(HI,xnγ) 1998Re05

Type	Author	History Citation	Literature Cutoff Date
Update	F. G. Kondev	ENSDF	14-Jun-2015

1998Re05: ^{209}Pb produced in deep-inelastic reactions using ^{208}Pb (6.5 MeV/A) and ^{136}Xe (5.7 MeV/A) beams on a 30 mg/cm^2 thick, ^{208}Pb target at GSI and ^{76}Ge (420 MeV) beam on a thick, ^{208}Pb target at INFN, Legnaro. Euroball Ge-cluster detectors and 132 NaI detectors of Crystal Ball were used in the GSI experiment, where the beam was pulsed with less than 5 ms (1 ns wide with a separation of 110 ns) macro pulses with a repetition of 20 ms. GASP array was used at Legnaro.

Others from the same collaboration: 2000Re12, 1999ReZT.

^{209}Pb Levels

E(level)†	J$^\pi$‡	$T_{1/2}$#	Comments
0	9/2+#	3.234 h *7*	
779.20 *15*	11/2+#		
1422.70 *10*	15/2−#		configuration=$\nu(1j_{15/2})^{+1}$ with $\nu(2g_{9/2})^{+1}\otimes3^-$ admixtures.
1567.0 *10*	5/2+#		
2032.0 *15*	1/2+#		
2317.0 *18*	3/2−#		
3046.7 *10*	(15/2)−#		configuration: dominant $\nu(2g_{9/2})^{+1}\otimes3^-$.
3091.86 *20*	(17/2−)#		configuration: $\nu(2g^{+2}_{9/2},3p^{-1}_{1/2})$.
3524.21 *19*	(19/2−)		configuration: $\nu(2g^{+1}_{9/2})\pi(1h_{9/2},3s^{-1}_{1/2})$.
3810.0 *3*	(21/2−)		likely configuration=$\nu(2g_{9/2},1i_{11/2},3p^{-1}_{1/2})$.
3842.00 *14*	(21/2+)		configuration: dominant $\nu(1j_{15/2})^{+1}\otimes3^-$ with $\nu(2g_{9/2})^{+1}\otimes3^-\otimes3^-$ admixtures. $T_{1/2}$=16 ps, if B(E3,2419.3γ)=50 W.u. (2000Re12).
4328.90 *17*	(23/2+)		configuration: likely $\nu(2g_{9/2},1j_{15/2},3p^{-1}_{1/2})$. The fully aligned, J^π=25/2+ state is expected to be much higher in energy, because the $\nu(2g_{9/2})^{+1}\otimes3^-$ admixture in the $\nu1j_{15/2}$ orbital is blocked by the Pauli principle.
4583.60 *20*			
4631.6 *5*			
4698.3 *3*			
4755.8 *4*			
5873.9 *4*			
6099.4 *5*			

† From a least-squares fit to Eγ.
‡ From 1998Re05, unless otherwise stated.
# From Adopted Levels.

γ(^{209}Pb)

E$_\gamma$†	I$_\gamma$†	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Comments
172.2 *3*	12 *2*	4755.8		4583.60		
225.5 *2*	10 *2*	6099.4		5873.9		
254.7 *1*	33 *3*	4583.60		4328.90	(23/2+)	
285 *1*		2317.0	3/2−	2032.0	1/2+	
285.8 *3*	9 *2*	3810.0	(21/2−)	3524.21	(19/2−)	
317.7 *2*	18 *2*	3842.00	(21/2+)	3524.21	(19/2−)	
369.4 *2*	9 *2*	4698.3		4328.90	(23/2+)	
432.2 *3*	31 *10*	3524.21	(19/2−)	3091.86	(17/2−)	E$_\gamma$,I$_\gamma$: Doublet.
x458						E$_\gamma$: above the 3842-keV level, in cascade with 790γ.
465 *1*		2032.0	1/2+	1567.0	5/2+	

Continued on next page (footnotes at end of table)

(HI,xnγ) 1998Re05 (continued)

γ(^{209}Pb) (continued)

E_γ†	I_γ†	E_i(level)	J^π_i	E_f	J^π_f	Comments
486.9 *1*	83 *5*	4328.90	(23/2+)	3842.00	(21/2+)	
643.5‡ *2*	13‡ *2*	1422.70	15/2−	779.20	11/2+	
718.2 *3*	10 *1*	3810.0	(21/2−)	3091.86	(17/2−)	
779.2‡ *2*	14‡ *2*	779.20	11/2+	0	9/2+	
789.6 *4*	5 *1*	4631.6		3842.00	(21/2+)	
x790						E_γ: above the 3842-keV level, in cascade with 458γ.
x1100						E_γ: above the 3842-keV level, likely feeding the 4329-keV level.
1118.1 *2*	11 *2*	5873.9		4755.8		
x1178						E_γ: above the 3842-keV level.
1422.7‡ *1*	100‡ *7*	1422.70	15/2−	0	9/2+	
1567 *1*		1567.0	5/2+	0	9/2+	
1624 *1*	≤5	3046.7	(15/2)−	1422.70	15/2−	
1669.1 *2*	33 *3*	3091.86	(17/2−)	1422.70	15/2−	
x1910						E_γ: feeds the 1423-keV level.
x2020						E_γ: feeds the 1423-keV level.
2101.4 *3*	17 *2*	3524.21	(19/2−)	1422.70	15/2−	
2419.3 *1*	100 *7*	3842.00	(21/2+)	1422.70	15/2−	Note that B(E3)(W.u.)=50 is expected from shell-model calculations and systematics arguments (2000Re12).

† From 1998Re05.
‡ in coincidence with the 2419.3γ.
x γ ray not placed in level scheme.

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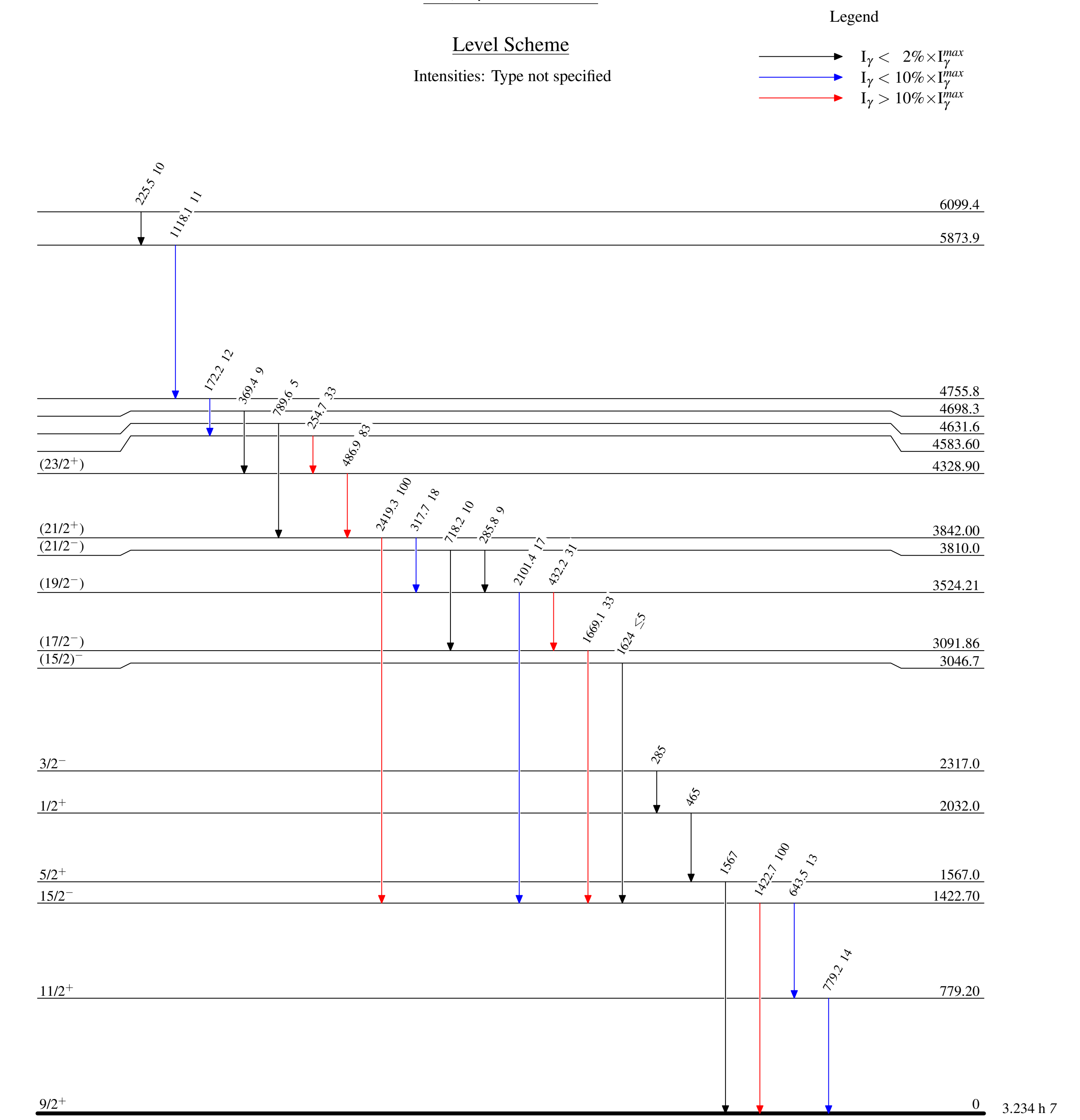
Level Scheme

Intensities: Type not specified



$^{209}_{82}Pb_{127}$