^{62}Ni(^{3}He,α) 2013Sc06,1968Ru02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	20-Jan-2020

No changes made since the 2015 update.

2013Sc06, 2013ScZZ: E(^{3}He)=25 MeV from WNSL-Yale tandem accelerator facility. Measured α spectra, $\sigma(\theta)$, spectroscopic factors C^2S using a split-pole Enge spectrograph. FWHM ≈75 keV. Target=219 μg/cm^2 thick 96.5% enriched. Deduced levels, J, π. DWBA analysis. Comparison with shell-model calculations.

The main purpose of the neutron adding and neutron removal reaction studies by 2013Sc06 was to obtain occupancies of neutron orbitals, proton vacancies, and energy centroids of neutron, neutron-holes, proton-single particle excitations in ^{60}Ni and ^{62}Ni, and thereby investigate closure of 0f$_{7/2}$ shell. Some data details of this study are supplied in 2013ScZZ.

1968Ru02: E=25 MeV. Measured σ(Eα,θ), 34 angles between 7.5° and 90°, semi, FWHM≈140 keV.

Other: 1969Ar20.

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dσ/dΩ in mb/sr (2013ScZZ)

Level	5° (^{3}He,α)
0	1.04
67	2.53
283	0.36
656	0.074
909	0.056
1015	0.012
1100	0.12
1132	0.24
1185	0.25
1455	0.73
1610	0.16
1729	0.055
2122	0.51
2469	0.21
2593	0.042
2905	1.11
3308	1.52

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.

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^{61}Ni Levels

E(level)[†]	L[‡]	S[‡]	Comments
0			
67	3	2.07	S: for J^π=5/2$^-$. L=(1+3), S=3.03 for L=3, 5/2$^-$ (1968Ru02). Additional information 1.
283			
656			
909	3	0.04	S: for J^π=5/2$^-$.
1015	3	0.009	S: for J^π=7/2$^-$.
1100			

Continued on next page (footnotes at end of table)

^{62}Ni(^{3}He,α) 2013Sc06,1968Ru02 (continued)

^{61}Ni Levels (continued)

E(level)†	L‡	S‡	Comments
1132	3	0.18	S: for $J^{\pi}=5/2^{-}$. 1968Ru02 report 1150 group with L(1+3), S=0.59 for L=3, $5/2^{-}$. Additional information 2.
1185			
1455	3	0.54	S: for $J^{\pi}=7/2^{-}$. Other: S=0.47 for L=3, $7/2^{-}$ (1968Ru02). Additional information 3.
1610	3	0.11	S: for $J^{\pi}=5/2^{-}$.
1729			
2122	4	0.34	S: for $J^{\pi}=9/2^{+}$. Other: S=0.27 for L=(4), $9/2^{+}$ (1968Ru02). Additional information 4.
2469	3	0.15	S: for $J^{\pi}=7/2^{-}$. Other: S=0.23 for L=3 (1968Ru02). Additional information 5.
2593	3	0.03	S: for $J^{\pi}=7/2^{-}$.
2905	3	0.80	S: for $J^{\pi}=7/2^{-}$. Other: S=0.60 for L=3, $7/2^{-}$ (1968Ru02). Additional information 6.
3308	3	1.11	S: for $J^{\pi}=7/2^{-}$. Other: S=0.91 for L=3, $7/2^{-}$ (1968Ru02). Additional information 7.
4940 *40*	(3)	(0.69)	E(level),L,S: from 1968Ru02 only; level not reported in 2013Sc06.

† 2013Sc06 quote values from 1999-Nuclear Data Sheets for A=61 (1999Bh04). These values are nearly the same as in Adopted Levels here.

‡ From 2013Sc06, 2013ScZZ, except for the 4940 group reported only in 1968Ru02.