

⁷⁰Ge(p,p),(p,p'γ) 1979Te04,1972Ma64,1979Ra29

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 188,1 (2023)	17-Jan-2023

1978Te03,1979Te04: E=4.95-5.19 MeV proton beams from the Ohio State University Van de Graaff accelerator. Scattered protons were detected with semiconductor detectors and γ rays were detected with NaI(Tl) detectors. Measured σ(θ) for elastic and inelastic scattering, py angular correlations and analyzing power measurements. Deduced spins.

1971Te05,1972Ma64: E=2.7-7.4 MeV, FWHM=3 keV. Measured σ(θ) for elastic and inelastic scattering at θ=90°, 125° and 165°.

1979Ra29: E=3.5-5.3 MeV, FWHM=35-50 keV. Measured σ(θ) for elastic scattering. Deduced levels, widths, L-transfers.

Others: 1974Ba04, 1989El04.

Additional information 1.

⁷¹As Levels

E(level) ^{†b}	J ^π	T _{1/2}	L	Comments
8199& 11		8 keV	1	E(p)=3631 10, Γ _p =0.3 keV.
8381& 11		7 keV	0	E(p)=3815 10, Γ _p =0.35 keV.
8493& 11			0,1	E(p)=3928 10, if L=0, Γ=10 keV, Γ _p =0.30 keV; if L=1, Γ=9 keV, Γ _p =0.45 keV.
8693‡& 11		35 keV	0	E(p)=4131 10, Γ _p =4.65 keV. E(level): IAR of 1349 level in ⁷¹ Ge.
8912& 11		17 keV	0	E(p)=4353 10, Γ _p =0.8 keV.
8928 ^a				E(p)=4370.
9049& 11		12 keV	0	E(p)=4492 10, Γ _p =0.6 keV.
9066 ^a				E(p)=4510.
9160& 11		12 keV	0	E(p)=4605 10, Γ _p =0.55 keV.
9352 ^a			0	E(p)=4800.
9524@ 11	3/2 ^{-c}	18 keV		E(p)=4974 10, Γ _p =0.99 keV.
9559@ 11	1/2 ^{+c}	17 keV		E(p)=5010 10, Γ _p =1.4 keV.
9593@ 11	5/2 ^{+c}	25 keV		E(p)=5044 10, Γ _p =0.8 keV.
9601#@ 11	1/2 ^{+c}	63 keV		E(p)=5052 10, Γ _p =21 keV. E(level): IAR of 2226 level in ⁷¹ Ge.
9617@ 11	1/2 ^{+c}	28 keV		E(p)=5068 10, Γ _p =1.1 keV.
9686@ 11	5/2 ^{+c}	21 keV		E(p)=5138 10, Γ _p =2.1 keV. E(level): IAR of 2278 level in ⁷¹ Ge.
9766 ^a			2	E(p)=5220.
9909 ^a			0	E(p)=5365.
10062 ^a			2	E(p)=5520.
10485 ^a			0	E(p)=5950.
10594 ^a			0	E(p)=6060.
10761 ^a			2	E(p)=6230.
10929 ^a			2	E(p)=6400.
11037 ^a			0	E(p)=6510.
11126 ^a			0	E(p)=6600.
11816 ^a			0	E(p)=7300.

[†] S(p)+E(p)(c.m.), where S(p)=4620 4 (2021Wa16).

[‡] Fine structure of this resonance has been measured by 1979Ra29 and five closely spaced resonances assigned L=0 and J^π=1/2⁺.

[#] Fine structure of this resonance has been reported by 1971Te05 who propose that it is composed of five closely spaced resonances of which four were assigned a J^π=1/2⁺ and no J^π assigned for the fifth. The data of 1979Ra29 could reproduce the detailed shape of this broad resonance with the widths deduced by 1971Te05 at all angles. Statistical analysis of 1974Ba04 using high resolution elastic scattering data shows significant substructure at E(p)=4.97-5.06 MeV. The data of 1979Te04, collected

${}^{70}\text{Ge}(\text{p,p}),(\text{p,p}'\gamma)$ [1979Te04](#),[1972Ma64](#),[1979Ra29](#) (continued)

${}^{71}\text{As}$ Levels (continued)

using two NaI(Tl) detectors in Goldfarb-Seyler geometry, disagree and assign $1/2^+$ to only two resonances at $E(\text{p})=5.010$ and 5.068 MeV casting doubt on this cluster of levels as an example of intermediate structure as proposed by [1971Te05](#).

@ Level parameters from [1978Te03](#), [1979Te04](#).

& Level parameters from [1979Ra29](#).

^a From [1972Ma64](#).

^b Parent states of these IAR in ${}^{71}\text{Ge}$ are identified assuming a Coulomb displacement energy of 10176.20 and where the J^π of both are known.

^c From $\text{p}\gamma(\theta)$ and analyzing power measurements ([1979Te04](#)).