^{65}Cu(p,n) 1970We02

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

1970We02: E(p)=3.62-4.50 MeV from HMI van de Graaff. 99.7% enriched ^{65}Cu target. Neutrons were detected with NE213 scintillator and energy is determined by time-of-flight (FWHM≈15-40 keV). Measured σ(E(n),θ), θ_{cm}=0°−150°. Deduced levels, J, π from Hauser-Feshbach analysis.

1970Fi03: E(p)=3.4-5.4 MeV from the HMI van de Graaff. 99.7% enriched target. Similar detector setup as 1970We02 with FWHM≈12-25 keV. Measured neutron spectra. Deduced levels.

1960Mc12: E(p)=2.4-4.7 MeV from Harwell Electrostatic Generator. 99.4% enriched target. Neutrons were detected with BF_3 counters (FWHM≈30 keV) using resonant scattering technique. Measured E(n). Deduced levels.

1971Da32: E(p)=2.959 MeV (res) from the 4.4 MeV Van de Graaff of Centre de Physique Nucleaire of Ht Universite Catholique de Louvain. 99.7% enriched ^{65}Cu target. Neutrons energies are measured using time-of-flight. Measured σ(E(n),θ), θ_{cm}=20°−120°. Deduced levels, J, π. 1971Da32 also measure $\gamma(\theta)$ for (p,nγ).

1989Sc24: E(p)= a few keV about threshold from Physikalisch-Technische Bundesanstalt accelerator facility. Measured Q value for ^{65}Cu(p,n)=−2.13355 MeV *43*.

Other: 1966St20.

For p-induced cross section and threshold data see 1960Sh08, 1962An02, 1963Ok01, 1964Jo11, 1978Sw03, 1982Gr09 and 1983HeZZ.

^{65}Zn Levels

E(level)[†]	J$^\pi$[‡]	Comments
0	(5/2)[@]	
53 *5*	(1/2)[@]	E(level): other: 49 *13* (1960Mc12).
116 *5*	(3/2)[@]	E(level): other: 127 *10* (1960Mc12).
209 *5*	(3/2)[@]	E(level): other: 198 *10* (1960Mc12).
769 *5*	(3/2,5/2)	E(level): other: 776 *13* (1960Mc12).
865 *5*		E(level): corresponds to an unresolved J=(1/2)+(7/2) level doublet (1970We02). Other: 893 *13* (1960Mc12).
908 *5*	(3/2)	E(level): other: 919 *13* (1960Mc12).
1047 *5*	(3/2,5/2)	E(level): other: 1041 *10* (1960Mc12).
1064 *5*	(9/2)	
1251[#] *5*		
1261[#] *5*		E(level): other: 1273 *13* (1960Mc12).
1341 *5*	(3/2,5/2)	E(level): other: 1352 *14* (1960Mc12).
1367 *5*	(5/2)	
1470 *5*	(3/2)	
1577 *5*		E(level): other: 1583 *14* (1960Mc12).
1590 *5*		
1963 *14*		E(level): from 1960Mc12.

[†] From 1970We02, unless otherwise noted. Values from 1970Fi03 are in a good agreement.

[‡] From Hauser-Feshbach analysis of measured $\sigma(\theta)$ (1970We02). 1970We02 assumed allowed ^{65}Ga ε decay (J^π(g.s.)=5/2$^-$ for ^{65}Ga) to the 769, 1047 and 1341 levels and known L(d,p) values for the other levels.

[#] Component of unresolved level doublet (1970We02).

[@] Spin confirmed by 1971Da32 in their analysis of measured $\gamma(\theta)$.