^{208}Pb(^{7}Li,5nγ) 2001Ba79

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 121, 561 (2014)	31-Mar-2014

Target: 99% enriched ^{208}Pb. Projectile: ^{7}Li, E=32-44 MeV, 53-56 MeV. Measured Eγ, Iγ, $\gamma\gamma$ coin, $\gamma\gamma$(t), Xγ(t), pulsed-beam gamma-ray coincidence, γ-ray angular distributions. Deduced total conversion coefficients from transition intensity balances, γ-ray multipolarities, level half-life. Detector: CAESAR array of six Compton-suppressed hyperpure Ge detectors.

^{210}At Levels

E(level)[†]	Jπ[‡]	$T_{1/2}$
0.0[&]	5^+	
73.0[&] *8*	4^+	
507.35[#a] *16*	6^+	
576.44[#a] *16*	7^+	
1222.42[@&] *23*	8^+	
1251.98[#&] *25*	9^+	
1363.3[&] *3*	11^+	23.6 ns *7*
1495.1[&] *3*	10^+	
1688.7[b] *3*	(10^-)	15.9 ns *14*
1740.0[@a] *3*	10^+	
1819.1[@a] *3*	11^+	
1905.3[#c] *3*	12^+	
1913.1 *11*		
1928.3[c] *3*	(11^+)	
1970.0[@a] *3*	12^+	
2042.8[#a] *3*	13^+	
2459.3 *6*		
2467.0[@d] *4*	13^+	
2549.6[f] *4*	15^-	0.500 μs *20*
2571.9[#f] *4*	14^-	
2600.3[f] *4*	13^-	
2640.5 *4*		
2649.9 *4*		
2665.5[f] *4*	(14^-)	
2683.7[f] *4*	(13^-)	
2783.4[#b] *4*	14^-	
2877.2[d] *6*	(14^+)	
3070.8 *8*	(14^-)	
3107.2[#g] *4*	16^-	
3176.5[@g] *4*	(15^-)	
3263.4[g] *4*	15^-	
3323.3[@] *4*	15^-	
3348.6 *6*		
3415.8[#g] *4*	16^-	
3423.3[@e] *4*	(15^-)	
3542.4[#g] *4*	17^-	
3551.6[#] *4*	15^-	
3578.4[h] *5*	(15^-)	
3655.3[#] *4*	16^-	
4027.6 *4*	19^+	5.61 μs *7*
4078.2[#i] *4*	(17^+)	
4199.0 *6*	(18^+)	
4235.9 *5*		
4426.6 *7*		
4467.7 *4*	20^+	
4751.4 *7*		
4786.2 *7*		
4814.5 *4*	20^+	
4975.8 *11*		
4986.1 *8*		
5063.9 *4*	21^-	
5175.3 *4*	22^-	
5248.1 *4*		
5332.6 *12*		
5353.4 *12*		
5453.4 *4*		
5578.4 *8*		
5719.4 *13*		
5836.3 *4*		
5839.6 *5*		
5848.1 *13*		
5893.9 *8*		
5933.4 *7*		
5949.0 *4*	(22)	
5969.6 *4*	(23^-)	
6199.4 *4*	(22^-)	
6274.7 *4*	(23^-)	
6287.3 *11*		
6413.6 *7*		
6428.3 *5*		
6467.8 *5*	$(^-)$	
6524.7 *4*	(24^-)	
6635.2 *7*		
6643.8 *5*		
6931.2 *7*		
6959.3 *6*	(26^-)	98 ns *2*
7203.6 *12*		
7262.3 *12*		
7369.4 *12*		
7409.0 *16*		

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^{208}Pb(^{7}Li,5nγ) 2001Ba79 (continued)

^{210}At Levels (continued)

E(level)[†]	E(level)[†]	J^{π}[‡]	$T_{1/2}$	E(level)[†]
7414.3 *9*	7831.3 *8*			8211.5 *13*
7472.1 *11*	7847.3 *6*	(29^{+})	36.0 ns *14*	8280.1 *8*
7476.0 *6*	7955.1 *6*			8376.1 *12*
7603.4 *6*	8011.2 *7*			8557.2 *16*
7658.8 *6*	8018.5 *13*			8564.9 *8*
7718.5 *8*	8045.3 *8*			8956.3 *13*
7774.6 *15*	8063.6 *8*			9067.3 *10*
7803.1 *8*	8122.3 *9*			

[†] Deduced by evaluator from a least-squares fit to γ-ray energies, using ΔE=0.2 keV for strong γ rays with I$\gamma\geq$10, otherwise ΔE=0.5 keV (as suggested in S. Bayer's Ph.D. Thesis, "Octupole Correlations and Residual Interactions," Australian National University, Canberra, 1998).

[‡] Spin and parity assignments are based on γ-ray multipolarities and angular distributions. Shell-model configuration assignments are based on a comparison of experimental level energies and γ-ray decay patterns with theoretical predictions.

[#] $T_{1/2}$<1.4 ns.

[@] $T_{1/2}$<2.1 ns.

[&] Configuration=$((\pi\ 1h_{9/2})^3(\nu\ 3p_{1/2})^{-1})$.

[a] Configuration=$((\pi\ 1h_{9/2})^3(\nu\ 2f_{5/2})^{-1})$.

[b] Configuration=$((\pi\ 1h_{9/2})^3(\nu\ 1i_{13/2})^{-1})$.

[c] Configuration=$((\pi\ 1h_{9/2})^2(\pi\ 2f_{7/2})^1(\nu\ 3p_{1/2})^{-1})$.

[d] Configuration=$((\pi\ 1h_{9/2})^2(\pi\ 2f_{7/2})^1(\nu\ 2f_{5/2})^{-1})$.

[e] Configuration=$((\pi\ 1h_{9/2})^2(\pi\ 2f_{7/2})^1(\nu\ 1i_{13/2})^{-1})$.

[f] Configuration=$((\pi\ 1h_{9/2})^2(\pi\ 1i_{13/2})^1(\nu\ 3p_{1/2})^{-1})$.

[g] Configuration=$((\pi\ 1h_{9/2})^2(\pi\ 1i_{13/2})^1(\nu\ 2f_{5/2})^{-1})$.

[h] Configuration=$((\pi\ 1h_{9/2})^2(\pi\ 1i_{13/2})^1(\nu\ 3p_{3/2})^{-1})$.

[i] Configuration=$((\pi\ 1h_{9/2})^1(\pi\ 1i_{13/2})^2(\nu\ 3p_{1/2})^{-1})$.

γ(^{210}At)

E_{γ}	I_{γ}[‡]	E_i(level)	J^{π}_i	E_f	J^{π}_f	Mult.[†]	α[#]	Comments
(22)	≤1	2571.9	14^{-}	2549.6	15^{-}			
(37)	≤1	4235.9		4199.0	(18^{+})			
(57)	≤1	6524.7	(24^{-})	6467.8	($^{-}$)	M1	11.96	α(L)=9.11 *13*; α(M)=2.16 *3* α(N)=0.559 *8*; α(O)=0.1197 *17*; α(P)=0.01654 *24* Mult.: α(exp)>8.
64.8	≤1	1970.0	12^{+}	1905.3	12^{+}	M1	8.22	α(L)=6.26 *9*; α(M)=1.483 *21* α(N)=0.384 *6*; α(O)=0.0822 *12*; α(P)=0.01136 *16* Mult.: α(exp)=7 *3*.
69.0	26 *2*	576.44	7^{+}	507.35	6^{+}	M1	6.84	α(L)=5.21 *8*; α(M)=1.234 *18* α(N)=0.320 *5*; α(O)=0.0685 *10*; α(P)=0.00945 *14* Mult.: α(exp)=9.2 *6*.
72.7	7 *1*	2042.8	13^{+}	1970.0	12^{+}	M1	5.87	α(L)=4.47 *7*; α(M)=1.059 *15* α(N)=0.274 *4*; α(O)=0.0588 *9*; α(P)=0.00812 *12* Mult.: α(exp)=4.7 *16*.
73.0	≤1	73.0	4^{+}	0.0	5^{+}			
75.2	≤1	6274.7	(23^{-})	6199.4	(22^{-})	M1	5.32	α(L)=4.05 *6*; α(M)=0.960 *14* α(N)=0.249 *4*; α(O)=0.0533 *8*; α(P)=0.00735 *11* Mult.: α(exp)=4.5 *12*.
76.8	≤1	3655.3	16^{-}	3578.4	(15^{-})	M1	5.00	α(L)=3.81 *6*; α(M)=0.903 *13*

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^{208}Pb(^{7}Li,5nγ) 2001Ba79 (continued)

γ(^{210}At) (continued)

E_γ	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[#]	Comments
								α(N)=0.234 *4*; α(O)=0.0501 *7*; α(P)=0.00692 *10* Mult.: α(exp)>2.
79.2	≤1	1819.1	11^+	1740.0	10^+	M1	4.58	α(L)=3.48 *5*; α(M)=0.825 *12* α(N)=0.214 *3*; α(O)=0.0458 *7*; α(P)=0.00632 *9* Mult.: α(exp)=4.9 *16*.
86.4	7.1 *11*	1905.3	12^+	1819.1	11^+	M1	3.55	α(L)=2.71 *4*; α(M)=0.641 *9* α(N)=0.1660 *24*; α(O)=0.0356 *5*; α(P)=0.00491 *7* Mult.: α(exp)=3.5 *6*.
92.5	19 *2*	3415.8	16^-	3323.3	15^-	M1	2.91	α(L)=2.22 *4*; α(M)=0.526 *8* α(N)=0.1362 *19*; α(O)=0.0292 *4*; α(P)=0.00403 *6* Mult.: α(exp)=2.8 *5*.
99.7	2.9 *3*	2783.4	14^-	2683.7	(13^-)	M1	12.15	α(K)=9.80 *14*; α(L)=1.79 *3*; α(M)=0.423 *6* α(N)=0.1096 *16*; α(O)=0.0235 *4*; α(P)=0.00324 *5* Mult.: α(exp)=7.3 *9*, near K-edge (95.7 keV).
103.5	8.0 *9*	3655.3	16^-	3551.6	15^-	M1	10.95	α(K)=8.85 *13*; α(L)=1.603 *23*; α(M)=0.380 *6* α(N)=0.0984 *14*; α(O)=0.0211 *3*; α(P)=0.00291 *4* Mult.: α(exp)=12.5 *7*.
104.9	13 *1*	2571.9	14^-	2467.0	13^+	E1	0.408	α(K)=0.319 *5*; α(L)=0.0673 *10*; α(M)=0.01606 *23* α(N)=0.00409 *6*; α(O)=0.000833 *12*; α(P)=0.0001000 *14* Mult.: α(exp)=0.9 *2*. A_2=−0.28 *10*.
111.3[@]	146[@] *4*	1363.3	11^+	1251.98	9^+	E2	4.91	α(K)=0.398 *6*; α(L)=3.34 *5*; α(M)=0.896 *13* α(N)=0.231 *4*; α(O)=0.0454 *7*; α(P)=0.00459 *7* Mult.: α(exp)=5.6 *2*. A_2=0.13 *4*, combined value for doublet.
111.3[@]	14[@] *1*	5175.3	22^-	5063.9	21^-	M1	8.91	α(K)=7.21 *10*; α(L)=1.300 *19*; α(M)=0.308 *5* α(N)=0.0798 *12*; α(O)=0.01708 *24*; α(P)=0.00236 *4* Mult.: α(exp)=7 *1*. A_2=0.13 *4*, combined value for doublet.
115.8	10 *2*	2665.5	(14^-)	2549.6	15^-	M1	7.96	α(K)=6.44 *9*; α(L)=1.160 *17*; α(M)=0.275 *4* α(N)=0.0712 *10*; α(O)=0.01524 *22*; α(P)=0.00210 *3* Mult.: α(exp)=8 *2*. A_2=−0.24 *13*.
117.8	1.0 *2*	2783.4	14^-	2665.5	(14^-)	M1	7.58	α(K)=6.13 *9*; α(L)=1.104 *16*; α(M)=0.261 *4* α(N)=0.0677 *10*; α(O)=0.01451 *21*; α(P)=0.00200 *3* Mult.: α(exp)=7 *2*.
120.8	4 *3*	4199.0	(18^+)	4078.2	(17^+)	M1	7.06	α(K)=5.71 *8*; α(L)=1.027 *15*; α(M)=0.243 *4* α(N)=0.0630 *9*; α(O)=0.01349 *19*; α(P)=0.00186 *3* Mult.: α(exp)=7 *1*.
128.3	≤1	3551.6	15^-	3423.3	(15^-)			
131.8	9 *1*	1495.1	10^+	1363.3	11^+	M1	5.51	α(K)=4.46 *7*; α(L)=0.800 *12*; α(M)=0.189 *3* α(N)=0.0491 *7*; α(O)=0.01051 *15*; α(P)=0.001451 *21* Mult.: α(exp)=4.4 *5*.
137.6	11 *4*	2042.8	13^+	1905.3	12^+	M1	4.87	α(K)=3.94 *6*; α(L)=0.707 *10*; α(M)=0.1674 *24* α(N)=0.0434 *6*; α(O)=0.00929 *13*; α(P)=0.001283 *18* Mult.: α(exp)=5.3 *4*. A_2=−0.22 *11*.
141.0	≤1	5719.4		5578.4				
146.7	≤1	7409.0		7262.3				
151.0	8.4 *3*	1970.0	12^+	1819.1	11^+	M1	3.74	α(K)=3.03 *5*; α(L)=0.542 *8*; α(M)=0.1284 *18* α(N)=0.0333 *5*; α(O)=0.00712 *10*; α(P)=0.000983 *14* Mult.: α(exp)=4.2 *3*.
152.2	8.9 *10*	3415.8	16^-	3263.4	15^-	M1	3.66	α(K)=2.96 *5*; α(L)=0.530 *8*; α(M)=0.1255 *18* α(N)=0.0325 *5*; α(O)=0.00696 *10*; α(P)=0.000962

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^{208}Pb(^{7}Li,5nγ) 2001Ba79 (continued)

γ(^{210}At) (continued)

E_γ	I_γ[‡]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[†]	α[#]	Comments
								14 Mult.: α(exp)=3.2 4.
161.3	≤1	4975.8		4814.5	20$^+$			
164.1	≤1	8011.2		7847.3	(29$^+$)			
166.2	≤1	8211.5		8045.3				
183.1	3.9 3	2783.4	14$^-$	2600.3	13$^-$	M1	2.17	α(K)=1.759 25; α(L)=0.314 5; α(M)=0.0743 11 α(N)=0.0192 3; α(O)=0.00412 6; α(P)=0.000569 8
193.1	10 1	6467.8	($^-$)	6274.7	(23$^-$)	M1	1.87	α(K)=1.515 22; α(L)=0.270 4; α(M)=0.0639 9 α(N)=0.01655 24; α(O)=0.00354 5; α(P)=0.000489 7 Mult.: α(exp)=1.5 5.
193.5	27 2	1688.7	(10$^-$)	1495.1	10$^+$	E1	0.0910	α(K)=0.0732 11; α(L)=0.01360 19; α(M)=0.00322 5 α(N)=0.000826 12; α(O)=0.0001712 24; α(P)=2.16×10^{-5} 3 Mult.: α(exp)=0.09 9. A_2=−0.01 9.
199.7	2.4 6	7803.1		7603.4				
211.5	49 2	2783.4	14$^-$	2571.9	14$^-$	M1	1.448	α(K)=1.174 17; α(L)=0.209 3; α(M)=0.0495 7 α(N)=0.01281 18; α(O)=0.00274 4; α(P)=0.000379 6 Mult.: α(exp)=1.3 1. A_2=0.15 4.
215.5	10 1	6643.8		6428.3				
216.2	3.1 2	3323.3	15$^-$	3107.2	16$^-$			
216.3	6.4 8	8063.6		7847.3	(29$^+$)			
224.4	≤1	1913.1		1688.7	(10$^-$)			
228.2	≤1	3551.6	15$^-$	3323.3	15$^-$			
229.8	4.9 7	6199.4	(22$^-$)	5969.6	(23$^-$)	M1	1.149	α(K)=0.932 13; α(L)=0.1656 24; α(M)=0.0392 6 α(N)=0.01015 15; α(O)=0.00217 3; α(P)=0.000300 5 Mult.: α(exp)=1.0 5.
231.9	4.2 5	3655.3	16$^-$	3423.3	(15$^-$)	M1	1.120	α(K)=0.908 13; α(L)=0.1615 23; α(M)=0.0382 6 α(N)=0.00990 14; α(O)=0.00212 3; α(P)=0.000293 4 Mult.: α(exp)=0.9 4.
233.9	2.5 3	2783.4	14$^-$	2549.6	15$^-$			
239.4	18 1	3415.8	16$^-$	3176.5	(15$^-$)	M1	1.026	α(K)=0.832 12; α(L)=0.1477 21; α(M)=0.0350 5 α(N)=0.00905 13; α(O)=0.00194 3; α(P)=0.000268 4 Mult.: α(exp)=0.8 2.
242.5	2.3 2	7718.5		7476.0				
243.2	14 1	1495.1	10$^+$	1251.98	9$^+$	M1	0.982	α(K)=0.796 12; α(L)=0.1414 20; α(M)=0.0335 5 α(N)=0.00866 13; α(O)=0.00186 3; α(P)=0.000256 4 Mult.: α(exp)=1.1 5.
244.3	≤1	7203.6		6959.3	(26$^-$)			
249.5	89 6	5063.9	21$^-$	4814.5	20$^+$	E1	0.0495	α(K)=0.0401 6; α(L)=0.00720 10; α(M)=0.001702 24 α(N)=0.000437 7; α(O)=9.11×10^{-5} 13; α(P)=1.170×10^{-5} 17 Mult.: α(exp)≤0.1. A_2=−0.31 9, combined value for 249.5γ and 250.0γ.
250.0	20 4	6524.7	(24$^-$)	6274.7	(23$^-$)			Mult.: A_2=−0.31 9, combined value for 249.5γ and 250.0γ.
250.3[&]	≤1	6199.4	(22$^-$)	5949.0	(22)			
278.1	15 2	5453.4		5175.3	22$^-$			
287.4	≤1	3070.8	(14$^-$)	2783.4	14$^-$			
302.5	≤1	7774.6		7472.1				
303.0	≤1	7262.3		6959.3	(26$^-$)			
305.6	≤1	6199.4	(22$^-$)	5893.9				
319.2	2.3 3	8122.3		7803.1				
324.0	15 1	1819.1	11$^+$	1495.1	10$^+$	M1	0.446	α(K)=0.362 5; α(L)=0.0639 9; α(M)=0.01511 22 α(N)=0.00391 6; α(O)=0.000838 12; α(P)=0.0001158 17 Mult.: α(exp)=0.4 2.

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$^{208}Pb(^{7}Li,5n\gamma)$ 2001Ba79 (continued)

$\gamma(^{210}At)$ (continued)

E_γ	I_γ[‡]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[†]	α[#]	Comments
325.5	28 *2*	1688.7	(10⁻)	1363.3	11⁺	E1	0.0268	α(K)=0.0218 *3*; α(L)=0.00380 *6*; α(M)=0.000895 *13* α(N)=0.000230 *4*; α(O)=4.83×10⁻⁵ *7*; α(P)=6.29×10⁻⁶ *9* Mult.: α(exp)≤0.1. A_2=−0.34 *5*.
325.7	14 *2*	6274.7	(23⁻)	5949.0	(22)			
332.0	3.8 *5*	3655.3	16⁻	3323.3	15⁻	M1	0.417	α(K)=0.339 *5*; α(L)=0.0598 *9*; α(M)=0.01413 *20* α(N)=0.00366 *6*; α(O)=0.000784 *11*; α(P)=0.0001083 *16* Mult.: α(exp)=0.6 *2*.
346.6	≤1	5332.6		4986.1				
348.4	2.3 *3*	4426.6		4078.2	(17⁺)			
352.4	2.2 *3*	8011.2		7658.8				
352.6	≤1	3423.3	(15⁻)	3070.8	(14⁻)			
363.1	≤1	6199.4	(22⁻)	5836.3				
367.3	≤1	5353.4		4986.1				
372.3	165 *4*	4027.6	19⁺	3655.3	16⁻	E3	0.324	α(K)=0.1106 *16*; α(L)=0.1571 *22*; α(M)=0.0424 *6* α(N)=0.01104 *16*; α(O)=0.00221 *3*; α(P)=0.000243 *4* Mult.: α(exp)=0.33 *3*. A_2=0.08 *4*.
389.4	26 *3*	5453.4		5063.9	21⁻			A_2=0.49 *9*.
391.9	10 *2*	3655.3	16⁻	3263.4	15⁻	M1	0.266	α(K)=0.216 *3*; α(L)=0.0380 *6*; α(M)=0.00898 *13* α(N)=0.00233 *4*; α(O)=0.000498 *7*; α(P)=6.88×10⁻⁵ *10* Mult.: α(exp)=0.29 *5*.
410.1	≤1	7369.4		6959.3	(26⁻)			
410.2	6.6 *8*	2877.2	(14⁺)	2467.0	13⁺			
421.0	≤1	8376.1		7955.1				
424.2	11 *2*	2467.0	13⁺	2042.8	13⁺			
432.8	4.0 *5*	8280.1		7847.3	(29⁺)			
433.2	33 *2*	1928.3	(11⁺)	1495.1	10⁺			A_2=0.63 *17*.
434.3	16 *2*	507.35	6⁺	73.0	4⁺			
435.0	35 *6*	6959.3	(26⁻)	6524.7	(24⁻)	[E2]	0.0473	α(K)=0.0305 *5*; α(L)=0.01259 *18*; α(M)=0.00321 *5* α(N)=0.000831 *12*; α(O)=0.0001691 *24*; α(P)=1.98×10⁻⁵ *3*
435.2	196 *6*	3542.4	17⁻	3107.2	16⁻			A_2=0.01 *3*.
436.6	29 *3*	1688.7	(10⁻)	1251.98	9⁺	[E1]	0.01411	α(K)=0.01156 *17*; α(L)=0.00195 *3*; α(M)=0.000457 *7* α(N)=0.0001177 *17*; α(O)=2.48×10⁻⁵ *4*; α(P)=3.28×10⁻⁶ *5*
438.4	18 *2*	6274.7	(23⁻)	5836.3				A_2=0.52 *20*.
440.1	132 *3*	4467.7	20⁺	4027.6	19⁺	M1	0.195	α(K)=0.1583 *23*; α(L)=0.0277 *4*; α(M)=0.00655 *10* α(N)=0.001697 *24*; α(O)=0.000364 *5*; α(P)=5.02×10⁻⁵ *7* Mult.: α(exp)=0.18 *9*. A_2=−0.51 *5*.
447.7	≤1	6287.3		5839.6				
455.8	12 *5*	1819.1	11⁺	1363.3	11⁺			
458.6	28 *2*	6428.3		5969.6	(23⁻)			A_2=−0.22 *11*.
463.4	6.0 *10*	6931.2		6467.8	(⁻)			A_2=−0.46 *8*.
478.7		3655.3	16⁻	3176.5	(15⁻)			
483.1	3.4 *4*	7414.3		6931.2				
485.2	110 *3*	4027.6	19⁺	3542.4	17⁻	[M2]	0.433	α(K)=0.333 *5*; α(L)=0.0751 *11*; α(M)=0.0184 *3* α(N)=0.00479 *7*; α(O)=0.001022 *15*; α(P)=0.0001389 *20* Mult.: A_2=0.09 *3*.
487.8	9 *1*	1740.0	10⁺	1251.98	9⁺			
494.7	≤1	5848.1		5353.4				

Continued on next page (footnotes at end of table)

^{208}Pb(^{7}Li,5nγ) 2001Ba79 (continued)

γ(^{210}At) (continued)

E_γ	I_γ ‡	E_i(level)	J^π_i	E_f	J^π_f	Mult.†	α#	Comments
497.1	1.9 3	2467.0	13+	1970.0	12+			
507.3	242 6	507.35	6+	0.0	5+			A_2=0.15 3.
511.1	40 4	3176.5	(15−)	2665.5	(14−)			
515.5	≤1	5848.1		5332.6				
517.6	17 2	1740.0	10+	1222.42	8+			
529.1	168 8	2571.9	14−	2042.8	13+			A_2=−0.11 5.
535.8	58 4	4078.2	(17+)	3542.4	17−			A_2=0.40 9.
540.0	73 1	3323.3	15−	2783.4	14−			A_2=−0.11 9.
542.0	564 10	1905.3	12+	1363.3	11+			A_2=−0.13 3.
548.0	≤1	3655.3	16−	3107.2	16−			
555.2	7.0 1	6524.7	(24−)	5969.6	(23−)			
557.7	244 8	3107.2	16−	2549.6	15−			A_2=−0.29 3.
561.8	31 2	2467.0	13+	1905.3	12+			A_2=−0.60 16.
565.0	22 2	1928.3	(11+)	1363.3	11+			
567.1	66 4	1819.1	11+	1251.98	9+			A_2=0.09 10.
574.0	6.0 14	6413.6		5839.6				
576.5	966 21	576.44	7+	0.0	5+			A_2=0.10 3.
578.6	14 2	4814.5	20+	4235.9				
579.5	42 3	2549.6	15−	1970.0	12+	E3	0.0742	α(K)=0.0414 6; α(L)=0.0244 4; α(M)=0.00639 9 α(N)=0.001662 24; α(O)=0.000338 5; α(P)=3.95×10^{-5} 6 Mult.: A_2=0.19 16.
591.4	10 2	5839.6		5248.1				
596.3	85 9	5063.9	21−	4467.7	20+			
604.2	≤1	8018.5		7414.3				
606.7	26 2	1970.0	12+	1363.3	11+			A_2=−0.55 9.
611.8	45 2	4027.6	19+	3415.8	16−	[E3]	0.0635	α(K)=0.0368 6; α(L)=0.0199 3; α(M)=0.00518 8 α(N)=0.001347 19; α(O)=0.000275 4; α(P)=3.24×10^{-5} 5 Mult.: A_2=−0.04 7.
627.0	5.0 5	3176.5	(15−)	2549.6	15−			
638.8	2.5 7	5453.4		4814.5	20+			
639.8	4.2 5	3423.3	(15−)	2783.4	14−			
644.3	467 4	2549.6	15−	1905.3	12+	E3	0.0549	α(K)=0.0329 5; α(L)=0.01642 23; α(M)=0.00426 6 α(N)=0.001107 16; α(O)=0.000226 4; α(P)=2.69×10^{-5} 4 Mult.: A_2=0.06 2.
646.0	5.0 9	1222.42	8+	576.44	7+			
657.7	10 1	3323.3	15−	2665.5	(14−)			
662.3	50 4	4078.2	(17+)	3415.8	16−			A_2=−0.15 10.
665.6	9 1	6635.2		5969.6	(23−)			
673.2	3.4 6	4751.4		4078.2	(17+)			
675.5	1000 11	1251.98	9+	576.44	7+			A_2=0.22 2.
679.6	123 4	2042.8	13+	1363.3	11+			A_2=0.27 7.
685.2	8.3 9	5933.4		5248.1				
691.5	50 2	3263.4	15−	2571.9	14−			A_2=−0.21 13.
695.1	36 2	2600.3	13−	1905.3	12+			A_2=−0.15 13.
699.5	13 1	7658.8		6959.3	(26−)			
707.7	16 2	5175.3	22−	4467.7	20+			
708.0	4.8 5	4786.2		4078.2	(17+)			
708.1	2.3 4	3348.6		2640.5				
714.1	6.7 8	3263.4	15−	2549.6	15−			
715.1	33 2	1222.42	8+	507.35	6+			A_2=0.45 18.
717.6	3.6 6	8564.9		7847.3	(29+)			
721.6	10 2	2649.9		1928.3	(11+)			
740.6	28 1	2783.4	14−	2042.8	13+			A_2=−0.05 5.

Continued on next page (footnotes at end of table)

^{208}Pb(^{7}Li,5nγ) 2001Ba79 (continued)

γ(^{210}At) (continued)

E_γ	I_γ‡	E_i(level)	J^π_i	E_f	J^π_f	Mult.†	α#	Comments
746.0	29 *1*	6199.4	(22⁻)	5453.4				A_2=−0.50 *5*.
758.0	2.4 *2*	3423.3	(15⁻)	2665.5	(14⁻)			
768.2	76 *2*	3551.6	15⁻	2783.4	14⁻			A_2=−0.07 *9*.
770.6	3 *1*	2459.3		1688.7	(10⁻)			
772.4	38 *2*	5836.3		5063.9	21⁻			A_2=−0.49 *22*.
778.4	30 *1*	2683.7	(13⁻)	1905.3	12⁺			A_2=−0.17 *12*.
780.5	50 *5*	5248.1		4467.7	20⁺			
786.9	110 *10*	4814.5	20⁺	4027.6	19⁺			A_2=−0.62 *7*.
787.1	8.0 *9*	4986.1		4199.0	(18⁺)			
794.3	52 *2*	5969.6	(23⁻)	5175.3	22⁻			A_2=−0.40 *17*.
795.0	4.9 *8*	3578.4	(15⁻)	2783.4	14⁻			
828.3	≤1	7472.1		6643.8				
830.0	≤1	5893.9		5063.9	21⁻			
832.2	14 *1*	7476.0		6643.8				
851.4	5.5 *5*	3423.3	(15⁻)	2571.9	14⁻			
866.3	8.0 *4*	3415.8	16⁻	2549.6	15⁻			
872.0	2.6 *6*	7831.3		6959.3	(26⁻)			
873.6	2.9 *4*	3423.3	(15⁻)	2549.6	15⁻			
885.1	16 *2*	5949.0	(22)	5063.9	21⁻			A_2=−0.50 *22*.
888.0	19 *2*	7847.3	(29⁺)	6959.3	(26⁻)	[E3]	0.0242	α(K)=0.01678 *24*; α(L)=0.00554 *8*; α(M)=0.001398 *20* α(N)=0.000363 *5*; α(O)=7.52×10⁻⁵ *11*; α(P)=9.35×10⁻⁶ *13* Mult.: A_2=0.48 *17*.
920.4	18 *2*	4027.6	19⁺	3107.2	16⁻	[E3]	0.0222	α(K)=0.01559 *22*; α(L)=0.00495 *7*; α(M)=0.001247 *18* α(N)=0.000324 *5*; α(O)=6.72×10⁻⁵ *10*; α(P)=8.40×10⁻⁶ *12*
951.4	2.9 *4*	6199.4	(22⁻)	5248.1				
951.8	10 *1*	2640.5		1688.7	(10⁻)			
959.6	10 *1*	7603.4		6643.8				
971.0	6.0 *9*	4078.2	(17⁺)	3107.2	16⁻			
979.7	15 *1*	3551.6	15⁻	2571.9	14⁻			
985.6	4.9 *9*	5453.4		4467.7	20⁺			
990.0	2.8 *4*	3655.3	16⁻	2665.5	(14⁻)			
992.9	26 *2*	3542.4	17⁻	2549.6	15⁻			
995.8	10 *1*	7955.1		6959.3	(26⁻)			
1002.0	5.7 *4*	3551.6	15⁻	2549.6	15⁻			
1003.7	4.5 *3*	9067.3		8063.6				
1006.4	≤1	3578.4	(15⁻)	2571.9	14⁻			
1014.6	6.6 *6*	7658.8		6643.8				
1029.0	≤1	3578.4	(15⁻)	2549.6	15⁻			
1036.2	11 *3*	5063.9	21⁻	4027.6	19⁺			
1083.2	≤1	3655.3	16⁻	2571.9	14⁻			
1086.0	6.5 *6*	8045.3		6959.3	(26⁻)			
1105.6	87 *2*	3655.3	16⁻	2549.6	15⁻			A_2=0.15 *4*.
1125.0	≤1	8956.3		7831.3				
1147.7	35 *2*	5175.3	22⁻	4027.6	19⁺	[E3]	0.01342	α(K)=0.00997 *14*; α(L)=0.00260 *4*; α(M)=0.000643 *9* α(N)=0.0001669 *24*; α(O)=3.49×10⁻⁵ *5*; α(P)=4.48×10⁻⁶ *7*; α(IPF)=2.42×10⁻⁷ *4* A_2=0.47 *12*.
1187.8	≤1	8557.2		7369.4				
1208.5	3.2 *7*	2571.9	14⁻	1363.3	11⁺	[E3]	0.01199	α(K)=0.00900 *13*; α(L)=0.00226 *4*; α(M)=0.000556 *8* α(N)=0.0001443 *21*; α(O)=3.02×10⁻⁵ *5*; α(P)=3.91×10⁻⁶ *6*; α(IPF)=1.394×10⁻⁶ *20*

Continued on next page (footnotes at end of table)

^{208}Pb(^{7}Li,5nγ) 2001Ba79 (continued)

γ(^{210}At) (continued)

E_γ	I_γ‡	E_i(level)	J_i^π	E_f	J_f^π
1210.5	5.2 *9*	6274.7	(23⁻)	5063.9	21⁻
1252.8	5.8 *9*	6428.3		5175.3	22⁻
1349.4	4.3 *6*	6524.7	(24⁻)	5175.3	22⁻
1364.2	2.4 *6*	6428.3		5063.9	21⁻
1372.0	3.2 *4*	5839.6		4467.7	20⁺
1379.4	2.3 *4*	5578.4		4199.0	(18⁺)

† Multipolarities are consistent with total conversion coefficients deduced from γ-ray transition intensity balances. Angular distribution coefficients A_0 and A_2 (A_4=0) were deduced from γ-ray intensity measurements at θ= ±145°, ±97°, and ±48°.

‡ At beam energy E=56 MeV.

Additional information 1.

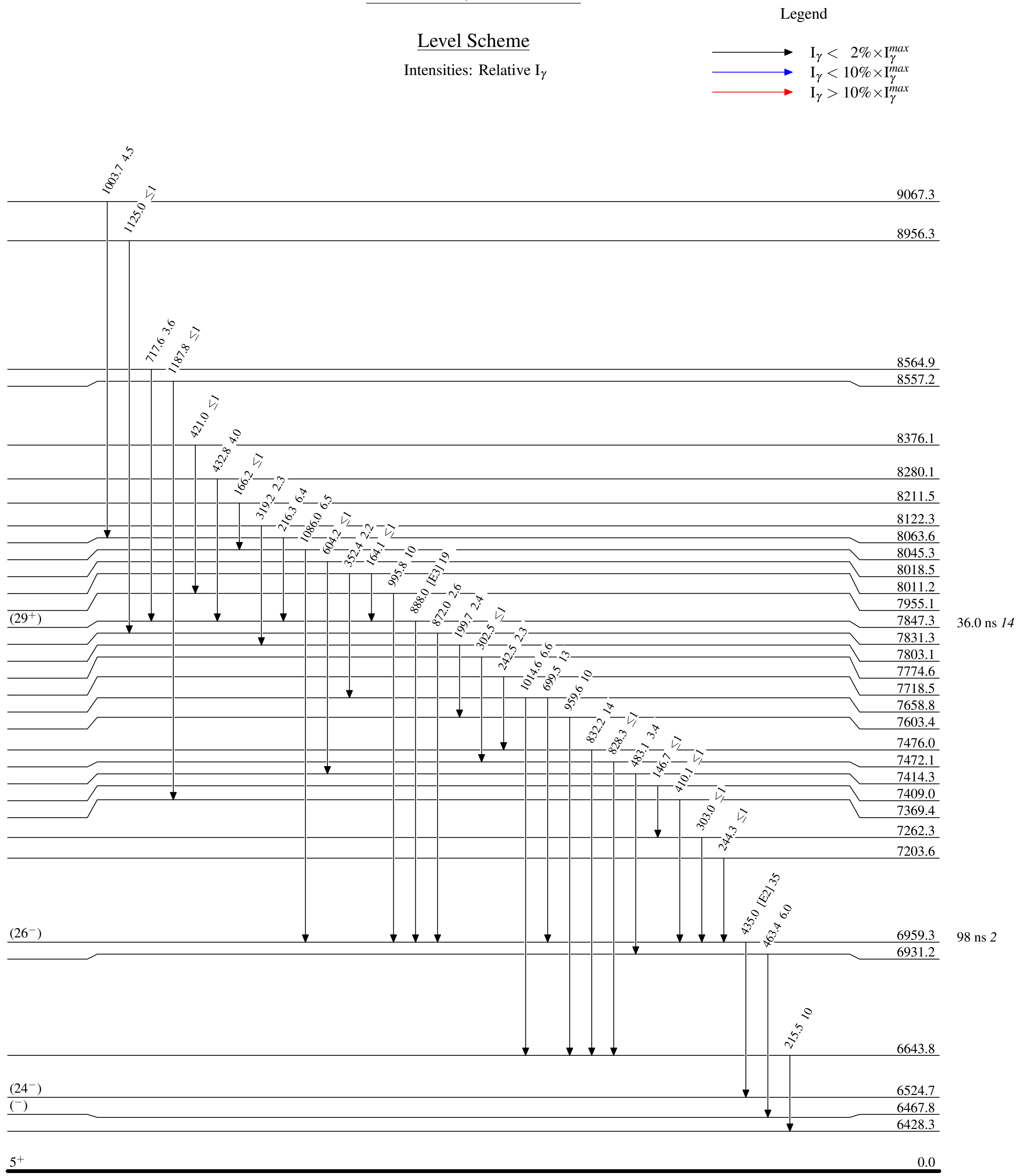
@ Multiply placed with intensity suitably divided.

& Placement of transition in the level scheme is uncertain.

$^{208}Pb(^7Li,5n\gamma)$ 2001Ba79

Level Scheme

Intensities: Relative I_γ



$^{210}_{85}At_{125}$

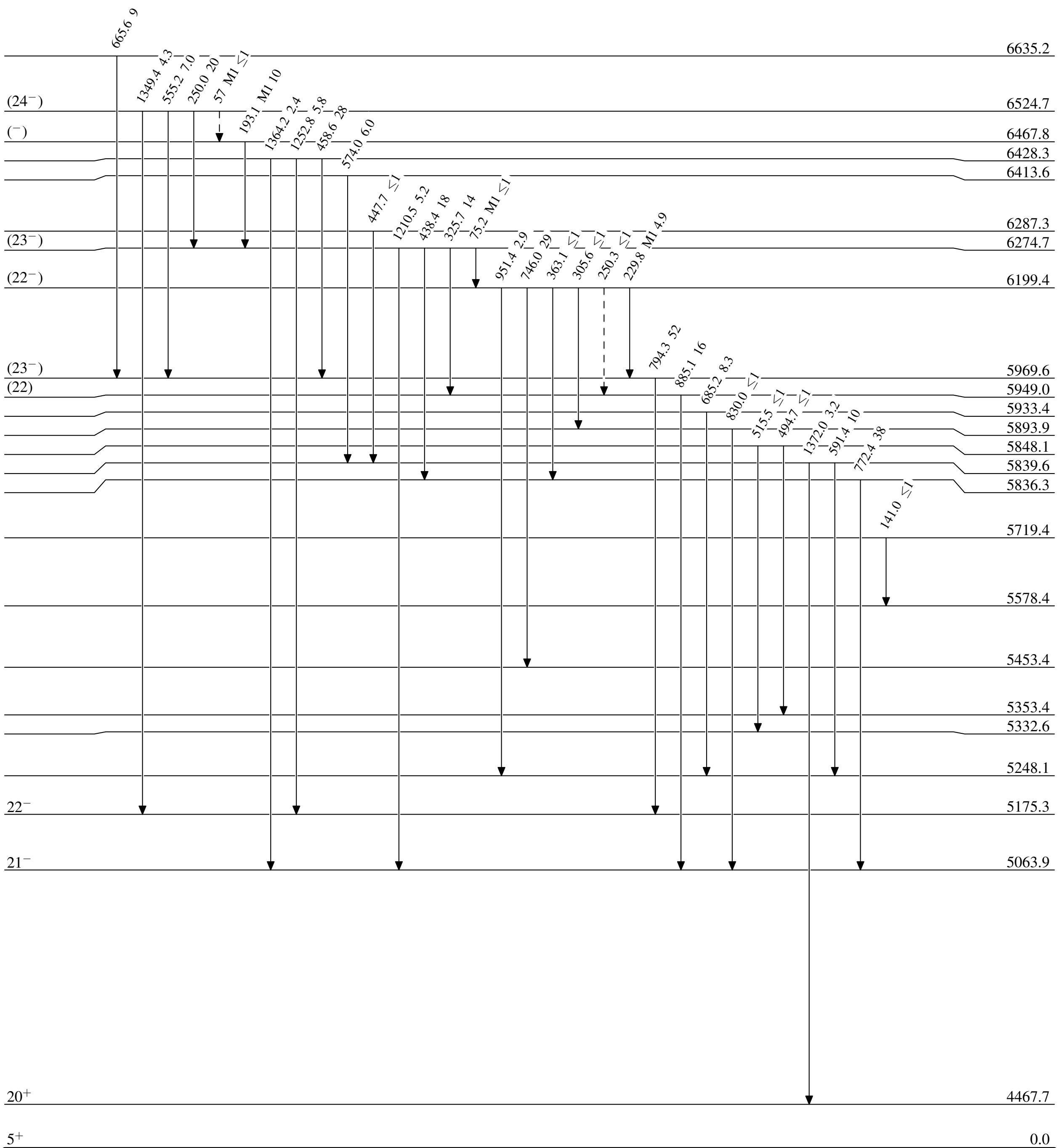
^{208}Pb(^{7}Li,5nγ) 2001Ba79

Level Scheme (continued)

Intensities: Relative I_γ

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



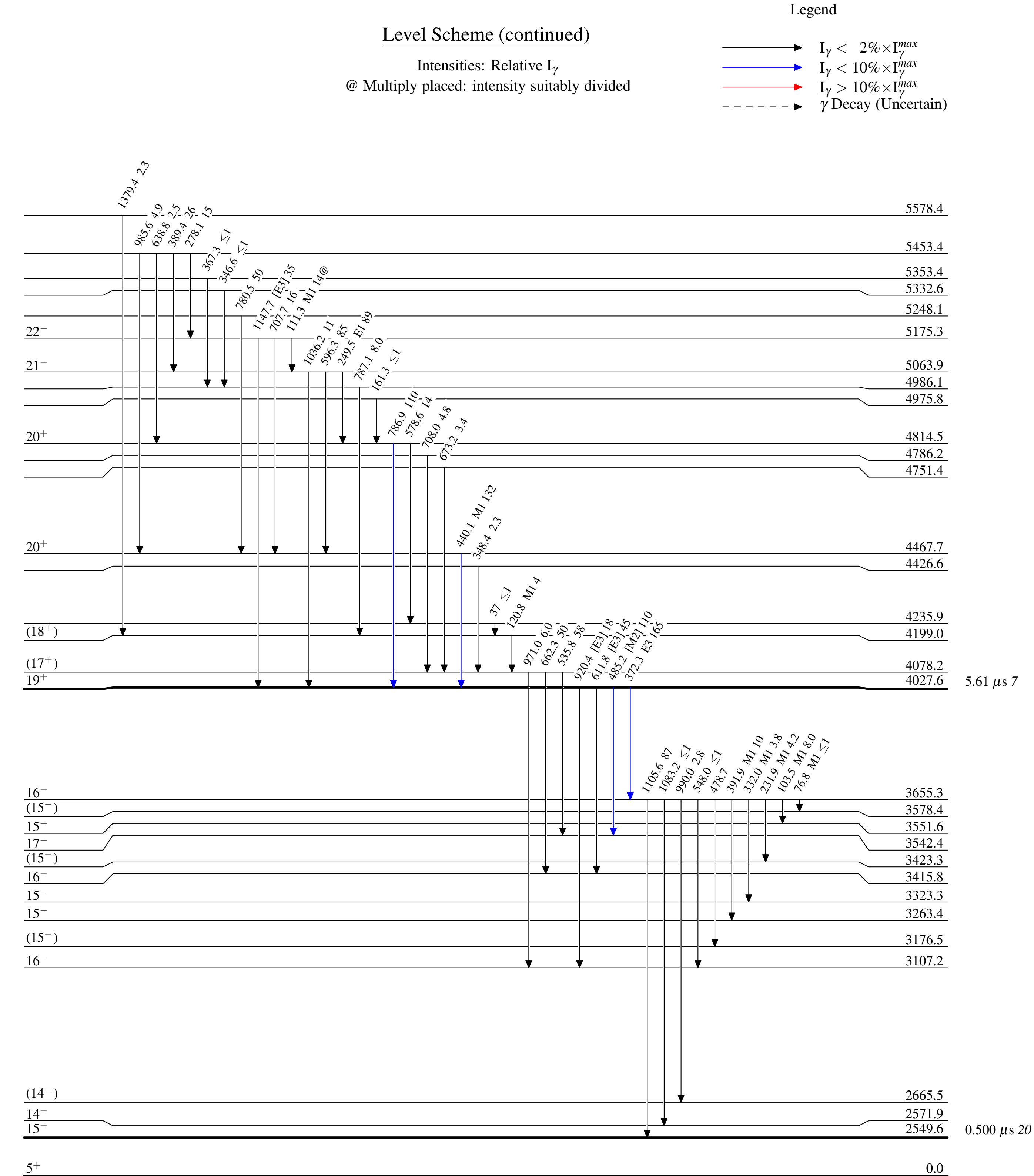
$^{210}_{85}At_{125}$

^{208}Pb(^{7}Li,5nγ) 2001Ba79

Level Scheme (continued)

Intensities: Relative Iγ

@ Multiply placed: intensity suitably divided



$^{210}_{85}At_{125}$

^{208}Pb(^{7}Li,5nγ) 2001Ba79

Level Scheme (continued)

Intensities: Relative I_γ

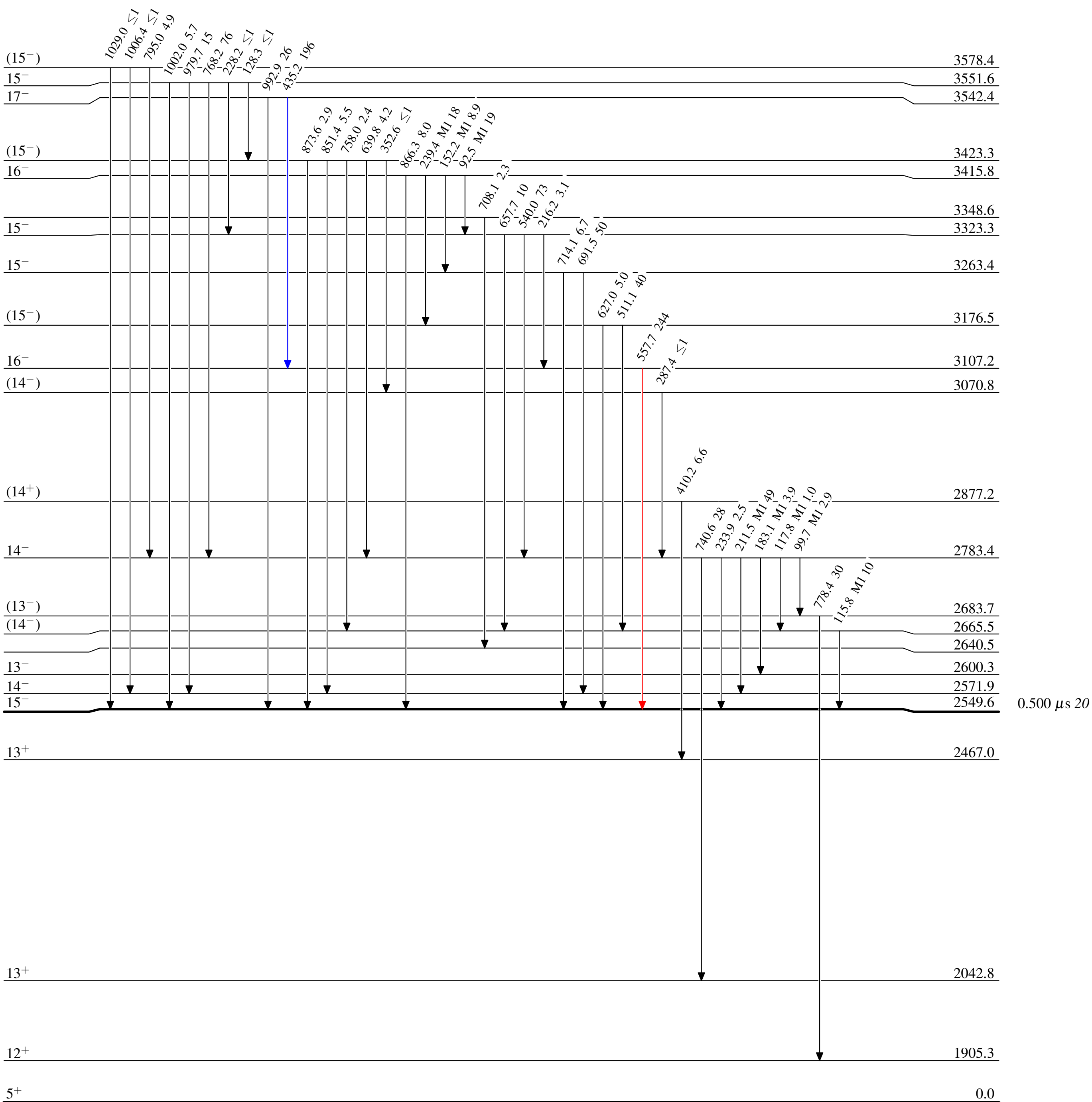
@ Multiply placed: intensity suitably divided

Legend

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

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

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



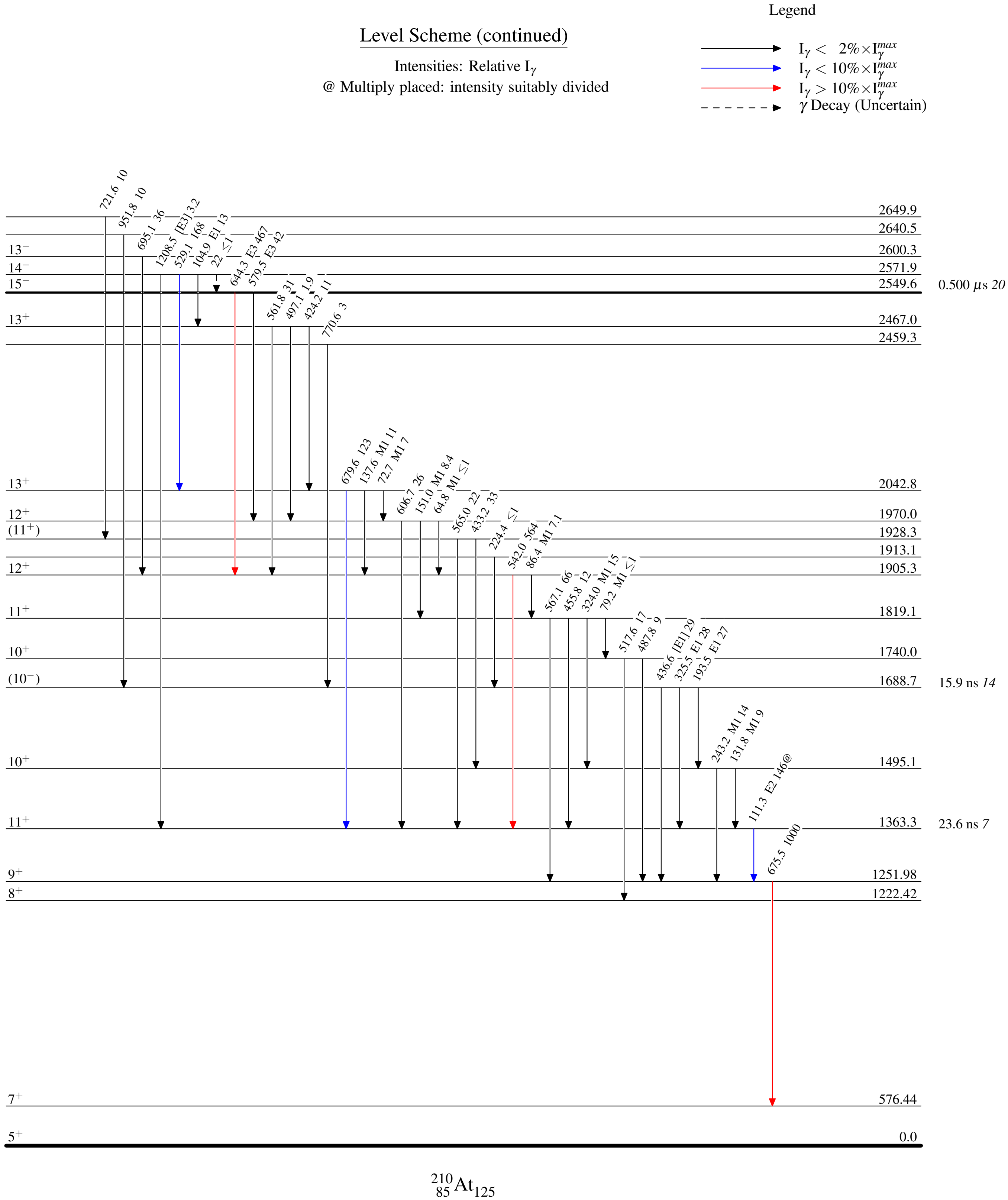
$^{210}_{85}At_{125}$

^{208}Pb(^{7}Li,5nγ) 2001Ba79

Level Scheme (continued)

Intensities: Relative I_γ

@ Multiply placed: intensity suitably divided



$^{208}Pb(^{7}Li,5n\gamma)$ 2001Ba79

Level Scheme (continued)

Intensities: Relative I_γ

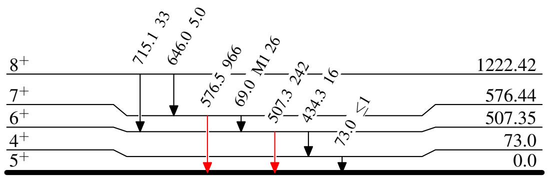
@ Multiply placed: intensity suitably divided

Legend

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

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

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



$^{210}_{85}At_{125}$