^{64}Ni(p,d) 2013ScZZ,1970De18,1979Ik04

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 196,17 (2024)	30-Sep-2023

This dataset is adapted from the XUNDL dataset for 2013ScZZ compiled by E. Thiagalingam and B. Singh (McMaster), on May 10, 2023.

2013ScZZ: E=28 MeV proton beam was produced from Yale tandem accelerator of WNSL facility. Target was 160 μg/cm^2 ^{64}Ni (91.0% enriched). Reaction products were momentum-analyzed with a split-pole Enge spectrograph (FWHM≈48 keV). Measured $\sigma(E_d,\theta)$. Deduced levels, J, π, spectroscopic factors from DWBA analysis. Comparison with shell-model calculations.

1970De18: E=27.5 MeV proton beam ws produced from the University of Colorado 1.32-m sector-focused cyclotron. Target was 78 μg/cm^2 self-supporting enriched ^{64}Ni. Reaction products were detected with a ΔE-E telescope (FWHM=105 keV). Measured σ(E(d),θ). Deduced IAS level, L-transfer, spectroscopic factor.

1979Ik04: E=50 MeV proton beam was produced from the RCNP AVF cyclotron. Target was 473 μg/cm^2 self-supporting metallic foil of enriched ^{64}Ni. Reaction products were momentum-analyzed with a magnetic spectrograph (FWHM=8-15 keV). Measured σ(E(d),θ). Deduced IAS level.

^{63}Ni Levels

E(level)[†]	Jπ	L	dσ/dΩ (mb/sr)[‡]	Comments
0			3.48	dσ/dΩ (mb/sr): other: 0.35 at 25°.
87			1.79	dσ/dΩ (mb/sr): other: 2.20 at 25°.
156			15.4	dσ/dΩ (mb/sr): other: 1.27 at 25°.
518			4.90	dσ/dΩ (mb/sr): other: 0.51 at 25°.
1001			2.91	dσ/dΩ (mb/sr): other: 0.25 at 25°.
1292			0.045	dσ/dΩ (mb/sr): other: 0.62 at 25°.
2149			2.53	dσ/dΩ (mb/sr): other: 0.20 at 25°.
2297			0.059	dσ/dΩ (mb/sr): other: 0.052 at 25°.
2519			0.027	dσ/dΩ (mb/sr): other: 0.064 at 25°.
2953			0.065	dσ/dΩ (mb/sr): other: 0.045 at 25°.
11850 *15*	$(7/2)^-$	3	0.21	E(level): from 1979Ik04. Assigned as IAS (^{63}Co g.s.) from systematics. Other: 11850 *80* (1970De18). Jπ,L,dσ/dΩ (mb/sr): from coupled-channel analysis of σ(θ) (1970De18).

[†] Rounded values from Adopted Levels, unless otherwise noted.

[‡] Measured σ(θ) at 10° from 2013ScZZ. Values at 25° are given under comments. The uncertainties are estimated to be ≈4% for σ>1 mb/sr, ≈7% for 0.1<σ< 1.0 mb/sr, and ≈18% for σ<0.1 mb/sr at their respective maxima. The uncertainties arising from possible contaminants or previously unidentified states for very weak transitions could be ≈0.02 mb/sr (2013ScZZ).