^{76}Ge(pol d,p),(d,p) 1976Yo04,1972Ha74,2008Sc03

History

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

1976Yo04: polarized deuterons, E=12.0 MeV, measured $\sigma(\theta)$ and vector-analyzing power. Cross section uncertainty=10-15%, FWHM=40 keV, enriched target. Energy region studied is below 1800 keV.

1973Ka03: E=6.02 MeV, measured $\sigma(\theta)$, cross section uncertainty=10%, FWHM=18 keV, enriched target.

1972Ha74: E=12MeV. Measured $\sigma(\theta)$, FWHM=8 keV, cross section uncertainty=25%, enriched targets.

2008Sc03, 2007ScZX: (d,p) E=15 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=40 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.

Others:

1968Ne06: (d,p),E(d)=6.5 MeV; measured $\sigma(\theta)$, deduced levels, L-transfer.

1962Si02: a short abstract in Bulletin of American Physical Society conference.

All use DWBA for data analysis.

^{77}Ge Levels

Cross-section data (2007ScZX)

Level	dσ/dΩ (mb/sr)(11°)	σ(11°)/σ(28°)	σ(28°)/σ(37°)
160	3.44	7.3	0.80
225	0.532	0.93	0.86
421	0.098	1.9	1.94
505	1.20	1.2	2.19
629	1.32	7.2	0.77
884	0.64	1.7	2.7
1021	1.05	6.2	0.77
1048	0.34	5.0	1.28
1250	4.39	2.9	1.73
1385	3.00	2.1	2.45

Uncertainties: 1% statistical uncertainty for strong peaks; 5% systematic uncertainty in absolute values, 3% in relative values.

E(level)[@]	Jπ[c]	L[&]	(2J+1)S[a]	Comments
0[†]	7/2+			Very weakly populated. Jπ: from Adopted Levels.
159 *5*	1/2−	1	0.58	(2J+1)S: 0.52 (1972Ha74, 1973Ka03), 0.65 (2007ScZX).
225 *5*	9/2+	4	3.0	(2J+1)S: 2.16 (1972Ha74), 3.21 (1973Ka03).
428 *5*		2	0.026	
500 *5*				
510 *5*	5/2+	2	0.56	(2J+1)S: 0.43 (1972Ha74), 0.60 (1973Ka03).
630 *5*	3/2−	1	0.20	(2J+1)S: 0.19 (1972Ha74), 0.20 (1973Ka03), 0.234 (2007ScZX).
884 *5*	5/2+	2	0.21	(2J+1)S: 0.17 (1972Ha74), 0.20 (1973Ka03).
1022 *10*		1	0.175	L,(2J+1)S: from 2007ScZX; also L=1 in 1972Ha74 but L=2 for a 1006 group in 1973Ka03.
1053 *10*		1	0.02	(2J+1)S: 0.057 (2007ScZX).
1109?[#] *10*				
1189?[#] *10*		4	0.058	
1248 *10*		0	0.48	E(level): 1226 (1973Ka03).

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^{76}Ge(pol d,p),(d,p) 1976Yo04,1972Ha74,2008Sc03 (continued)

^{77}Ge Levels (continued)

E(level)[@]	J$^\pi$[c]	L[&]	(2J+1)S[a]	Comments
				(2J+1)S: other: 0.74 (1973Ka03).
1386 *10*	5/2$^+$	2	0.39	E(level): 1361 (1973Ka03). (2J+1)S: others: 0.92 (1973Ka03), 0.73 (1972Ha74).
1536 *10*		0	0.12	E(level): 1513 (1973Ka03). (2J+1)S: others: 0.12 (1973Ka03), 0.033 (1972Ha74).
1610[#] *10*				
1655[#] *10*				
1777 *10*		0	0.15	E(level): 1755 (1973Ka03). (2J+1)S: others: 0.18 (1973Ka03), 0.037 (1972Ha74).
1804 *10*	3/2$^+$	2	0.68	E(level): 1783 (1973Ka03). (2J+1)S: others: 0.34 (1973Ka03), 0.24 (1972Ha74).
1836 *10*		(0)[‡]	0.22[‡]	E(level): 1810 (1973Ka03).
1883 *10*				E(level): 1862 (1973Ka03).
1954 *10*		(2)[‡]	0.04[‡]	E(level): 1920 (1973Ka03).
2060 *10*				E(level): 2031 (1973Ka03).
2088 *10*		4	0.32	E(level): 2061 (1973Ka03). L,(2J+1)S: from 1972Ha74.
2120 *10*		2	0.059[b]	E(level): 2083 (1973Ka03).
2260[#] *10*				
2305 *10*		(2)[‡]	0.15[‡]	E(level): 2264 (1973Ka03).
2442[†] *10*		(2)[‡]	0.13[‡]	
2479[†] *10*		(0)[‡]	0.04[‡]	
2515[†] *10*				
2556[†] *10*				
2783[†] *10*				
2873[†] *10*		0	0.16	
2929[†] *10*		[‡]	[‡]	
2960 *10*		(0)[‡]	0.08[‡]	E(level): 2913 (1973Ka03).
2998[†] *10*				
3090[†] *15*				
3135 *10*				E(level): 3089 (1973Ka03).
3147[#] *10*				
3242 *10*		2[‡]	0.51[‡]	E(level): 3195 (1973Ka03).
3257 *10*		(0)[‡]	0.22[‡]	E(level): 3227 (1973Ka03).
3364[†] *15*		(2)[‡]	0.36[‡]	
3388[†] *15*				
3443[†] *15*				
3496[†] *15*				
3547[†] *15*				

[†] Reported by 1973Ka03 only. Energies have been increased by 45 keV.
[‡] From 1973Ka03.
[#] Reported by 1972Ha74 only.
[@] From 1972Ha74, unless otherwise specified. Values are in good agreement with those from (n,γ) work (see 1023 and 1250 levels from 1972Ha74 and 1972Gr34). 1976Yo04 take energies from 1973Ka03 that are systematically lower than those in 1972Ha74, the deviations are 5 keV for lower levels, 20 keV for E>1000 keV rising to 50 keV at 3200 keV.

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^{76}Ge(pol d,p),(d,p) 1976Yo04,1972Ha74,2008Sc03 (continued)

^{77}Ge Levels (continued)

& From 1976Yo04 for levels below 1800 keV and from 1973Ka03 or 1972Ha74 for others.
[a] From 1976Yo04, unless otherwise noted.
[b] From 1972Ha74.
[c] From analyzing powers in (pol d,p) (1976Yo04). Above 1800, L values for many of the levels are uncertain, thus have not been used in assigning J^{π} values.