^{70}Zn(^{3}He,d) 1974Ri08

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 188,1 (2023)	17-Jan-2023

1974Ri08: E=17 MeV ^{3}He beam from the EN Tandem Van de Graaff in Heidelberg. Targets were self-supporting foils of ≈100 μg/cm^2 ≥79% enriched ^{70}Zn. Reaction products were momentum-analyzed with a single-gap broad-range magnetic spectrograph (FWHM=15-20 keV). Measured $\sigma(\theta)$, θ(lab)=5°−35°. Deduced levels, L-transfers, spectroscopic factors from comparison with DWBA calculations with zero-range approximation and inclusion of spin-orbit coupling.

Other:

1974Ze01: E=18 MeV from the Argonne tandem. Measured $\sigma(\theta)$ for 12 levels using ΔE-E detectors (FWHM=120 keV). DWBA analysis.

^{71}Ga Levels

E(level)	L	(2J+1)C^{2}S[†]	Comments
0	1	1.88[#]	(2J+1)C^{2}S: 2.1, L=1 (1974Ze01).
390 *15*	1	1.61[@]	(2J+1)C^{2}S: 0.12, L=1 (1974Ze01).
487[‡] *15*	3[‡]	3.18[@] *50*	
512[‡] *15*	1[‡]	0.40[#] *4*	
714?			
912 *15*			
965 *15*			
1109 *15*	1	1.41,1.23	(2J+1)C^{2}S: 1.1, L=1 (1974Ze01).
1397 *15*			
1485 *15*	4(+2)		E(level): doublet; other member of the doublet is probably the level at 1475 with J^{π}=5/2$^-$ thus requiring L=3. (2J+1)C^{2}S: 2.90-3.60 (for L=4, J=9/2$^+$), 0.29 (for L=(2), J=(5/2$^+$)) component. (2J+1)C^{2}S: 5.3, L=4(+1) (1974Ze01).
1643 *15*	1	0.061,0.052	
1713 *15*	0	0.098	L=1+3 in 1974Ze01, implying a doublet, is in disagreement. Additional information 1.
2075 *30*			
2206 *30*	3	1.82,1.14	(2J+1)C^{2}S: 0.9, L=3 (1974Ze01).
2260 *30*			
2310 *30*	1	0.22,0.19	(2J+1)C^{2}S: 0.2, L=1 (1974Ze01).
2346 *30*	1	0.086,0.073	
2447 *30*	1	0.086,0.077	
2516 *30*	1	0.14,0.12	(2J+1)C^{2}S: 0.5, L= 1 (1974Ze01).
2813 *30*			
2852 *30*			
2924 *30*			
2967 *30*	(2)	(0.18)[#]	
3016 *30*			(2J+1)C^{2}S: 0.7, L=3 (1974Ze01).
3153 *30*	2	0.11[#]	
3227 *30*	1	0.093,0.084	
3438 *30*			
3506 *30*			
3607 *30*	2	0.16[#]	
3683			E(level): probably a doublet.
3749 *30*	2	0.18[#]	
3813 *30*	0	0.052	
3863 *30*			
4060 *30*			
4130 *30*	0	0.032	E(level): possible contamination from ^{65}Ga.

Continued on next page (footnotes at end of table)

^{70}Zn(^{3}He,d) 1974Ri08 (continued)

^{71}Ga Levels (continued)

E(level)	L	(2J+1)C^{2}S[†]	E(level)	L	(2J+1)C^{2}S[†]	E(level)	L	(2J+1)C^{2}S[†]
4211 *30*	0	0.030	4487 *30*			4813 *30*	(2)	(0.091)[#]
4278 *30*			4644 *30*	0	0.026	5221 *30*	0	0.050
4382 *30*			4692 *30*					

[†] When two values are given, first value is for L−1/2, the second for L+1/2. Absolute uncertainties about 25%; relative uncertainties are lower.
[‡] 487 and 512 form an unresolved doublet; L=1+3 determined for the unresolved peak.
[#] L+1/2 assumed.
[@] L-1/2 assumed.