^{74}Ge(^{3}He,α) 2007ScZX,2008Sc03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 158, 1 (2019)	16-May-2019

2007ScZX,2008Sc03: E=26 MeV ^{3}He beam was provided by Yale tandem accelerator. Targets were about 200-300 μg/cm^2 thick enriched Ge on thin carbon foils. Reaction products were momentum-analyzed with the Yale Engel spectrograph (FWHM≈70 keV) and detected by a gas-filled focal plane detector backed by a scintillator. Measured $\sigma(\theta)$. Deduced levels, L-transfers, spectroscopic factors from DWBA analysis. Comparisons with theoretical calculations. 2007ScZX is from private communication from J. P. Schiffer in 2007 and contains data details for fourteen different reactions, results of which are summarized and used in 2008Sc03.

The experiments in 2007ScZX, 2008Sc03 were designed to determine occupation of valence neutron orbitals in the ground states of ^{76}Ge and ^{76}Se by precise measurements of cross sections through particle- transfer reactions. Cross sections were measured at angles where these are maximum.

Uncertainty in cross sections: statistical uncertainty of 1% for strong peaks; systematic uncertainties of 5% in absolute values and 3% in relative values (2007ScZX).

Cross-section (2007ScZX)	
Level	dσ/dΩ (mb/sr)
0	7.29
354	3.31
499	0.301
598	0.12
639	0.12
809	0.24
894	0.29
1027	0.44
1150	0.96
1246	0.147
1307	0.32
1624	0.49

^{73}Ge Levels

E(level)[†]	L[@]	C^{2}S[@]	E(level)[†]	L[@]	C^{2}S[@]	E(level)[†]	L[@]	E(level)[†]	L[@]	C^{2}S[@]
0	4	5.73	639 *10*			1150 *5*	(3)[#]	x[‡]	3	0.183
353 *5*	3	3.84	809 *5*	3	0.26	1246 *5*		y[‡]	4	0.031
499 *5*			894 *5*			1307 *5*				
598 *10*	3	0.135	1027 *5*			1624 *5*	(3)[#]			

[†] From 2007ScZX.
[‡] Analog states (2007ScZX).
[#] Uncertain assignment (2007ScZX).
[@] From DWBA analysis of measured cross sections (2007ScZX).