^{64}Zn(d,p) 1967Vo05,1965Bo36,1963Li06

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

Target J^π(^{64}Zn g.s.)=0$^+$.

1967Vo05: E(d)=10.0 MeV from Argonne Tandem Van de Graaff. Target was isotopically enriched ^{64}Zn with a thickness of about 0.5 mg/cm^2. Charged particles were detected with surface-barrier Si detectors (FWHM≈50 keV) or momentum-analyzed with a magnetic spectrograph (FWHM=10-15 MeV). Measured σ(E(p),θ), θ_{cm}=25°−165° (Si) and 5°−40° (magnetic spectrograph). Deduced levels, L-transfers, spectroscopic factors from DWBA analysis. Uncertainty in cross-section is about 25%.

1965Bo36: E(d)=6.5 MeV. FWHM≈60-100 keV. Measured σ(E(p),θ), θ_{cm}≈10°−80°. Deduced levels, L-transfer from DWBA analysis. See also 1968Gr18, 1968Gr23.

1963Li06: E(d)=15 MeV from the University of Pittsburgh cyclotron. Target was natural Zinc. Reaction products were momentum-analyzed with a magnetic spectrograph (FWHM≈90 keV). Measured σ(E(p),θ), θ_{cm}=9°−50°; DWBA analysis.

Others: 1966Sc11; 2007Ko18, 2006Ab30, measured yield.

^{65}Zn Levels

E(level)[†]	L[‡]	C^{2}S[‡#]	Comments
0	3	2.03	C^{2}S: other: 0.80 (1963Li06).
54 *5*	1	0.46	E(level): other: 60 (1963Li06). C^{2}S: other: 0.45 (1963Li06).
115 *5*	1	0.90	E(level): other: 120 (1963Li06). C^{2}S: other: 0.44 (1963Li06).
205 *5*	1	0.05	E(level): other: 210 (1963Li06). L: other: (3) (1963Li06). C^{2}S: other: 0.44 for L=(3) (1963Li06).
865 *5*	1	0.46	E(level): other: 860 (1963Li06). C^{2}S: other: 0.36 (1963Li06).
908 *5*	1	0.12	
1064 *10*	4	5.10	E(level): other: 1040 (1963Li06). C^{2}S: other: 4.12 (1963Li06).
1370 *10*	2	0.98	E(level): other: 1350 (1963Li06). C^{2}S: other: 0.99 (1963Li06).
1469 *10*	1	0.05	
1911 *10*	0	0.08	E(level): other: 1860 (1963Li06). C^{2}S: other: 0.07 (1963Li06).
2054 *10*			A level at 2140 *30* with L=(1) is reported in 1965Bo36.
2421 *10*	1	0.08	E(level): other: 2360 (1963Li06). C^{2}S: other: 0.14 (1963Li06).
2491 *10*	0	0.004	E(level): other: 2490 (1963Li06). C^{2}S: other: 0.14 for L=(2) (1963Li06). L: other: (2) (1963Li06).
2532 *10*	2	0.11	
2575 *10*			
2674 *10*	2	0.07	
2811 *10*	(1)		E(level): other: 2830 *30* (1965Bo36). L: from 1965Bo36.
3002 *10*	2	0.07	
3054 *10*	0	0.04	E(level): other: 2990 (1963Li06). C^{2}S: other: 0.06 (1963Li06).
3104 *10*	2	0.10	
3207 *10*			
3355 *10*	2	0.07	
3409 *10*			
3470? *40*	2	0.21	E(level),L,C^{2}S: from 1963Li06. Level not observed in 1967Vo05. A tentative level is reported at 3450 *30* in 1965Bo36.

Continued on next page (footnotes at end of table)

^{64}Zn(d,p) 1967Vo05,1965Bo36,1963Li06 (continued)

^{65}Zn Levels (continued)

E(level)[†]	L[‡]	C^2S[‡#]	Comments
3533 *10*	2	0.24	E(level): other: 3550 (1963Li06). C^2S: other: 0.11 for L=(0) (1963Li06). L: other: (0) (1963Li06).
3618 *10*	2	0.24	
3672 *10*	0	0.09	E(level): other: 3650 (1963Li06). C^2S: other: 0.05 (1963Li06).
3822 *10*			E(level): observed peak probably corresponds to several unresolved levels (1967Vo05).
3857 *10*	0	0.03	
4180[&] *30*	2[&]		
4370[&] *30*	0[@]	0.35[@]	E(level): other: 4400 (1963Li06).
4500[&] *30*	(0)[&]		
4710[&] *30*	0[@]	0.54[@]	E(level): other: 4780 (1963Li06).
4900?[&]			
5160			E(level): from 1963Li06. $\sigma(\theta)$ reported to be isotropic (1963Li06).
5270?[&] *30*			

[†] From 1967Vo05, unless otherwise noted.
[‡] From DWBA analysis of measured $\sigma(\theta)$. Values are from 1967Vo05, unless otherwise noted.
[#] From 1967Vo05, unless otherwise noted. Original values in 1967Vo05 and 1963Li06 are deduced by using $\sigma(\text{exp})=N^*(2J+1)\times\sigma(\text{DWBA})$ with N=1.0, where N is the normalization factor and J is the spin of the final level. The quoted values are from renormalization of the original values using N=1.53 (1977En02), by the evaluator.
[@] From 1963Li06.
[&] From 1965Bo36.