^{210}Pb(p,d) 1971Ig01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. Chen [#] and F. G. Kondev	NDS 126, 373 (2015)	30-Sep-2013

Target ^{210}Pb J^{π}(g.s.)=0^+.

1971Ig01 (also 1969Fl01): E=20.6 MeV proton beam was produced from the Los Alamos Scientific Laboratory tandem Van de Graaff facility. Target was 240 μg/cm^2 enriched ^{210}Pb. Reaction products were momentum analyzed with an Elbek-type magnetic spectrograph (FWHM=14 keV) and detected in a CsI(Tl) scintillator. Measure $\sigma(\theta)$. Deduced levels, J^{π}, L, spectroscopic factors from DWBA analysis.

^{209}Pb Levels

E(level)[†]	L[‡]	S[#]	Comments
0.0		1.34	S: for configuration=$\nu(2g_{9/2})^{+1}$.
782 *5*		0.39	S: for configuration=$\nu(1i_{11/2})^{+1}$.
1426 *5*		0.42	S: for configuration=$\nu(1j_{15/2})^{+1}$.
1571 *5*		0.02	S: for configuration=$\nu(3d_{5/2})^{+1}$.
2035 *5*		0.003	S: for configuration=$\nu(4s_{1/2})^{+1}$.
2152 *5*	1	2.15	
2320 *5*	1	0.50	
2463 *5*	3	0.61	
2499 *5*		0.04	S: for configuration=$\nu(2g_{7/2})^{+1}$.
2547 *5*		0.007	S: for configuration=$\nu(3d_{3/2})^{+1}$.
2563 *5*	3	0.02	
2584 *5*			
2741 *5*	3	4.76	
2873 *5*	3	1.02	
2906 *5*	1	0.20	
3031 *5*	1	0.01	
3077 *5*	1	2.62	L: authors′ parentheses around this L value in their Table vi is apparently a misprint. See authors′ Fig. 6 and the text (1971Ig01).
3499 *5*	3	0.16	
3524 *5*	(1)	0.03	
3562 *5*	(1)	0.02	
3637 *5*	(1)	0.11	
3659 *5*	6	11.8	
3751 *5*	5,6	0.14	S: for L=6.
3811 *5*	5,6	0.32	S: for L=6.
3831 *5*	(1)	0.04	
3906 *6*	3	0.11	
3937 *5*	6	0.92	
3995 *5*	6	0.41	
4024 *5*	(1)	0.03	
4084 *11*	(1)	0.06	
4119 *5*	1	0.16	
4145 *5*			
4174 *10*			
4212 *5*	3	0.91	
4222 *5*	3	2.08	
4270 *5*	3	1.44	
4309 *5*	3	0.91	
4345 *8*			
4358 *5*			
4395 *5*	3	0.06	
4472 *12*	1	0.09	
4529 *12*			
4562 *5*	3	0.32	

Continued on next page (footnotes at end of table)

^{210}Pb(p,d) 1971Ig01 (continued)

^{209}Pb Levels (continued)

E(level)†	L‡	S#	E(level)†	L‡	S#	E(level)†	L‡	S#	E(level)†	L‡	S#
4584 *5*	3	0.14	4781 *8*	3	0.11	4944 *9*	1	0.06	5222 *12*	1	0.11
4621 *10*			4819 *7*	1	0.12	5074 *10*	(1)	0.23	5359 *10*		
4671 *5*	3	0.09	4837 *5*	(1)	0.12	5094 *8*					
4690 *5*	3	0.25	4865 *8*			5136 *10*					
4715 *10*	3	0.17	4924 *5*			5160 *10*					

† From 1971Ig01.

‡ Values for strong levels at 2741, 3077, 3659, and 4222 determined from DWBA fits (1971Ig01). Shape of $\sigma(\theta)$ for these levels used to assign other L values.

Values for the single-particle states (5 lowest levels plus 2499 and 2547 levels) have been calculated using local zero-range DWBA with normalization factor 2.29 and neutron parameters radius=1.19 fm, diffuseness=0.75 fm, and spin-orbit coupling strength=20.5. Neutron well depth chosen based on separation energy approximation. Values for the other levels have been obtained under the assumption that the 2152 level has the same spectroscopic factor as the ^{207}Pb g.s.. 1971Ig01 makes the following further assumptions: 1) the 2152 level contains all the $p_{1/2}$ strength; 2) the three lowest L=3 levels have J=5/2, the 2873 level has J=5/2 or 7/2, and the other L=3 levels have J=7/2; 3) the L=6 levels have J=13/2 (1971Ig01).