^{66}Zn(p,d) 1976VaYX,1966Mc15

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 202,59 (2025)	25-Feb-2025

Target J^π(^{66}Zn g.s.)=0^+.

1976VaYX: E=35 MeV proton beam was produced from the MSU cyclotron. Target was isotopically enriched ^{66}Zn. Reaction products were momentum-analyzed with an Enge split-pole spectrograph (FWHM=4-7 keV) for energy spectra and with a delay-line proportional counter system (FWHM=13-15) for $\sigma(\theta)$. Measured σ(E(d),θ), θ_{cm}=3°−60°. Deduced levels.

1966Mc15: E=17.5 MeV proton beam was produced from the Princeton cyclotron. Target was about 1 mg/cm^2 isotopically enriched ^{64}Zn foil. Reaction products were detected with silicon surface barrier detectors (FWHM≈70 keV). Measured σ(E_d,θ), θ_{cm}≈15°−140∝ Deduced levels, J, π, L-transfers, spectroscopic factors from DWBA analysis.

^{65}Zn Levels

E(level)[†]	L[‡]	C^{2}S[‡]	Comments
0	3	1.79	C^{2}S: for J^π=5/2$^-$.
54	1	0.16	C^{2}S: J^π=1/2$^-$.
115	1	0.96	C^{2}S: J^π=3/2$^-$.
207	(1)	0.09	
769			
867	1	0.26	C^{2}S: J^π=1/2$^-$.
910			
1047[#]			
1066[#]			
1253[@]			
1263[@]			
1344			
1370			
1470			
1588			E(level): a possible doublet reported at 1590 *30* (1966Mc15).
1908			
1942[&]			
1956[&]			
1976[&]			
2053			
2080			
2137			
2202[a]			
2216[a]			
2248[a]			
2310			
2342			
2410			
2419			
2430			
2458			
2486			
2491			
2522			
2528			
2730			
2740			
2803			
2830			
2860			

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^{66}Zn(p,d) 1976VaYX,1966Mc15 (continued)

^{65}Zn Levels (continued)

E(level)[†]	E(level)[†]	E(level)[†]	E(level)[†]
2870[b]	3108	3730	4740
2902[b]	3150	3776	4780
2914[b]	3211	3810	4970
2953	3221	3844	4980
2971	3239	3880	4990
2994	3340	3889	5100
3010	3350	3902	5120
3023	3465	4086	
3053	3550	4200	
3095	3563	4350	

[†] From 1976VaYX, unless otherwise noted. Uncertainty is not reported in 1976VaYX but could be estimated to around 5 keV from the resolution in the spectrum.

[‡] From DWBA analysis of $\sigma(\theta)$ (1966Mc15). C^2S is obtained from $d\sigma/d\Omega(exp)=N\times C^2S\times d\sigma/d\Omega(DWBA)$, where N is the normalization factor. Original values in 1966Mc15 are obtained by the authors using N=1.0, and the quoted values in this dataset are from the renormalization by the evaluator of those original values, using the recommended normalization factor N=2.29 for (p,d) in 1977En02. Average values for the two spin possibilities are given, except as noted.

[#] L=(3,4) reported for a level doublet at 1070 *30* (1966Mc15).

[@] L=(3), C^2S=0.31, reported for a level doublet at 1260 *30* (1966Mc15).

[&] L=(1), C^2S=0.04, reported for a level at 1960 *30* (1966Mc15).

[a] L=(1), C^2S=0.04, reported for a level at 2220 *30* (1966Mc15).

[b] C^2S=0.52, calculated for $J^\pi=7/2^-$ for a level at 2900 *30* (1966Mc15).