

$^{70}\text{Ge}(\text{p,p}'),(\text{pol p,p}')$ 1969Hi01,1967Br10

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	G. Gürdal, E. A. McCutchan		NDS 136, 1 (2016)	1-Jul-2016

1993Mo05: polarized beam, E=22.3 MeV, coupled-channel calculations for one-, two-phonon states.

1969Hi01: E=7.02 and 10 MeV. Scattered protons were detected using photographic emulsions placed at the focal plane of a magnetic spectrograph. FWHM=6 and 10 keV; measured $\sigma(\theta)$ for $\theta=50^\circ$ and 90° ; Hauser-Feshbach analysis.

1967Br10: E=11-12 MeV, FWHM=12 keV; measured $\sigma(\theta)$.

1970Cu03: E \approx 14.5 MeV, FWHM=70 keV; measured $\sigma(\theta)$, $\theta=20^\circ-150^\circ$; coupled-channel analysis.

1985Se05: E=11.5 MeV, incident beam polarized; measured $\sigma(\theta)$, $\theta=25^\circ-165^\circ$; and vector-analyzing power; coupled-channel analysis.

1986Ro08: E=22 MeV; measured $\sigma(\theta)$, DWBA and coupled-channel analysis. Reanalysis of data by 1992Ke07.

 ^{70}Ge Levels

J^π from 1969Hi01 based on a comparison with Hauser-Feshbach analysis are given in comments.

E(level) [†]	L [‡]	Comments
0.0		
1039 2	2	$J^\pi=2^+$. $\beta_2=0.25$ 2 (1992Ke07).
1215 2		$J^\pi=0^+$.
1707 2		$J^\pi=2^+$.
2156 3		$J^\pi=4^+$.
2160 3		$J^\pi=2^+$.
		E(level): the 2156 and 2160 levels form a doublet with an estimated separation of 3.4 keV 5 (1969Hi01).
2310 2		$J^\pi=0^+$.
2454 2		J=(3).
2538 2		$J^\pi=(1,2^+)$.
2565 2	3	$J^\pi=3^-$; based on the large $\sigma(\text{p,p}')$ at 10 MeV for the 2565-keV level which suggests that it is the one-phonon octupole level. $\beta_3=0.265$ 20 (1992Ke07).
2809 2	4	$J^\pi=(4^+)$.
2890 2	0	J=0.
2948 2		J=(2,1).
3049 2		$J^\pi=3^+$.
3062 2	4	$J^\pi=4^+$.
		E(level): energy separation of 3049 and 3062 levels is 12.5 keV 3 (1969Hi01).
3109 2		J=(0).
3182 2		
3195 2	4	E(level): energy separation of 3182 and 3195 levels is 13.2 keV 4 (1969Hi01).
3242 2	4	J=1.
3296 2	4	
3316 2	1	J=1. E(level): probable doublet with J=1 for one member.
3336 2		
3345 2		
3351 2		
3419 2	5	
3428 2		$J^\pi=(5^-)$ from coupled-channel fit of 1970Cu03.
3432 2	3	
3456 2	4	
3483 2		J=(1,2).
3489 2	5	J=3,4.
3563 3	4	
3570 3		
3581 3	3+5	

Continued on next page (footnotes at end of table)

$^{70}\text{Ge}(\text{p},\text{p}'),(\text{pol p},\text{p}') \quad 1969\text{Hi01},1967\text{Br10}$ (continued) ^{70}Ge Levels (continued)

<u>E(level)[†]</u>	<u>L[‡]</u>	<u>Comments</u>
3593 3		J=3,4.
3633 3	(0)	
3667 3		
3678 3		J=3,4.
3691 3		
3710 3	4	
3740 3		
3754 10	(6)	E(level): from 1986Ro08 .
3777 3		
3783 3	2+3	
3850 3		
3857 3		
3871 3		
3891 3		
3904 3	(0)	J=(1,2).
3911 3		
3928 3		
3941 10	4	E(level): from 1986Ro08 .
3959 10		
3976 3		
3990 3	(2)	
4003 3		
4037 3		
4054 3	4	
4062 3		
4097 3		J=(1,2).
4107 3	3	
4119 3		
4132 3		
4144 3		J=(1,2).
4153 3		
4166 3		
4176 10		
4196 10	8	
4219 10	4	
4227 10		
4242 10		
4261 10		
4282 10	4	
4299 10		
4334 10		
4357 10	4	
4365 10		
4378 10		
4392 10		
4409 10		
4421 10		
4448 10		
4475 10		
4520 10		
4534 10		
4546 10		
4557 10		
4578 10		
4606 10		
4621 10		
4641 10		

Continued on next page (footnotes at end of table)

$^{70}\text{Ge}(\text{p,p}'),(\text{pol p,p}')$ [1969Hi01](#),[1967Br10](#) (continued)

^{70}Ge Levels (continued)

E(level)[†]

4677 *10*

4689 *10*

4707 *10*

4716 *10*

4727 *10*

[†] The 3959 keV, 4176 keV and higher energy levels are from [1967Br10](#); the rest are from [1969Hi01](#) unless indicated otherwise.

[‡] From DWBA analysis ([1986Ro08](#)).