^{76}Se(d,p),(pol d,p) 1978Mo12,2008Sc03

History

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

1978Mo12: (pol d,p) E=12.5 MeV. Enriched target, beam polarization=0.44 *3*, magnetic spectrograph, FWHM≈22 keV.
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. Levels reported up to 1831 keV.
Others:
1965Li08: (d,p), E=15 MeV, measured $\sigma(\theta)$, FWHM≈40 keV, 39 groups reported up to 4750 keV.
1963Ma27: (d,p), E=7.8 MeV. measured $\sigma(\theta)$, 14 groups reported up to 1424 keV.
All data are from 1978Mo12, unless otherwise stated.

Cross-section data (2007ScZX)

Level	dσ/dΩ (mb/sr)(11°)	σ(11°)/σ(28°)	σ(28°)/σ(37°)
0	2.26	9.8	0.63
175	0.31	0.58	0.72
238,250	0.73	2.18	1.01
301	0.186	1.06	2.96
521	2.08	7.7	0.66
680	1.10	1.36	3.04
818	0.85	5.7	1.13
911	0.121	3.1	1.7
947	0.56	2.05	2.2
1005	0.43	5.1	0.99
1024	0.086	1.53	1.03
1128	2.50	2.45	1.9
1187	0.132	1.31	1.8
1253	1.24	1.44	2.6
1364	0.07	0.94	1.57
1412	0.895	2.21	2.0
1439	0.237	1.77	2.3
1488	0.118	2.93	2.1
1511	0.068	1.46	0.91
1608	0.023	1.00	3.7
1623	0.082	1.82	1.51
1831	0.510		0.91

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

^{77}Se Levels

E(level)	Jπ#	L	(2J+1)S	Comments
0	1/2⁻	1[a]	0.58‡	(2J+1)S: other: 0.78 (1978Mo12).
176 *5*	9/2⁺	4[a]	4.50	
243 *5*	3/2⁻&5/2⁻	1+3[a]	0.30,1.34	E(level): unresolved doublet (239 and 250 levels in Adopted Levels). (2J+1)S: other: 0.180 for L=1 component (2007ScZX).
302 *5*	5/2⁺	2[a]	0.23	

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^{76}Se(d,p),(pol d,p) 1978Mo12,2008Sc03 (continued)

^{77}Se Levels (continued)

E(level)	J^{π}[#]	L	(2J+1)S	Comments
442 *5*	5/2$^-$	3	0.35	
524 *5*	3/2$^-$	1[a]	0.49[‡]	(2J+1)S: other: 0.67 (1978Mo12).
683 *5*	5/2$^+$	2[a]	0.96	
818 *5*	1/2$^-$	1[a]	0.191[‡]	(2J+1)S: other: 0.28 (1978Mo12).
911[†]				
950 *5*	1/2$^+$	0[a]	0.36	
1005 *5*	3/2$^-$	1[a]	0.093[‡]	(2J+1)S: other: 0.19 (1978Mo12).
1024[†]				
1133 *5*	1/2$^+$	0	0.64	
1187[†]		1,2[b]		
1253 *5*	5/2$^+$	2[a]	0.88	
1364[†]		1,2[b]		
1412[†]				
1439 *5*	3/2$^+$	2[a]	0.84	
1488[†]				
1511[†]		1,2[b]		
1608[†]		2[b]		
1623[†]				
1711 *12*		1[&]	0.041[&]	E(level): 1760 (1965Li08).
1831		1[&a]	0.23[&]	E(level): from 2007ScZX which agrees better with 1830 from 1965Li08. Other: 1814 *12* (1978Mo12).
2057 *12*	5/2$^+$	2	0.30	
2157 *12*	5/2$^+$	2	0.16	
2251 *12*		2[&]	0.29[&]	E(level): 2290 (1965Li08).
2386 *12*				
2455 *12*				
2504 *12*		(2)[&]	0.39[&]	E(level): 2500 (1965Li08).
2584 *12*		(2)[&]	0.50[&]	
2640[@]		(2)	0.22	
2730 *12*				
2950[@]		2	0.25	
3107 *12*				
3167 *12*		2[&]	0.51[&]	E(level): 3160 (1965Li08).
3268 *12*		2[&]	0.46[&]	
3324 *12*		(2)[&]	0.43[&]	E(level): 3330 (1965Li08).
3441 *12*		2[&]	0.36[&]	E(level): 3400 (1965Li08).
3530[@]		2	0.28	
3690 *12*		2[&]	0.13[&]	E(level): 3670 (1965Li08).
3780[@]		2	0.21	
3860[@]		2	0.19	
4070[@]		2	0.29	
4234 *12*		2[&]	0.39[&]	E(level): 4220 (1965Li08).
4272 *12*				
4340[@]		2	0.23	
4430[@]		2	0.24	
4640[@]		(2)	0.21	
4750[@]		(2)	0.10	

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^{76}Se(d,p),(pol d,p) 1978Mo12,2008Sc03 (continued)

^{77}Se Levels (continued)

† From 2007ScZX only.
‡ From 2007ScZX.
# From L transfer and vector-analyzing power.
@ The proton group reported by 1965Li08 only, ΔE not quoted.
& From 1965Li08.
a L-value confirmed by 2007ScZX.
b From 2007ScZX.