

$^{72}\text{Ge}(\gamma, \gamma')$ **1995Ju01**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	D. Abriola(a), A. A. Sonzogni		NDS 111,1 (2010)	1-May-2009

E=4, 10 MeV, measured $E\gamma$, $I\gamma$, σ , widths; it includes (pol γ, γ').

 ^{72}Ge Levels

E(level) [†]	J ^π @	T _{1/2} ^a	I _s (eVb) ^{&}	Comments
0.0	0 ⁺			
2116.9 [‡] 4	1	0.41 fs 8	2.7 3	Γ_{γ}^2/Γ (meV)= 1.1 2, Γ_f (meV)=1.1 2.
3089.4 9	1	0.38 fs 19	1.5 7	Γ_{γ}^2/Γ (meV)= 1.2 6, Γ_f (meV)=1.2 6.
3094.8 [‡] 5	2 ⁺		1.1 3	Γ_{γ}^2/Γ (meV)=0.5 1, Γ_f (meV)=0.5 1.
3338.0 [‡] 4	1 ⁽⁺⁾	89 ps 21	5.3 12	Γ_{γ}^2/Γ (meV)=5.1 12, Γ_f (meV)=5.1 12.
3666.2 [‡] 5	1 ⁺		41 5	Γ_{γ}^2/Γ (meV)=48 6, Γ_f (meV)=65 10.
3895.0 [‡] 5	1		16 4	Γ_{γ}^2/Γ (meV)=21 5, Γ_f (meV)=31 9.
3996.0 [#] 4	1 ⁽⁺⁾		101 12	Γ_{γ}^2/Γ (meV)=139 17, Γ_f (meV)=139 17.
4049.6 [#] 3	1		61 5	Γ_{γ}^2/Γ (meV)=87 8, Γ_f (meV)=87 8.
4256.1 [#] 3	1		33 6	Γ_{γ}^2/Γ (meV)=52 9, Γ_f (meV)=52 9.
4358.7 [#] 3	1		37 4	Γ_{γ}^2/Γ (meV)=60 6, Γ_f (meV)=60 6.
5164.8 [#] 3	1 ⁺		47 6	Γ_{γ}^2/Γ (meV)=108 14, Γ_f (meV)=108 14.
5199.2 11	1		37 5	Γ_{γ}^2/Γ (meV)=86 11, Γ_f (meV)=86 11.
5280.4 [#] 6	1		43 5	Γ_{γ}^2/Γ (meV)=105 12, Γ_f (meV)=105 12.
5315.0 [#] 6	1		52 9	Γ_{γ}^2/Γ (meV)=126 22, Γ_f (meV)=126 22.
5435.8 [#] 5	1 ⁺		71 7	Γ_{γ}^2/Γ (meV)=182 19, Γ_f (meV)=182 19.
5849.8 [#] 3	1 ⁽⁻⁾		86 5	Γ_{γ}^2/Γ (meV)=254 15, Γ_f (meV)=254 15.
5919.8 [#] 4	1 ⁻		115 8	Γ_{γ}^2/Γ (meV)=349 23, Γ_f (meV)=349 23.
5974.6 [#] 12	1		52 5	Γ_{γ}^2/Γ (meV)=160 16, Γ_f (meV)=160 16.
6131.7 [#] 7	1		57 6	Γ_{γ}^2/Γ (meV)=185 19, Γ_f (meV)=185 19.
6146.0 [#] 11	1		30 5	Γ_{γ}^2/Γ (meV)=99 17, Γ_f (meV)=99 17.
6163.5 [#] 4	1 ⁽⁻⁾		60 6	Γ_{γ}^2/Γ (meV)=197 19, Γ_f (meV)=459 44.
6383.2 [#] 7	1		41 5	Γ_{γ}^2/Γ (meV)=144 19, Γ_f (meV)=144 19.
6470.0 [#] 7	1		54 6	Γ_{γ}^2/Γ (meV)=198 22, Γ_f (meV)=198 22.
6629.9 [#] 6	1		33 6	Γ_{γ}^2/Γ (meV)=126 22, Γ_f (meV)=126 22.
6736.8 [#] 6	1		48 6	Γ_{γ}^2/Γ (meV)=190 23, Γ_f (meV)=190 23.
6811.7 [#] 12	1 ⁻		63 9	Γ_{γ}^2/Γ (meV)=254 34, Γ_f (meV)=254 34.
7061.2 [#] 10	1		62 7	Γ_{γ}^2/Γ (meV)=267 29, Γ_f (meV)=494 53.
7450.4 [#] 11	1		54 6	Γ_{γ}^2/Γ (meV)=261 31, Γ_f (meV)=261 31.
7518.5 [#] 8	1		77 7	Γ_{γ}^2/Γ (meV)=376 36, Γ_f (meV)=376 36.
7673.7 [#] 4	1 ⁻		86 7	Γ_{γ}^2/Γ (meV)=441 33, Γ_f (meV)=441 33.
7805.0 [#] 13	1 ⁽⁻⁾		71 7	Γ_{γ}^2/Γ (meV)=373 37, Γ_f (meV)=373 37.
8441.7 [#] 8	1 ⁽⁻⁾		81 11	Γ_{γ}^2/Γ (meV)=501 69, Γ_f (meV)=501 69.
8486.9 [#] 10	1		51 7	Γ_{γ}^2/Γ (meV)=321 44, Γ_f (meV)=715 98.
8867.9 [#] 5	1		62 7	Γ_{γ}^2/Γ (meV)=42148, Γ_f (meV)=421 48.

[†] From recoil-corrected gamma ray energies, assuming that the E_x values in 1995Ju01 are gamma-ray energies.

[‡] Observed in 4 MeV end-point energy.

[#] Observed in 10 MeV end-point energy.

$^{72}\text{Ge}(\gamma, \gamma')$ 1995Ju01 (continued) ^{72}Ge Levels (continued)

@ From polarization measurements.

& Photon scattering cross section integrated over the single resonance.

^a From $\Gamma_{\gamma 0}^2/\Gamma$ and I_γ , calculated only for the 4 MeV end-point energy run, as the widths for the 10-MeV run are considerable higher due to contributions from higher levels.

 $\gamma(^{72}\text{Ge})$

E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [†]	E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [†]
2116.9 4	100	2116.9	1	0.0	0 ⁺	D	5974.3 12	100	5974.6	1	0.0	0 ⁺	D
3089.3 9	100	3089.4	1	0.0	0 ⁺	D	6131.4 7	100	6131.7	1	0.0	0 ⁺	D
3094.7 5	100	3094.8	2 ⁺	0.0	0 ⁺	E2	6145.7 11	100	6146.0	1	0.0	0 ⁺	D
3337.9 4	100	3338.0	1 ⁽⁺⁾	0.0	0 ⁺	(M1)	6163.2 4		6163.5	1 ⁽⁻⁾	0.0	0 ⁺	(E1)
3666.1 5		3666.2	1 ⁺	0.0	0 ⁺	M1	6382.9 7	100	6383.2	1	0.0	0 ⁺	D
3894.9 5		3895.0	1	0.0	0 ⁺	D	6469.7 7	100	6470.0	1	0.0	0 ⁺	D
3995.9 4	100	3996.0	1 ⁽⁺⁾	0.0	0 ⁺	(M1)	6629.6 6	100	6629.9	1	0.0	0 ⁺	D
4049.5 3	100	4049.6	1	0.0	0 ⁺	D	6736.5 6	100	6736.8	1	0.0	0 ⁺	D
4256.0 3	100	4256.1	1	0.0	0 ⁺	D	6811.4 12	100	6811.7	1 ⁻	0.0	0 ⁺	E1
4358.6 3	100	4358.7	1	0.0	0 ⁺	D	7060.8 10		7061.2	1	0.0	0 ⁺	D
5164.6 3	100	5164.8	1 ⁺	0.0	0 ⁺	M1	7450.0 11	100	7450.4	1	0.0	0 ⁺	D
5199.0 11	100	5199.2	1	0.0	0 ⁺	D	7518.1 8	100	7518.5	1	0.0	0 ⁺	D
5280.2 6	100	5280.4	1	0.0	0 ⁺	D	7673.3 4	100	7673.7	1 ⁻	0.0	0 ⁺	E1
5314.8 6	100	5315.0	1	0.0	0 ⁺	D	7804.5 13		7805.0	1 ⁽⁻⁾	0.0	0 ⁺	(E1)
5435.6 5	100	5435.8	1 ⁺	0.0	0 ⁺	M1	8441.2 8	100	8441.7	1 ⁽⁻⁾	0.0	0 ⁺	(E1)
5849.5 3	100	5849.8	1 ⁽⁻⁾	0.0	0 ⁺	(E1)	8486.4 10		8486.9	1	0.0	0 ⁺	D
5919.5 4	100	5919.8	1 ⁻	0.0	0 ⁺	E1	8867.3 5	100	8867.9	1	0.0	0 ⁺	D

[†] From polarization measurements.

Intensities: Type not specified

	$I_\gamma < 2\% \times I_\gamma^{\max}$
	$I_\gamma < 10\% \times I_\gamma^{\max}$
	$I_\gamma > 10\% \times I_\gamma^{\max}$

