^{62}Ni(α,p) 2001Ny01,1972Bu17

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

2001Ny01: E=25 MeV α beam was produced from the Niels Bohr Institute Tandem accelerator. Target was 99.8% enriched ^{62}Ni with a thickness of about 65 μg/cm^2. Reaction products were momentum-analyzed with the NBI multigap magnetic spectrometer (FHWM≈25 keV). Measured σ(E$_p$, θ), θ_{cm}=7.5° to 77.5° in steps of 5°. Deduced levels, J, π, level spins and parities. The j-dependence of cross sections was used to achieve firmer spin assignments.

1972Bu17, 1975Se14: E=19.3-19.4 MeV α beams were produced from the U-120 cyclotron of the Institute for Atomic Physics, Bucharest. Target was >98% enriched ^{62}Ni with a thickness of about 1 mg/cm^2. Reaction products were detected with a Si(Li) detector (FWHM=150-200 keV). Measured σ(E$_p$,θ), θ_{cm}=10°−130°. Deduced levels, J, π, L-transfer, spectroscopic factors from DWBA analysis with zero-range approximation.

Others (measured σ): 1987Sm07, 1986Se02, 1985Wa30, 1974Pa06, 1971Gl02, 1972Lu03 (also 1972Lu09), 1968Se03, 1965Sa21 (also 1965Sa20).

^{65}Cu Levels

Spectroscopic factor is obtained by using dσ/dΩ(exp)=N×(2J+1)C^{2}S×dσ/dΩ(DWBA), where N is the normalization factor and J is the spin of the final level.

E(level)‡	J$^\pi$#	L†	(2J+1)C^{2}S†	Comments
0	3/2$^-$	1	1.00	dσ/dΩ(μb/sr)=355 *71*.
771 *2*	1/2$^-$	1	0.44	dσ/dΩ(μb/sr)=145 *29*.
1116 *3*	5/2$^-$	3	0.40	dσ/dΩ(μb/sr)=42 *8*.
1482 *5*				dσ/dΩ(μb/sr)=6 *1*.
1623 *2*	5/2$^-$	3	1.08	dσ/dΩ(μb/sr)=113 *23*.
1729 *5*				dσ/dΩ(μb/sr)=3 *1*.
2105 *5*	5/2$^-$			dσ/dΩ(μb/sr)=24 *5*.
2213 *3*	(3/2$^-$)			dσ/dΩ(μb/sr)=41 *8*.
2328 *3*	3/2$^-$			dσ/dΩ(μb/sr)=35 *7*.
2534 *2*	9/2$^+$	4	0.85	dσ/dΩ(μb/sr)=233 *47*.
2905 *5*	(3/2,5/2)			dσ/dΩ(μb/sr)=16 *3*.
3003 *5*	(11/2$^-$)			dσ/dΩ(μb/sr)=20 *4*.
3082 *3*	(3/2,5/2)			dσ/dΩ(μb/sr)=31 *6*.
3278 *3*	(11/2$^-$)			dσ/dΩ(μb/sr)=28 *6*.
3359 *2*	5/2$^+$			dσ/dΩ(μb/sr)=146 *29*.
3402 *5*	(7/2,9/2)			dσ/dΩ(μb/sr)=25 *5*.
3485 *5*	(7/2,9/2)			dσ/dΩ(μb/sr)=20 *4*.
3519 *5*	(9/2$^+$)			dσ/dΩ(μb/sr)=27 *5*.
3566 *5*	(5/2,7/2)			dσ/dΩ(μb/sr)=26 *5*.
3606 *5*	(9/2,7/2)			dσ/dΩ(μb/sr)=23 *5*.
3640 *5*				dσ/dΩ(μb/sr)=14 *3*.
3666 *5*	(9/2,7/2)			dσ/dΩ(μb/sr)=28 *6*.
3737 *5*				dσ/dΩ(μb/sr)=20 *4*.
3757 *3*	(9/2,7/2)			dσ/dΩ(μb/sr)=38 *8*.
3825 *5*				dσ/dΩ(μb/sr)=12 *2*.
3910 *5*	(9/2)			dσ/dΩ(μb/sr)=20 *4*.
3965 *5*	(9/2,11/2)			dσ/dΩ(μb/sr)=23 *5*.
4011 *3*	(11/2$^-$)			dσ/dΩ(μb/sr)=46 *9*.
4090 *3*	(9/2)			dσ/dΩ(μb/sr)=72 *14*.
4195 *3*	(9/2$^+$)			dσ/dΩ(μb/sr)=71 *14*.
4238?	(13/2$^+$)			E(level): from Fig.11 of 2001Ny01; not listed in Table VI by the authors.

† From DWBA analysis of measured $\sigma(\theta)$ (1972Bu17, 1975Se14). Quoted values of C^{2}S are relative spectroscopic factors.

Continued on next page (footnotes at end of table)

^{62}Ni(α,p) 2001Ny01,1972Bu17 (continued)

^{65}Cu Levels (continued)

‡ From 2001Ny01. The uncertainty is assigned by the evaluator based authors′ statement that ΔE=2 keV is for the strongest proton groups, and increases to ΔE=5 keV for the weakest and the σ data, as given under comments measured at 12.5°.

From DWBA analysis and j-dependence of measured $\sigma(\theta)$ (2001Ny01).