^{31}P(π^+,π^+n),(π^-,π^-n) 1982Li15

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia, A. Chakraborty	NDS 197,1 (2024)	31-May-2024

$J^\pi(^{31}P)=1/2^+$.

Target: phosphorus powder (2.9 g/cm^2), E=200 MeV; γ rays were detected with a Ge(Li) detector in coincidence with incident 190 MeV π^+ and 220 MeV π^- from the Space Radiation Effects Laboratory (SREL) synchrocyclotron; measured residuals $\sigma(\theta=90°)$; deduced reaction mechanism. Deduced total σ^-/σ^+.

^{30}P Levels

E(level)†	J$^\pi$†	Comments
0.0	1^+	
677.10 *10*	0^+	σ^-_{tot}=2.5 mb *3*; σ^+_{tot}=2.6 mb *6*; $\sigma^-_{tot}/\sigma^+_{tot}$=1.0 *5*.
708.69 *7*	1^+	σ^-_{tot}=7.8 mb *16*; σ^+_{tot}=4.9 mb *15* $\sigma^-_{tot}/\sigma^+_{tot}$=1.6 *9*.
1454.28 *5*	2^+	σ^-_{tot}=1.8 mb *6*; σ^+_{tot}=1.8 mb *8*; $\sigma^-_{tot}/\sigma^+_{tot}$=1.0 *7*.
2839.38 *8*	3^+	σ^-_{tot} or upper limit could not be determined; σ^+_{tot}=4.5 mb *18*.
2937.54 *9*	2^+	σ^-_{tot} or upper limit could not be determined; σ^+_{tot}=4.5 mb *19*.

† From Adopted Levels.

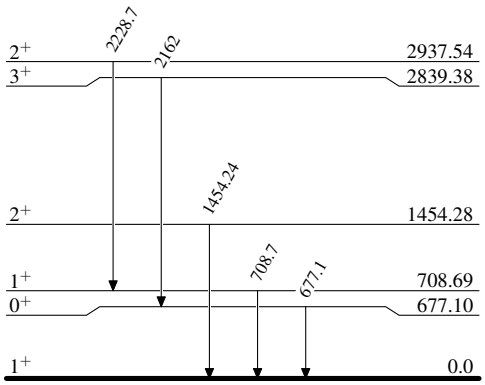
$\gamma(^{30}P)$

E$_\gamma$†	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Comments
677.1 *1*	677.10	0^+	0.0	1^+	
708.7 *1*	708.69	1^+	0.0	1^+	
1454.24 *5*	1454.28	2^+	0.0	1^+	
2162	2839.38	3^+	677.10	0^+	E$_\gamma$: from level energy differences, not present in Adopted Gammas.
2228.7 *1*	2937.54	2^+	708.69	1^+	

† From Adopted Gammas, except where otherwise noted.

^{31}P(π^+,π^+n),(π^-,π^-n) 1982Li15

Level Scheme



$^{30}_{15}P_{15}$