^{76}Se(p,p′),(pol p,p′) 1986Og01,1974MuZB,1993Mo05

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, Jun Chen and Ameenah R. Farhan	NDS 194,3 (2024)	8-Jan-2024

1986Og01 (also 1983Og02): (p,p′),E=64.8 MeV. $\sigma(\theta)$ data from 8° to 60° (lab) in steps of 4°. Uncertainty on $\sigma\approx10\%$. DWBA and coupled-channel calculations. Theoretical levels predicted from calculations based on random-phase approximation method.

1974MuZB: (p,p′),E=9 MeV. 55 levels reported up to 5 MeV.

Coupled-channel analysis of first 0^+, 2^+, 4^+ and 3^- and second 2^+:

1993Mo05 (also 1986MoZR): (pol p,p′),E=22 MeV. Measured $\sigma(\theta)$ and analyzing powers for g.s.,0^+; 559,2^+; 1122,0^+; 1216,2^+; 1331,4^+ and 2427,3^- levels. Coupled-channel analysis for first 0^+, 2^+, 4^+, 3^- and second 0^+, 2^+ states.

1984De01: (pol p,p′),E=16 MeV. $\sigma(\theta)$ and analyzing powers from 35° to 165° in steps of 5°. Coupled-channel analysis. Data for first and second 0^+ and 2^+ states, first 4^+, and first 3^- state reported. Deformation parameters deduced. Theory based on three models: vibrational, rotational-vibrational, and asymmetric rotor model. Authors find that none of the models simultaneously describes all the data.

1983Ma59: (pol p,p′),E=65 MeV. $\sigma(\theta)$ and analyzing powers measured. Coupled-channel analysis for first 2^+ and first 4^+ states based on vibrational model and rotor model.

1979Ma28 (also 1979Ma41): (p,p′) E=51.9 MeV. $\sigma(\theta)$ data for first 2^+ and 3^- levels.

Others:

1970He10: (p,p′) E=6.4, 7.0 MeV, $\sigma(\theta)$ and DWBA calculations.

1963Da19: (p,p′) E=12 MeV, $\sigma(\theta)$ and DWBA analysis.

The following abbreviations are used below: HVM for harmonic vibrational model, SRM for symmetric rotational model, and A_y=vector analyzing power.

^{76}Se Levels

E(level)†	L†	β_LR (1986Og01)	Comments
0	0		
559 *2*	2	1.45	β_2=0.28 *1*, β_2R=1.41 (HVM), 1.39 (SRM) (1993Mo05,1986MoZR). β_2=0.310 *10* (1984De01, asymmetric rotor model); 0.301 *15* (1984De01, rotational-vibrational model); 0.267 *40* (1983Ma59, rotor model); 0.281 *42* (1983Ma59, vibrational model); 0.278 *7* (1979Ma28, coupled-channel); 0.293 *7* (1979Ma28,1979Ma41, DWBA). Other: 0.323 (1970He10).
1122 *2*	0		L: $\sigma(\theta)$ and $A_y(\theta)$ (1986MoZR).
1216 *2*	2	0.26	β_2=0.085 *2* (1986MoZR,1993Mo05).
1330 *2*	4	0.06	β_4=0.049 *10* (HVM), 0.012 (SRM) (1986MoZR). β_4R=0.069 (SRM) (1986MoZR,1993Mo05). β_4=0.014 5 (1983Ma59, rotor model); 0.012 *4* (1983Ma59, vibrational model); 0.040 (srm,1984De01).
1688‡ *3*			
1787 *2*	2	0.06	
2026‡ *3*			
2127‡ *3*			
2177‡ *3*			
2263‡ *5*			
2429 *2*	3	0.69	β_3=0.17 *1*, β_3R=0.86 (1986MoZR,1993Mo05); β_3=0.15, β_3R=0.78 (1984De01); β_3=0.16, β_3R=0.86 (1979Ma28,1979Ma41).
2487‡ *5*			
2515‡ *5*			
2621 *2*	4	0.09	
2658 *2*			
2691 *2*	(3)		E(level): 2670 *5* (1974MuZB).
2807 *2*	4	0.28	
2853 *2*	4	0.12	
2915 *2*	4	0.26	

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^{76}Se(p,p′),(pol p,p′) 1986Og01,1974MuZB,1993Mo05 (continued)

^{76}Se Levels (continued)

E(level)†	L†	β_LR (1986Og01)	Comments
2968‡ *5*			
3001 *4*	2	0.04	
3042 *4*	6		
3081‡ *5*			
3103 *4*	3	0.19	
3160 *4*	3	0.11	
3216 *4*	3+4	0.23,0.29	
3259‡ *5*			
3289 *4*	4	0.18	
3342‡ *3*			
3408 *4*	4	0.19	
3443 *4*	3	0.15	
3475 *4*	4	0.16	
3565 *4*			E(level): 3552 *3* (1974MuZB).
3630‡ *5*			
3655 *4*	(4)		L: given as (3) in Table 4 (1986Og01) but the $\sigma(\theta)$ (Fig. 8) shows (4).
3697 *4*			E(level): 3690 *5* and 3707 *5* in 1974MuZB.
3732 *4*	3	0.12	
3776 *4*	4	0.06	
3806 *4*	5		
3862 *4*	4	0.07	
3917 *4*	4	0.08	
3948 *4*	4	0.09	
3999 *4*	3	0.11	
4042 *4*			
4119 *4*			
4170 *4*	4	0.11	
4218 *4*	3	0.10	
4241‡ *6*			
4340 *4*	3	0.09	
4399 *4*	4	0.18	
4447‡ *10*			
4476 *4*	(2)		
4523 *4*	3	0.07	
4611 *4*	3	0.11	E(level): 4593 (1974MuZB).
4658 *4*	3	0.11	
4723 *4*	4	0.08	
4771 *4*	(3)		
4811 *4*			
4859 *4*	4	0.05	
4935 *4*	3	0.07	E(level): 1974MuZB report a 4968 *10* level which may be composite of 4935 and 4998.
4998 *4*			
5081 *4*	3	0.12	
5174 *4*	3	0.12	
5261 *4*	4	0.11	
5303 *4*	3	0.09	
5401 *4*			

† From 1986Og01, unless otherwise stated.
‡ Reported by 1974MuZB only.