

$^{74}\text{Ge}(\text{d,p}),(\text{pol d,p})$ 1988BuZV,1976Yo04,1973Ka03

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Alexandru Negret, Balraj Singh		NDS 114, 841 (2013)	30-Jun-2013

1988BuZV (also 1986BuZZ): (d,p) E=17 MeV. Measured $\sigma(\theta)$, FWHM=20 keV.

1976Yo04 (also 1975YoZR): (pol d,p) E=12.0 MeV, measured $\sigma(\theta)$ and vector analyzing power. Cross section uncertainty=10-15%, FWHM=40 keV, enriched target.

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

Others:

2007ScZX, 2008Sc03: (d,p), E=15 MeV beam provided by Yale tandem. Enge spectrograph and gas-filled focal plane detector backed by a scintillator. Measured cross sections (statistical uncertainty 1%, systematic 5%). FWHM=40 keV. Spectroscopic factors deduced from analysis of cross section data by DWBA calculations using ptolemy code; all previous L assignments confirmed.

1983Is07: (d,p) E=6 MeV. Report 38 groups up to 3300.

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

1966Bo05, 1962Si02: (d,p).

All papers use DWBA for data analysis.

Level	Cross-section data (2007ScZX)		
	$d\sigma/d\Omega$ (mb/sr) (11°)	$\sigma(11^\circ)/\sigma(28^\circ)$	$\sigma(28^\circ)/\sigma(37^\circ)$
0	2.84	7.3	0.79
201	0.53	0.63	0.98
253	0.53	5.4	0.84
317	0.148	0.35	2.05
457	0.035	0.27	1.72
584	3.60	2.84	1.79
673	0.49	1.80	2.29
765	0.048	1.36	
886	1.27	5.3	1.02
986			0.95
1137	0.52	4.7	1.04
1241			1.71
1394	0.72	1.39	2.29
1514	4.27	2.18	1.89
1718			2.95
1869	0.45	1.93	1.88
2004	0.70		
2215	0.197	1.28	
2321	0.174	4.0	
2383	0.58	1.44	2.17
2478			2.85
2527			1.05
2574	0.249		
2661	0.72		

 ^{75}Ge Levels

E(level) [†]	J^π [‡]	L	(2J+1)S [#]	Comments
0	1/2 ⁻	1	0.663	(2J+1)S: 0.59 in 2007ScZX.
139.1 26		4	0.092	(2J+1)S: for L-1/2.
200.6 11	9/2 ⁺	4	4.55	L,(2J+1)S: from 1976Yo04. 1988BuZV find a doublet with L=2+4 and (2J+1)S=1.97; indicating that the 192.5/2 ⁺ level seen in (d,py) is also being populated.
253.4 20	3/2 ⁻	1	0.108	(2J+1)S: 0.105 in 2007ScZX.

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$^{74}\text{Ge}(\text{d,p}),(\text{pol d,p})$ **1988BuZV,1976Yo04,1973Ka03 (continued)** ^{75}Ge Levels (continued)

E(level) [†]	J ^π [‡]	L	(2J+1)S [#]	Comments
				J ^π : from Adopted Levels. 1976Yo04 report J=9/2+1/2 for the 200+253 doublet. 1983Is07 , in (d,py) explain the discrepancy for J(253) as being due to the presence of the 192,5/2 ⁺ level in the peak observed by 1976Yo04 .
317.5 21	5/2 ⁻	3	0.771	
458.4 20		3	0.205	L: L=2 in table 4 of 1973Ka03 is a misprint.
				(2J+1)S: for L-1/2.
581.4 20	(5/2) ⁺	2	0.845	J ^π : from Adopted Levels. 1976Yo04 report J=3/2, but contribution from 574 3/2 ⁻ level (not reported in (d,p)) could explain the discrepancy.
673.0 17		0	0.043	L,(2J+1)S: from 1972Ha74 , 1988BuZV give L=0+3, (2J+1)S=0.023. 1973Ka03 give L=1 contradicting others (see Adopted Levels). 1976Yo04 report J=3/2, but a possible contribution from the 574 3/2 ⁻ level (unreported in (d,p)) might explain the discrepancy.
764.7 16		1,2	0.01,0.016	
886.7 13	1/2 ⁻	1	0.294	(2J+1)S: 0.23 in 2007ScZX .
986.2 26		(2,4)	(0.01,0.075)	
1134.5 21	3/2 ⁻	1	0.117	(2J+1)S: 0.090 in 2007ScZX .
1236 3	5/2 ⁻	3	0.273	L: 1973Ka03 report L=0 for 1226-keV level.
				(2J+1)S: for L-1/2.
1391.4 16	5/2 ⁺	2	0.291	
1517 3		0	0.55	L,(2J+1)S: from 1973Ka03 for 1507 10 level. 1988BuZV get L=0+2+4.
1534 10		2	0.27	E(level),L,(2J+1)S: from 1972Ha74 . L=4 in table 7 of 1972Ha74 is a misprint. Figure 7 gives L=2 for the 1534-keV level.
1713.6 19	5/2 ⁺	2	0.659	
1864.1 25	3/2 ⁺	2	0.144	
2004 3	3/2 ⁺	2	0.188	
2050 @ 10				
2108 & 10		(0)	0.02	
2136 @ 10				
2196 10				E(level): from 1972Ha74 . 1988BuZV observe a doublet at 2204 with L=2 or L=2+4.
2212 10				E(level): from 1972Ha74 .
2319.0 25		1	0.060	(2J+1)S: 0.026 in 2007ScZX .
				L: 1973Ka03 give L=0 for 2310 level.
2380.4 20	5/2 ⁺	2	0.165	E(level): 1973Ka03 give 2359.
2475.6 24		4	0.335	E(level): reported by 1988BuZV and 1973Ka03 .
2526 3		2	0.124	
2574.2 17		2	0.670	
2659.1 20		1	0.159	(2J+1)S: 0.103 in 2007ScZX .
				L: 1973Ka03 give L=0 for 2636 level which does not agree with the value in (p,d); perhaps a different level. 1972Ha74 also give L=0 for E=2660.
2748.5 23		2	0.089	L: 1973Ka03 give L=0 for 2725 level.
2836 3		2	0.113	E(level): reported by 1973Ka03 and 1988BuZV .
2924 @ 10				
3028 & 15		2	0.11	
3049.6 24		2	0.479	
3063 & 15		0	0.098	L,(2J+1)S: from 1973Ka03 .
3083 & 15		0	0.098	
3126 3		2	0.034	E(level): reported by 1988BuZV and 1973Ka03 . But the level reported by 1973Ka03 may correspond to 3160 level of 1988BuZV . 1973Ka03 report L=0.
3160 3				L: L=0+3 or 0+2+4.
				E(level): 1973Ka03 report 3186 15 with L=(2).
3215 4		2	0.045	E(level): 1973Ka03 report 3247 15 with L=(2).
3281 4		2	0.283	
3361 4		2	0.035	
3399 4		2	0.062	
3438 5		2	0.093	

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$^{74}\text{Ge}(\text{d,p}),(\text{pol d,p})$ [1988BuZV](#),[1976Yo04](#),[1973Ka03](#) (continued) ^{75}Ge Levels (continued)

<u>E(level)[†]</u>	<u>E(level)[†]</u>	<u>L</u>	<u>(2J+1)S[#]</u>
3502 @ 15	3683 @ 15	(0)	0.066
3530 @ 15	3729 @ 15		
3587 @ 15	3782 @ 15		
	3832 @ 15		

[†] Data are from [1988BuZV](#), except as noted. The agreement among different references is good, except for [1973Ka03](#) where the energies are consistently too low. The average deviation from 1714 to 2836 is -16 keV comparing the values with [1988BuZV](#). In the region above 3000, the deviation is consistently 26 to 36 keV low in [1973Ka03](#). If the 3000 level of [1973Ka03](#) is associated with the 3028 level of [1972Ha74](#), the agreement between the levels in [1988BuZV](#), [1972Ha74](#) and [1973Ka03](#) is excellent. The energies of the peaks reported only by [1973Ka03](#), at 2050 and 2136 are increased by 15 keV, the energy of the peak at 2924 is increased by 20 keV, and the peaks above 3437 are increased by 30 keV when transferred to Adopted Levels.

[‡] From vector analyzing powers ([1976Yo04](#)) and measured L values, unless stated otherwise.

[#] Following assumptions are made by [1988BuZV](#) in the calculation: J=3/2 for L=1; J=5/2 for L=3; J=5/2 for L=2 and J=9/2 for L=4 for states with two possible spins.

@ Reported by [1973Ka03](#) only.

& Reported by [1973Ka03](#) and [1972Ha74](#). Energies are from [1972Ha74](#).