

$^{76}\text{Ge}(\alpha, ^3\text{He})$ 2007ScZX,2008Sc03

Type	History		Literature Cutoff Date
	Author	Citation	
Full Evaluation	Balraj Singh	ENSDF	30-Sep-2020

2008Sc03, 2007ScZX: E=40 MeV beam provided by Yale tandem accelerator. Enriched target. Particles detected with Enge spectrograph and gas- filled focal plane detector backed by a scintillator. Measured cross sections. FWHM=70 keV. Spectroscopic factors deduced from analysis of cross section data by DWBA calculations using PTOLEMY code.

The experiments 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.

All data listed here are from 2007ScZX.

Level	Cross-section data	
	$d\sigma/d\Omega$ (mb/sr)	$\sigma(^3\text{He}, \alpha)/\sigma(d, p)$ (28°)
160	0.046	0.10
225	1.515	2.64
492	0.147	0.14
1100	0.024	0.12
1386	0.032	0.02
1655	0.059	
1954	0.062	
2088	0.049	

 ^{77}Ge Levels

E(level) [†]	J ^π [†]	L [†]	S [‡]	Comments
160		1		
225	9/2 ⁺	4	3.38	
492	5/2 ⁻	3	1.13	L: assignment from 2007ScZX; mixed L=2 and 3, L=3 dominates in ($^3\text{He}, \alpha$).
1100				
1386				
1655		(3)		
1954				
2088				

[†] 2008Sc03 take data primarily from the 1997 evaluation of A=77.

[‡] From 2007ScZX, the optical-model parameters used for the calculations are listed by 2007ScZX.