*	
		1318.6 *2*	28 *3*	601.44	4⁺			5.9 *2*	
2077.61	2⁻	275.26 *15*	100 *6*	1802.06	1⁺	E1	0.0372	<97.3[q]	
		1141.4 *2*	1.0 *2*	936.24	3⁺			0.5 *1*	
		1152.84 *10*	0.8 *2*	924.76	2⁺			0.4 *1*	
2126.86	2⁺	255.7 *2*	13.7 *11*	1870.73	3⁺			2.0[b] *2*	Iγ: Iγ/Iγ(1191γ)=0.21 *2* from 1971Pr02 compared with 0.137 *15* from 2006Bo08 suggests that only about 70% of the Iγ from 1971Pr02 belongs with the 2127 level.
		597.2 *2*	13 *2*	1529.34	3⁺				
		1057.5 *3*	3.5 *7*	1069.10	3⁺				
		1093.4 *8*	4.4 *8*	1033.23	4⁺				
		1190.77 *12*	100 *7*	936.24	3⁺			9.7 *3*	
		1202.1 *2*	13.9 *11*	924.76	2⁺			1.2 *1*	
		1493.8 *2*	16.3 *13*	633.14	3⁺			1.3 *1*	
2179.43	4 to 7	1083.8 *4*		1095.10	6⁺				
		1293.2 *2*	100 *11*	886.36	5⁺			0.8 *1*	Iγ: 1971Pr02 report Eγ=1292.7 *3* with Iγ=0.8 *1* placed from the 1920 level. This placement is not confirmed by 2006Bo08 who place the 1293γ from the 2179 level.
2180.07	4 to 7	1084.9 *2*	100 *11*	1095.10	6⁺				
		2180.3 *4*	310 *6*	0.0	5⁺				
2202.85	1⁻,2⁻,3⁻	125.3 *2*	100 *15*	2077.61	2⁻	M1	5.35		Iγ: 1971Pr02 report an unplaced transition with Eγ=125.4 *2*. They do not report an Iγ value from their 8-MeV spectrum. From their 10.5-MeV spectrum one gets Iγ/Iγ(663γ)=4.1 *6*.
		663.3 *2*	51 *9*	1539.37	2⁺			2.2 *2*	
2307.99	4	388.1 *1*	5.0 *9*	1919.95	3⁻			1.4 *1*	
		837.9 *2*	4.2 *12*	1469.43	5⁺			<10.2[m]	
		1239.09 *12*	100 *8*	1069.10	3⁺			20.8 *6*	
2340.0	7⁺	1829.8 *4*	100	510.21	6⁺				
2358.65	2 to 5	1725.2 *2*	100 *11*	633.14	3⁺			3.3[b] *3*	
		1758.1 *6*	16 *8*	601.44	4⁺				
2383.8	3,4,5	1750 *1*	100 *6*	633.14	3⁺				
		1754.8 *6*	31 *13*	628.32	5⁺				
		1782.5 *2*	190 *90*	601.44	4⁺			5.1[b] *3*	
2385.95	3,4,5	856.7 *3*	15 *5*	1529.34	3⁺				
		1753.0 *3*	50 *50*	633.14	3⁺				
		1757.6 *2*	100 *9*	628.32	5⁺				
		1784.1 *4*	9×10¹[‡] *13*	601.44	4⁺				
2404.2	1 to 5	1771.1 *5*	100	633.14	3⁺				
2409.06	6⁺	1780.4 *3*	100 *6*	628.32	5⁺				
		1807.5 *3*		601.44	4⁺				
		1899.3 *3*		510.21	6⁺				

$^{208}_{83}Bi_{125}$-5

^{208}Pb(p,nγ) 2006Bo08,1971Pr02 (continued)

γ(^{208}Bi) (continued)

E_i(level)	J_i^π	E_γ[@]	I_γ[&]	E_f	J_f^π	Iγ[a]	Comments
2415.62	1,2,3	337.9 *2*	100 *6*	2077.61	2^-	14.2[b] *4*	
2436.85	3,4,5	873.3 *2*	100	1563.44	4^+		
2457.35	3^+	918.0 *2*	27 *2*	1539.37	2^+	0.8[b] *1*	
		1388.6[#]	6.6[#] *17*	1069.10	3^+	0.5[b] *1*	Iγ: Iγ/Iγ(1824γ + 1856γ)=0.086 *18* compared with 0.038 *10* from 2006Bo08 suggests that about only about 45% of the Iγ of 1971Pr02 should Be placed from the 2457 level.
		1532.6 *2*	50 *4*	924.76	2^+	1.3[b] *2*	
		1824.13 *14*	100 *8*	633.14	3^+	2.8[b] *2*	
		1856.0 *2*	73 *6*	601.44	4^+	3.0 *2*	Iγ: 1971Pr02 report an unplaced transition with Eγ=1857.0 *2* and Iγ=3.0 *2*. From branching In 2006Bo08 one expects Iγ=2.0 *3*, so part of the intensity reported by 1971Pr02 belongs elsewhere.
2478.46	2,3	275.3 *2*		2202.85	$1^-,2^-,3^-$		
		558.5 *2*	100 *7*	1919.95	3^-	3.3[b] *2*	
		1845.5 *2*	20.5 *17*	633.14	3^+		
2495.49	4,5	293.5 *5*	25 *2*	2202.85	$1^-,2^-,3^-$		
		656.2 *4*	62 *5*	1838.98	4^-	0.5[b] *1*	
		792.1 *2*	60 *5*	1703.25	5^-	0.5[b] *1*	
		1559.2 *2*	48 *4*	936.24	3^+		
		1609.1 *4*	35 *12*	886.36	5^+		
		1862.5 *2*	100 *8*	633.14	3^+		
		1894.0 *3*	66 *6*	601.44	4^+		
2501.60	2^+	1432.3 *2*	20 *6*	1069.10	3^+	2.6[b] *2*	Iγ: from branching In 2006Bo08, one expects Iγ=1.0 *4* for 1971Pr02, so part of the intensity of 1971Pr02 belongs elsewhere.
		1576.7 *2*	100 *20*	924.76	2^+	<5.0[p]	
		1868.3 *2*	90 *20*	633.14	3^+	5.1[b] *2*	
2513.47	3,4,5	1444.2 *2*	100 *8*	1069.10	3^+	1.2 *1*	Iγ: 1971Pr02 report Eγ=1444.2 *2* with Iγ=1.2 *1* placed from the 2077 level. This placement is not confirmed by 2006Bo08 who place the transition from the 2513 level.
		1480.0 *2*	39 *3*	1033.23	4^+	0.6[b] *2*	
		1554.5 *2*	190 *30*	958.97	4^+	2.7[b] *2*	
		1577.5 *2*	29 *5*	936.24	3^+	<5.0[p]	
		1880.5 *4*	86 *7*	633.14	3^+		
		1912.2 *2*	89 *7*	601.44	4^+		
2544.78	1 to 4	467.21 *12*	100 *11*	2077.61	2^-		
2556.40	2,3,4	636.2 *2*	46 *4*	1919.95	3^-		
		1487.4 *1*	100 *7*	1069.10	3^+		
		1620.0 *3*	23.3 *19*	936.24	3^+		
		1923.3 *2*	86 *6*	633.14	3^+		
2564.77	3 to 6	149.4 *4*	3.9 *15*	2415.62	1,2,3		
		1936.6 *2*	100 *11*	628.32	5^+		
		1963.4 *3*	7 *10*	601.44	4^+		

$^{208}_{83}Bi_{125}$-6

^{208}Pb(p,nγ) 2006Bo08,1971Pr02 (continued)

γ(^{208}Bi) (continued)

E_i(level)	J_i^π	E_γ [@]	I_γ [&]	E_f	J_f^π	Iγ [a]
2570.21	1,2,3	154.6 *2*	8 *7*	2415.62	1,2,3	
		492.6 *2*	100 *20*	2077.61	2^-	3.2 [b] *1*
		1645.6 *2*	140 *40*	924.76	2^+	4.4 [b] *3*
2586.58	3,4,5	1627.4 *2*	59 *6*	958.97	4^+	
		1700.5 *2*	71 *6*	886.36	5^+	
		1953.4 *2*	64 *6*	633.14	3^+	
		1984.9 *3*	21 *4*	601.44	4^+	
		2523.5 *3*	100 *8*	63.06	4^+	
2612.59	4,5	1653.6 *2*	45 *3*	958.97	4^+	
		1676.4 *3*	13 *3*	936.24	3^+	<1.1 [r]
		1979 *1*	10 *20*	633.14	3^+	
		2011.3 *3*	100 *8*	601.44	4^+	
		2102.3 *3*	37 *3*	510.21	6^+	
2631.02	5,6	928.1 *3*	60 *20*	1703.25	5^-	
		1006.3 *2*		1624.68	6^-	
		1535.8 *2*	100 *11*	1095.10	6^+	
2636.32	2 to 5	1677.3 *2*	78 *9*	958.97	4^+	<1.1 [r]
		2003.2 *3*	92 *8*	633.14	3^+	
		2034.9 *2*	100 *8*	601.44	4^+	
2657.25	1 to 4	454.4 *2*	100 *5*	2202.85	$1^-,2^-,3^-$	
2660.6	8^+	2010.1 *3*	100	650.50	7^+	
2679.38	1,2,3	601.3 *2*		2077.61	2^-	
		1610.4 *2*	100 *5*	1069.10	3^+	
		1754.8 *2*	39 *9*	924.76	2^+	
		2046.4 *2*		633.14	3^+	
2693.78	2 to 5	149.4 *4*		2544.78	1 to 4	
		1624.8 *2*	42 *3*	1069.10	3^+	
		1660.9 *4*	4.6 *7*	1033.23	4^+	
		1757.4 *3*	0.29 *3*	936.24	3^+	
		2060.3 *3*	45 *3*	633.14	3^+	
		2630.6 *2*	100 *8*	63.06	4^+	
2718.53	2,3,4	798.42 *15*	100 *7*	1919.95	3^-	6.3 [b] *2*
		848.7 *4*	42 *3*	1870.73	3^+	3.5 [b] *3*
		1189.7 *3*	3.5 *9*	1529.34	3^+	
		1649.2 *3*	11.0 *9*	1069.10	3^+	0.7 [b] *2*
		1782.2 *2*	0.12 *2*	936.24	3^+	
2732.99	2,3	254.4 *2*	100 *6*	2478.46	2,3	
		530.2 *2*		2202.85	$1^-,2^-,3^-$	
		1808.3 *2*		924.76	2^+	
2739.49	3,4	1114.6 *2*	64 *7*	1624.68	6^-	0.6 [b] *1*
		1780.4 *3*	46 *10*	958.97	4^+	
		1814.9 *2*	100 *12*	924.76	2^+	

^{208}Pb(p,nγ) 2006Bo08,1971Pr02 (continued)

γ(^{208}Bi) (continued)

E_i(level)	J_i^π	E_γ[@]	I_γ[&]	E_f	J_f^π	Iγ[a]
2739.49	3,4	1853.2 *2*	82 *9*	886.36	5^+	
2838.84	1,2,3	268.8 *3*	15.7 *14*	2570.21	1,2,3	0.4[b] *2*
		282.2 *2*	13.2 *12*	2556.40	2,3,4	0.5[b] *1*
		423.1 *1*	45 *3*	2415.62	1,2,3	0.9[b] *1*
		761.3 *2*	100 *8*	2077.61	2^-	2.6[b] *1*
		1914.4 *2*	20 *2*	924.76	2^+	
2843.31	1,2,3	765.7 *2*	100	2077.61	2^-	1.4[b] *1*
2869.59	3 to 6	2806.50 *16*	28.0 *15*	63.06	4^+	
		2869.57 *15*	100 *5*	0.0	5^+	
2879.63	2,3,4	1340.1 *2*	59 *6*	1539.37	2^+	
		1846.6 *2*	100 *13*	1033.23	4^+	3.1[b] *2*
2881.32	2 to 5	294.6 *3*		2586.58	3,4,5	
		1812.1 *5*	100 *14*	1069.10	3^+	
		1994.6 *6*		886.36	5^+	
		2818.5 *3*	51 *7*	63.06	4^+	
2884.07	1^+	382.5 *2*	100[‡] *10*	2501.60	2^+	
		1815.1 *3*	140[‡] *30*	1069.10	3^+	
		1959.1 *3*	100 *40*	924.76	2^+	
2886.72	3,4	330.5 *2*		2556.40	2,3,4	
		578.7 *2*	99 *8*	2307.99	4	
		2285.0 *2*	100 *8*	601.44	4^+	
2888.47	3 to 7	2888.45 *16*	100	0.0	5^+	
2893.73	2^-	973.8 *2*	100 *60*	1919.95	3^-	<6.6[j]
		1091.6 *2*	8 *7*	1802.06	1^+	
		1364.1 *4*	8 *7*	1529.34	3^+	
		1957.6 *2*	13 *13*	936.24	3^+	
2903.56	$0^+,1^+,2^+,3^+$	1101.6 *2*	100	1802.06	1^+	
		1978.9 *4*	21 *4*	924.76	2^+	
2932.82	1 to 5	1996.4 *2*	36 *2*	936.24	3^+	
		2046.4 *2*	100 *7*	886.36	5^+	6.2[b] *3*
		2331.6 *2*	19.7 *16*	601.44	4^+	
2942.92	2 to 6	2879.84 *15*	100	63.06	4^+	
2950.92	2,3,4	873.3 *2*		2077.61	2^-	
		1411.3 *3*	32 *2*	1539.37	2^+	
		1992.3 *2*	22 *2*	958.97	4^+	
		2026.1 *2*	100 *8*	924.76	2^+	
		2317.6 *2*	26 *8*	633.14	3^+	
3069.30	2,3	632.2 *3*		2436.85	3,4,5	
		1267.6 *2*	100 *6*	1802.06	1^+	1.6[b] *1*
		1529.9 *2*	81 *11*	1539.37	2^+	[h]
		1539.7 *3*	22 *8*	1529.34	3^+	

$^{208}_{83}Bi_{125}$-8

^{208}Pb(p,nγ) 2006Bo08,1971Pr02 (continued)

γ(^{208}Bi) (continued)

E_i(level)	J_i^π	E_γ [@]	I_γ [&]	E_f	J_f^π	Iγ [a]
3069.30	2,3	2036.2 *3*	29 *7*	1033.23	4^+	
		2132.7 *3*	0.39 *7*	936.24	3^+	
3154.89	2 to 6	846.9 *2*	100 *11*	2307.99	4	
3165.92	3^+	262.5 *2*	100 *11*	2903.56	$0^+,1^+,2^+,3^+$	<68.1 [l]
		601.4 *2*		2564.77	3 to 6	
		664.0 *2*		2501.60	2^+	
		1626.4 *3*		1539.37	2^+	
3286.34	2,3,4	1159.35 *12*	77 *6*	2126.86	2^+	1.0 [b] *1*
		1757.2 *2*	41 *7*	1529.34	3^+	
		2217.2 *3*	14 *2*	1069.10	3^+	
		2253.1 *2*	64 *6*	1033.23	4^+	
		2361.5 *2*	91 *11*	924.76	2^+	
		2652.8 *4*	64 *11*	633.14	3^+	
		2685.2 *2*	100 *8*	601.44	4^+	
3351.27	2,3,4	738.8 *4*		2612.59	4,5	
		935.7 *3*		2415.62	1,2,3	
		1821.8 *3*	100 *5*	1529.34	3^+	
3390.9	3	440.2 *6*	24.0 *10*	2950.92	2,3,4	<2.1 [t]
		496 *2*	0 *10*	2893.73	2^-	
		2454.6 *4*	100 *6*	936.24	3^+	
3425.05	3,4,5	538.2 *2*		2886.72	3,4	
		545.6 *4*		2879.63	2,3,4	
		1117.2 *3*	22 *2*	2307.99	4	
		2488.9 *2*	51 *4*	936.24	3^+	
		2791.8 *2*	100 *8*	633.14	3^+	
3427.2	1 to 8	862.4 *3*	100 *11*	2564.77	3 to 6	

[†] From 2006Bo08 based on measurements of the ratio I_s/I_0, where I_0=measured γ-ray intensity obtained from a gate on a transition just above the γ ray of interest; $I_s=[1/(1+\alpha_0)]\Sigma_i I_i(1+\alpha_i)$; α_0=total conversion coefficient for the transition of interest; I_i=γ−ray intensities for the transitions following the transition of interest but determined from the gate position as I_0, α_i=corresponding conversion coefficients. Only M1 and E1 transitions were considered for this analysis. E2 transitions were not considered since they would show a measurable lifetime in this energy range.

[‡] Published value corrected In priv comm to the evaluator from K.H.Maier, June, 2006.

[#] Transition added In priv comm to the evaluator from K.H.Maier, June, 2006.

[@] Weighted averages of data In 2006Bo08 and 1971Pr02. See 1971Pr02 for additional transitions unplaced by these authors or by 2006Bo08. Note that above 1700, 1971Pr02 list only the prominent γ′s.

[&] Branching ratios for each level, normalized to 100 for the strongest transition, As given by 2006Bo08.

[a] Relative photon intensities from the 8-MeV data of 1971Pr02 normalized to Iγ=100.0 *24* for the 570γ. See 1971Pr02 for a list of intensities taken At 10.5 MeV. Note that 2006Bo08 resolve many of the multiple placement assignments of 1971Pr02. Note further that above 1700, 1971Pr02 list only the prominent γ′s.

[b] Unplaced by 1971Pr02. Placed by the evaluator on the basis of data In 2006Bo08.

$^{208}_{83}Bi_{125}$-9

γ(^{208}Bi) (continued)

[c] 1971Pr02 report Eγ=886.4 *3* with Iγ=7.8 *3* placed from the 886 and 1920 levels. From branching In 2006Bo08 for the 1920 level, one deduces Iγ<1.4 for placement from this level, leaving Iγ=7.1 *8* for placement from the 886 level.

[d] 1971Pr02 report Eγ=330.8 *2* with Iγ=0.8 *1* placed from the 959 level. 2006Bo08 place a transition with this energy from both the 959 and 1871 levels. From branching In 2006Bo08 for the 1871 level, one deduces Iγ=0.3 *2* for placement from the 959 level.

[e] 1971Pr02 report Eγ=959.0 *3* with Iγ=14.7 *5* doubly placed from the 959 and 1469 levels.

[f] 1971Pr02 report Eγ=436.3 *1* with Iγ=1.9 *1* doubly placed from the 1069 and 1469 levels.

[g] 1971Pr02 report Eγ=895.9 *2* with Iγ=20.3 *6* doubly placed from the 959 and 1529 levels. Branchings from 2006Bo08 for these two levels are consistent with the summed intensity of 1971Pr02.

[h] 1971Pr02 report Eγ=1529.8 *2* with Iγ=2.9 *3* placed from the 1529 level. 2006Bo08 place a transition with this energy from both the 1529 and 3069 levels. From branching In 2006Bo08 for the 1529 level, one deduces Iγ=1.3 *6* for placement from the 3069 level. This gives a value of Iγ/Iγ(1268γ) from the 3069 level that is consistent with that from 2006Bo08.

[i] 1971Pr02 report Eγ=530.5 *2* with Iγ=6.1 *3* placed from the 1563 level. 2006Bo08 place a transition with this energy from both the 1563 and 1625 levels. Iγ from 1971Pr02 for placement from these two levels, based on branching from 2006Bo08, is expected to Be 1.5 *4*, so most of the intensity reported by 1971Pr02 belongs elsewhere.

[j] 1971Pr02 report an unplaced transition with Eγ=973.8 *3* and Iγ=6.4 *2*. 2006Bo08 place transitions with this energy from levels At 1624 and 2894.

[k] 1971Pr02 report Iγ=4.1 *2* for an unplaced 1206.0 *2* transition. Transitions with this energy are placed by 2006Bo08 from the 1716 and 1839 levels. A comparison of the branchings In the two works suggests that most of the intensity belongs with the 1839 level. One can deduce Iγ=3.4 *9* for placement from that level.

[l] 1971Pr02 report Eγ=262.7 *1* with Iγ=66.5 *16* placed from the 1802 level. 2006Bo08 place a transition with this energy from both the 1802 and 3166 levels. From branching In 2006Bo08 for the 1802 level, one deduces Iγ=52 *4* for placement from this level, leaving Iγ=14 *5* for placement from the 3166 level.

[m] 1971Pr02 report Eγ=837.8 *2* with Iγ=9.7 *5* placed from a 2401 level. This level is not confirmed by 2006Bo08. They place an 838γ from levels At 1871 and 2308. From branchings In 2006Bo08 from the 2308 level, one deduces Iγ=0.9 *3* for placement from that level, leaving Iγ=8.8 *6* for placement from the 1871 level.

[n] 1971Pr02 report Eγ=934.7 *3* with Iγ=9.1 *5* placed from the 1563 level. 2006Bo08 place transitions with this energy from the 1563 and 1871 levels. From branching In 2006Bo08 from the 1563 level, one deduces Iγ=3.0 *9* for placement from this level, leaving Iγ=6.1 *10* for placement from the 1871 level.

[o] 1971Pr02 report an unplaced transition with Eγ=946.1 *3* and Iγ=4.2 *2*. 2006Bo08 place a transition with this energy from the 1871 and 1882 levels.

[p] 1971Pr02 report an unplaced transition with Eγ=1576.6 *2* and Iγ=4.8 *2*. 2006Bo08 place a transition with this energy from the 2502 and 2513 levels. From branching of 2006Bo08 for the 2513 level one deduces Iγ=0.39 *8* for placement from this level, leaving Iγ=4.4 *2* for placement from the 2502 level.

[q] 1971Pr02 report Eγ=275.4 *1* with Iγ=95.1 *22* placed from the 2077 level. The branching In 2006Bo08 suggests that only about half of this intensity should Be associated with the 2077 level. 2006Bo08 show a 275γ also from the 2478 level, but No branching is given.

[r] 1971Pr02 report an unplaced transition with Eγ=1676.7 *2* and Iγ=1.0 (1). 2006Bo08 place transitions with this energy from the 2613 and 1637 levels.

[s] 1971Pr02 report Eγ=1006.3 *3* with Iγ=55.9 *17* placed from the 1069 level. 2006Bo08 place a transition with this energy from the 1069 level and also As a single deexcitation mode from the 1657 level. From a comparison with branching of 2006Bo08, most of the intensity belongs with the 1069 level.

[t] 1971Pr02 report Eγ=440.2 *1* with Iγ=2.0 *1* placed from the 1069 level. This placement is not confirmed by 2006Bo08 who place the transition from the 3391 level.

[u] 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.

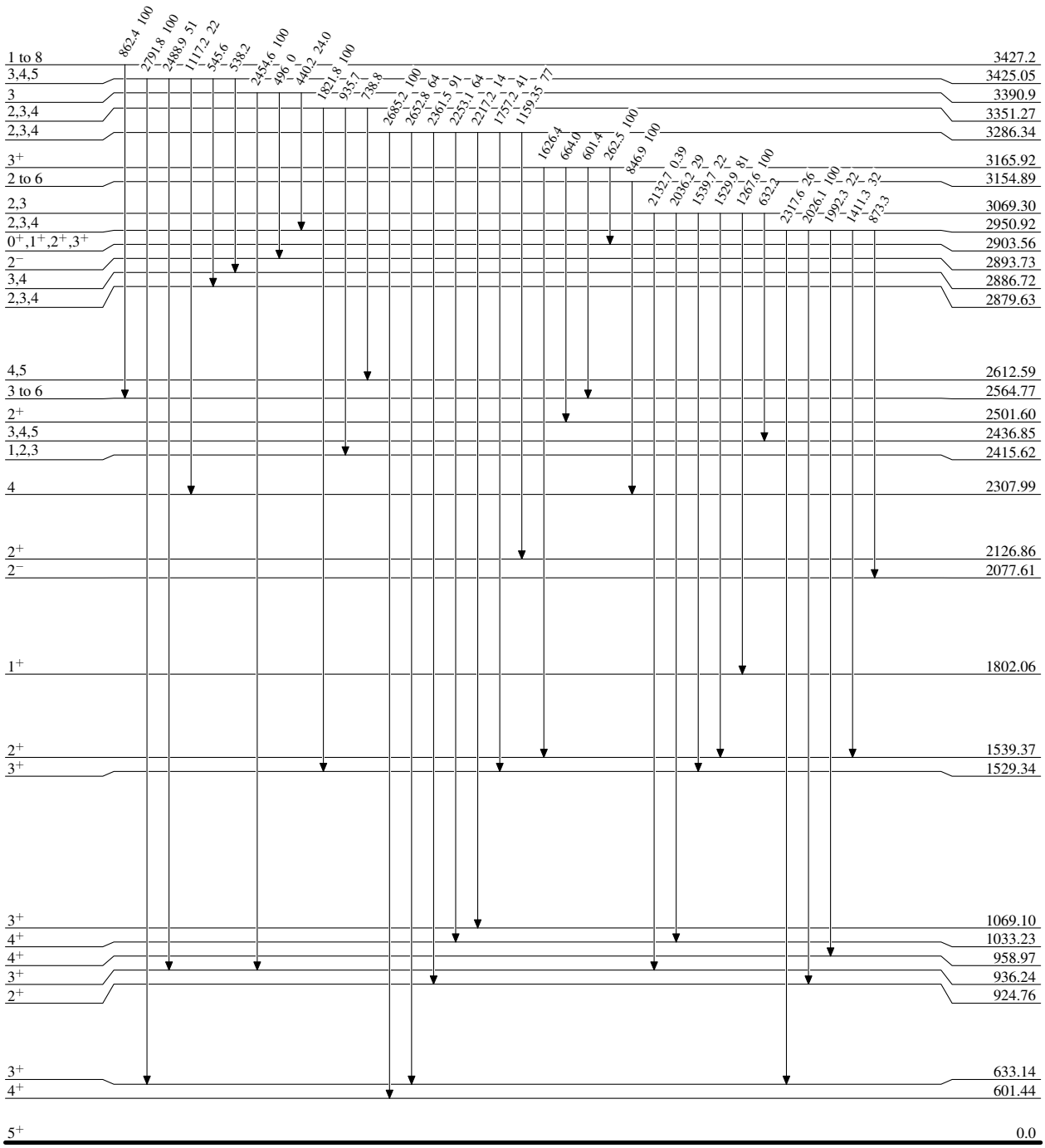
[v] Placement of transition in the level scheme is uncertain.

$^{208}_{83}Bi_{125}$-10

^{208}Pb(p,nγ) 2006Bo08,1971Pr02

Level Scheme

Intensities: Relative photon branching from each level

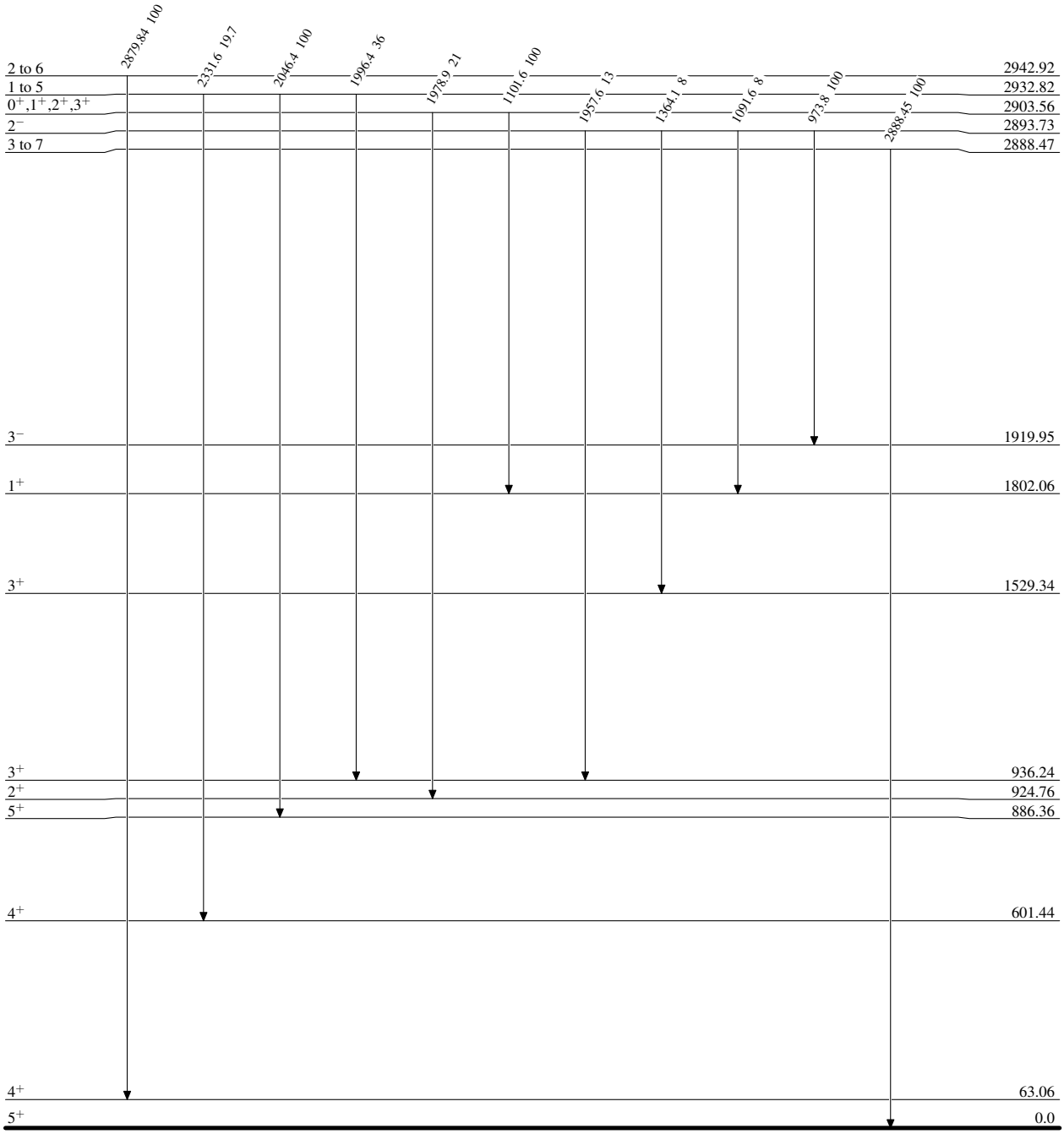


$^{208}_{83}Bi_{125}$

^{208}Pb(p,nγ) 2006Bo08,1971Pr02

Level Scheme (continued)

Intensities: Relative photon branching from each level

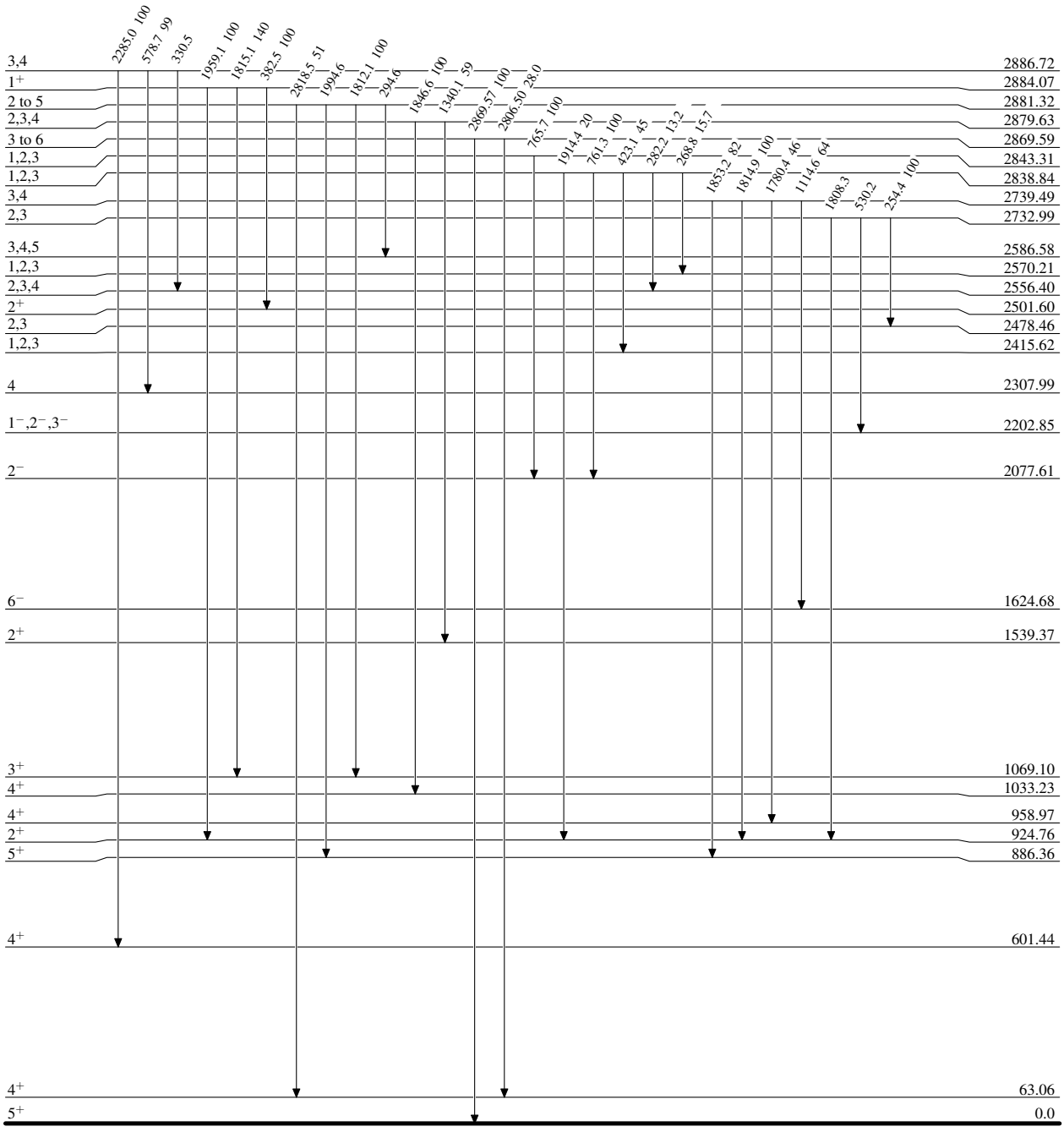


$^{208}_{83}Bi_{125}$

^{208}Pb(p,nγ) **2006Bo08,1971Pr02**

Level Scheme (continued)

Intensities: Relative photon branching from each level

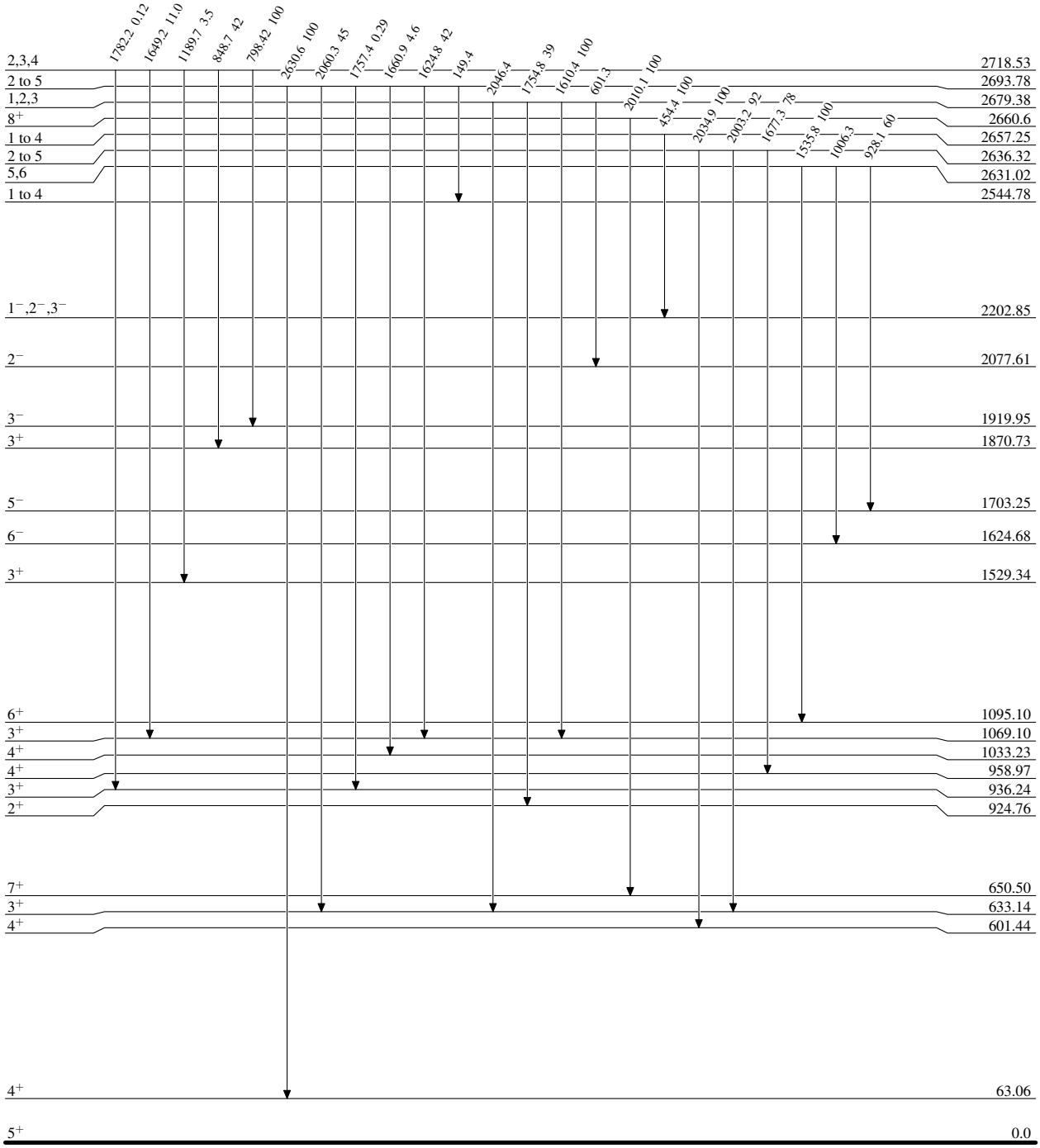


$^{208}_{83}Bi_{125}$

^{208}Pb(p,nγ) 2006Bo08,1971Pr02

Level Scheme (continued)

Intensities: Relative photon branching from each level

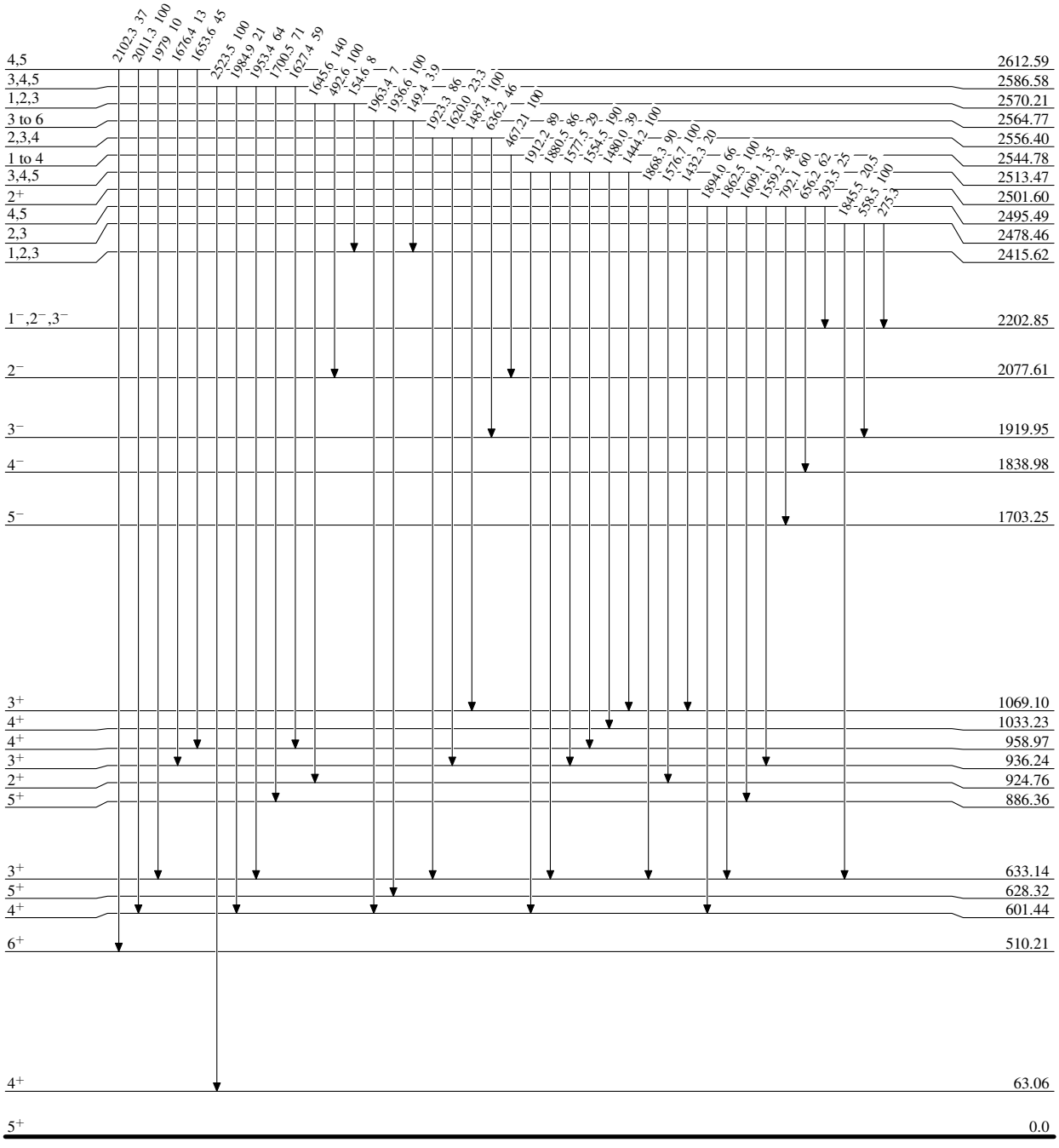


$^{208}_{83}Bi_{125}$

^{208}Pb(p,nγ) 2006Bo08,1971Pr02

Level Scheme (continued)

Intensities: Relative photon branching from each level

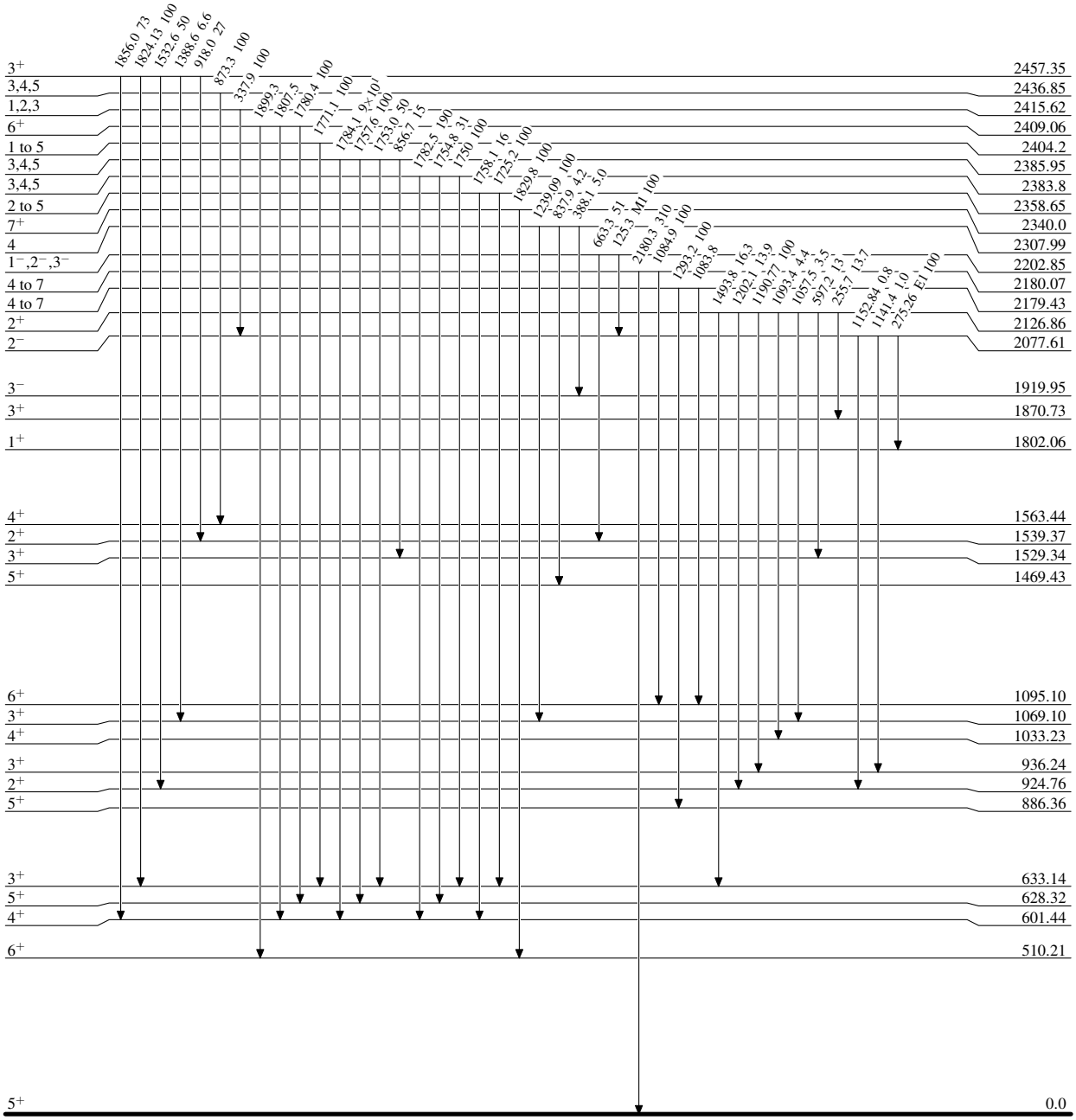


$^{208}_{83}Bi_{125}$

^{208}Pb(p,nγ) 2006Bo08,1971Pr02

Level Scheme (continued)

Intensities: Relative photon branching from each level

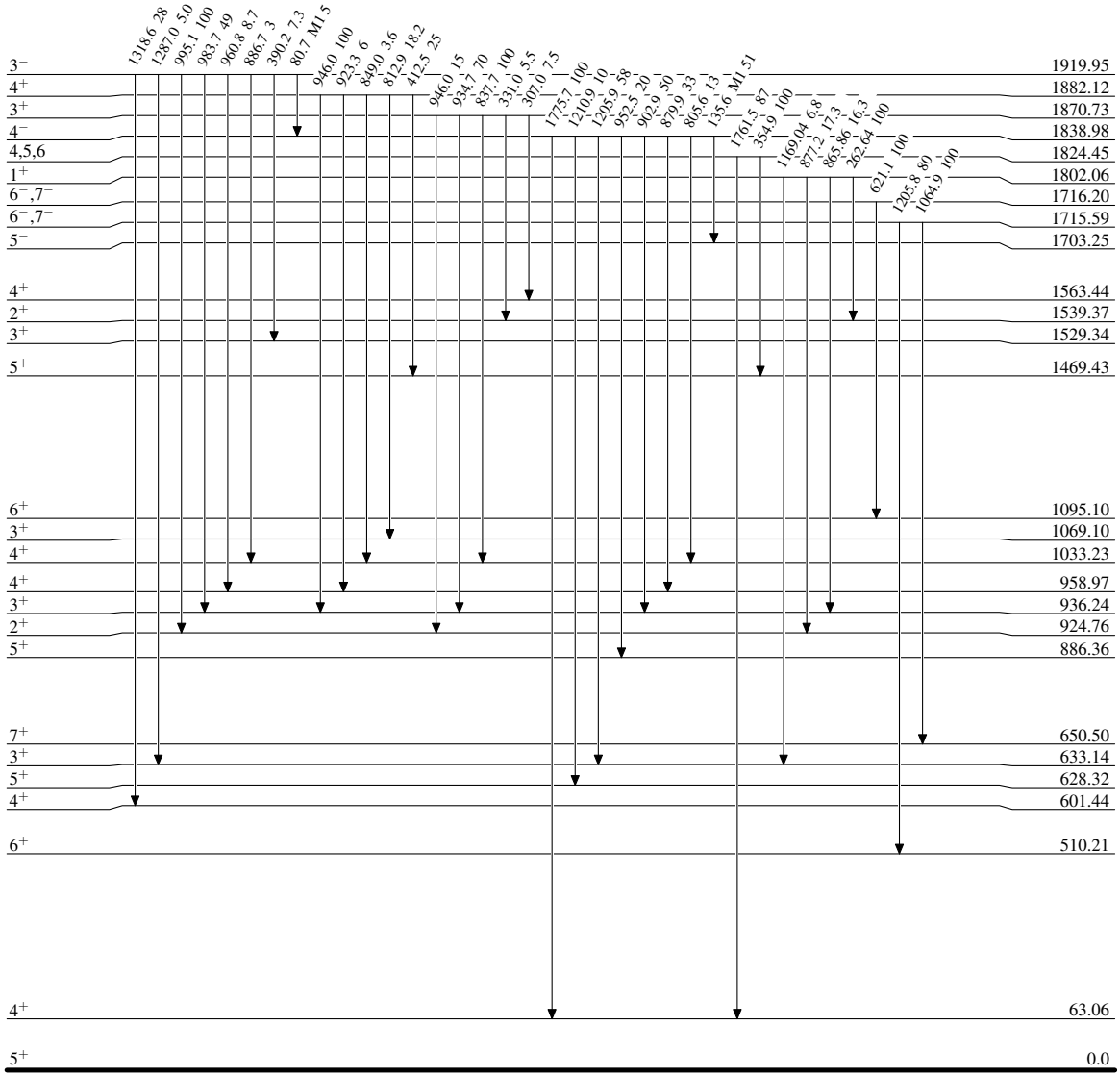


$^{208}_{83}Bi_{125}$

^{208}Pb(p,nγ) 2006Bo08,1971Pr02

Level Scheme (continued)

Intensities: Relative photon branching from each level



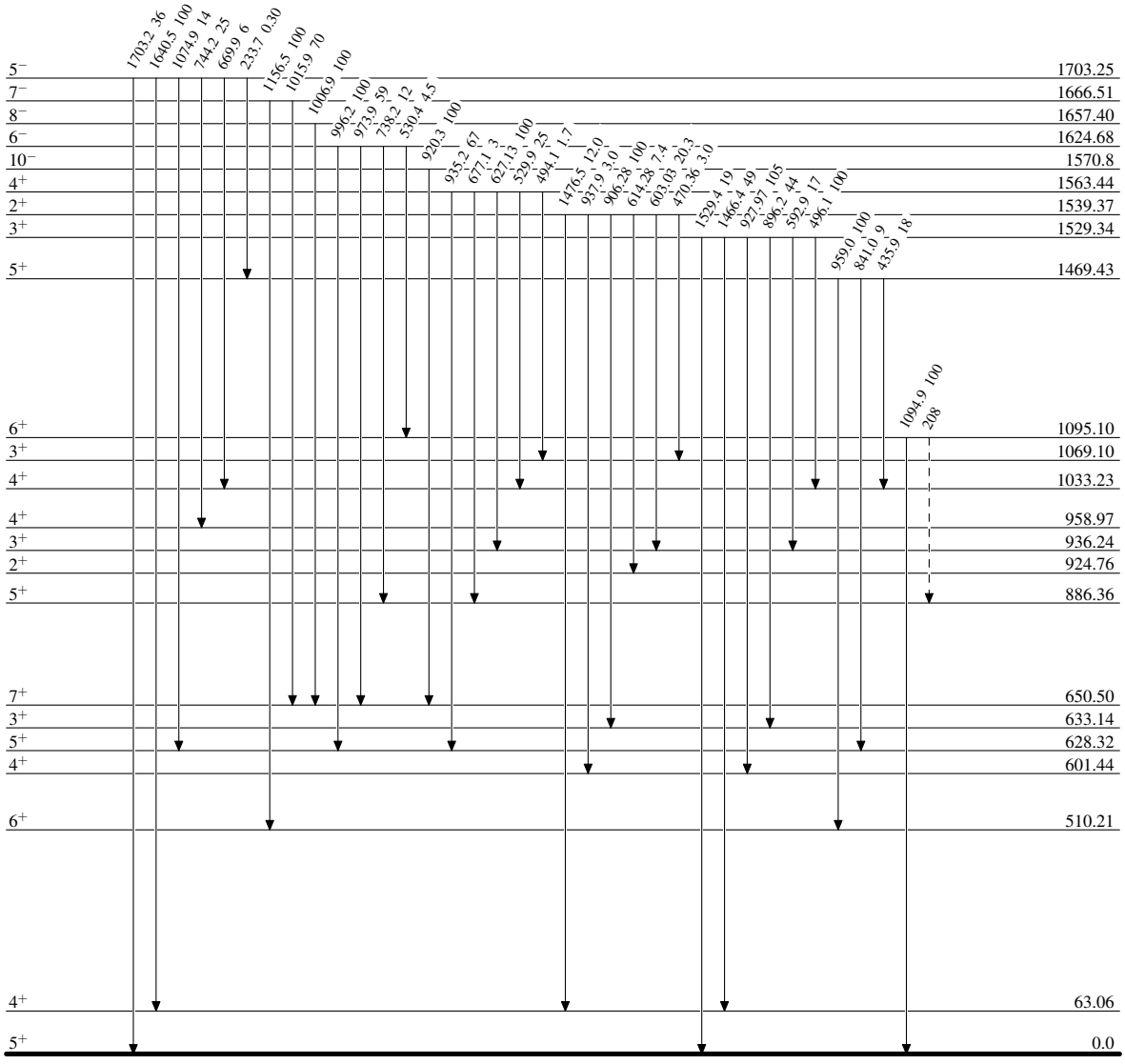
$^{208}_{83}Bi_{125}$

^{208}Pb(p,nγ) 2006Bo08,1971Pr02 Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



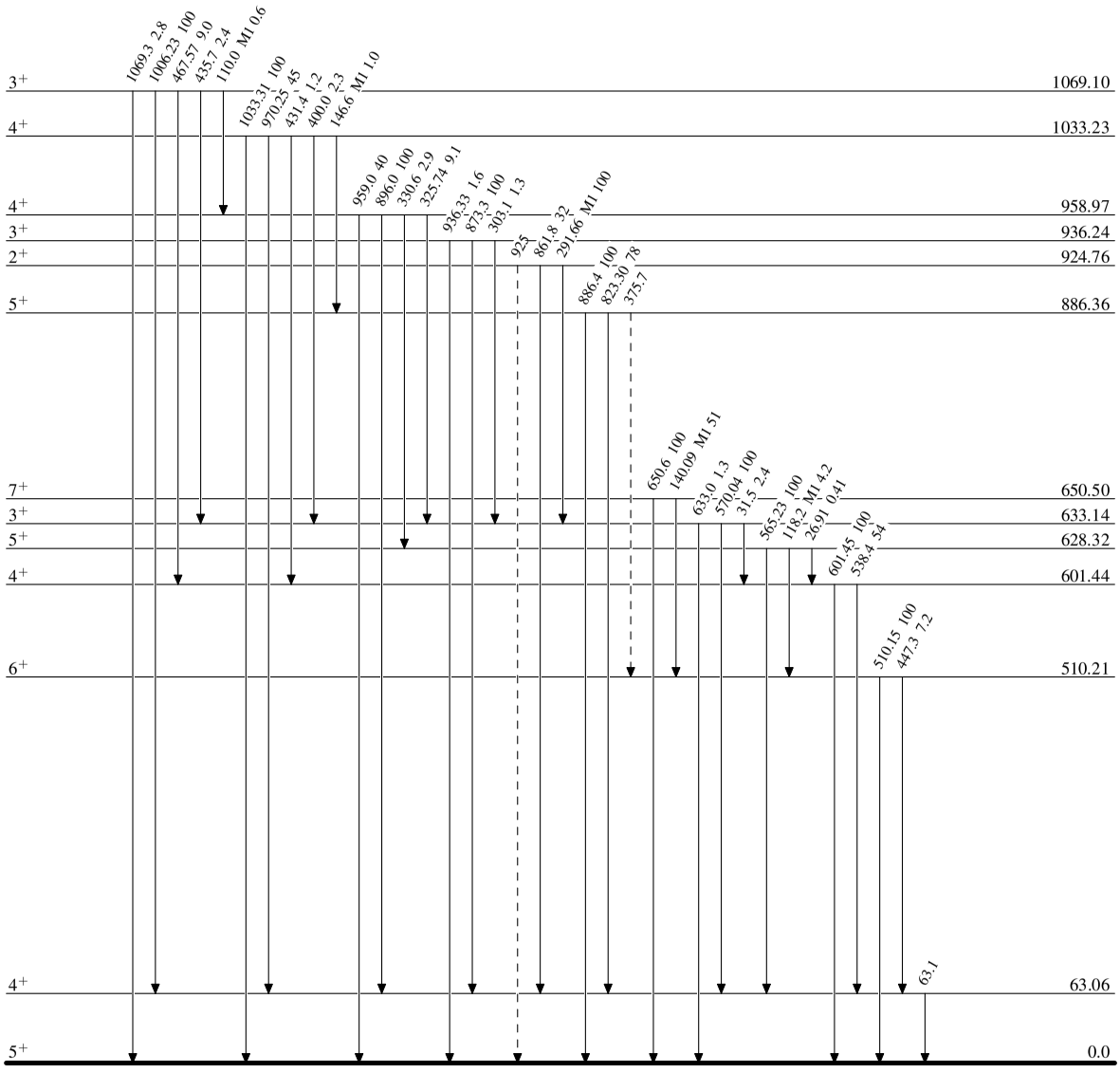
$^{208}_{83}Bi_{125}$

^{208}Pb(p,nγ) **2006Bo08,1971Pr02** Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{208}_{83}Bi_{125}$