

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	J. K. Tuli, E. Browne		NDS 157, 260 (2019)	1-Mar-2019

Q(β^-)=4688 5; S(n)=7195 3; S(p)=15076 4; Q(α)=-10357 3 2017Wa10

⁸²Ge Levels

Cross Reference (XREF) Flags

A	⁸² Ga β^- decay	E	¹⁹² Os(⁸² Se,X γ)
B	⁸³ Ga β^- -n decay	F	²³⁸ U(⁸² Se, ⁸² Ge γ)
C	²⁴⁸ Cm SF decay	G	⁹ Be(⁸³ As, ⁸² Ge γ)
D	Coulomb excitation	H	²⁵² Cf SF decay

E(level) [‡]	J $\pi^{\dagger a}$	T _{1/2}	XREF	Comments
0.0 [#]	0 ⁺	4.0 s 7	ABCDEFGH	% β^- =100 T _{1/2} : Based on measured values by 2015Et01. The weighted average value of the 13 values measured by 2015Et01 is 4.04 s 27; however, an uncertainty of 0.27 s is considerably lower than the smallest measured T _{1/2} uncertainty and may be smaller than the systematic uncertainty, moreover, the T _{1/2} from the strongest gamma ray of 1092 keV is 5.0 s 7. As a result, evaluators adopt a value of 4.0 s 7. Others: 4.60 s 35 (1972De43), 4.5 s 4 (1981ZeZY).
1348.3 [#] 1	2 ⁺	0.50 ps 8	ABCDEFGH	T _{1/2} : deduced from measured B(E2)(up) in Coul. Ex. J π : Coulomb excited from 0 ⁺ ground state. Syst.of even-even nuclides.
1951.52? 20			A	
2028.6 4	(4 ⁺)		E	
2215.43 9	(2 ⁺)		AB E	
2286.61 [#] 15	4 ⁺		ABCD FGH	
2333.61@ 15	0 ⁺		AB H	
2524.7@ 4	(2 ⁺)		B F H	
2661.0 7			H	
2702.01 18			AB	
2713.74 20			AB	
2826.7? 3			A	
2882.9? 3			B	
2884.6@ 7	(4 ⁺)		H	
2933.0 9			C F H	
2957.6 7			H	
3014.3? 5			B	
3055.5& 7	(0 ⁺)		H	
3075.78 19			AB	
3225 [#] 2	6 ⁺		C F H	
3257.4& 7	(2 ⁺)		AB H	
3397.2@ 9	(6 ⁺)		H	
3571.5? 5			A	
3606.1 5	(6 ⁺)		E	
3627.0& 7	(4 ⁺)		H	
3681.8 5			E	
3689.2 10			H	
3848.5? 3			A	
4220.95 23			A	
5617.82 23	(1 ⁻ ,2 ⁻ ,3 ⁻)		A	

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Adopted Levels, Gammas (continued) ^{82}Ge Levels (continued)

<u>E(level)[‡]</u>	<u>J^π†α</u>	<u>XREF</u>
6012.5 5	(1 ⁻ ,2 ⁻ ,3 ⁻)	A
6062.7 4	(1 ⁻ ,2 ⁻ ,3 ⁻)	A
6675.19 23	(1 ⁻ ,2 ⁻ ,3 ⁻)	A
6818.7 6	(1 ⁻ ,2 ⁻ ,3 ⁻)	A

† From systematics of even-mass N=50 isotones, band assignment. Levels seen in ^{82}Ga β^- decay alone are based on log *ft* and level decay.

‡ Deduced from γ -ray data.

Band(A): g.s. band.

@ Band(B): Band based on first excited 0⁺.

& Band(C): Band based on second excited (0⁺).

ª Two deformed rotational bands have been assigned, indicating coexistence of the spherical ground state and deformed excited states in ^{82}Ge . Possible 2p-2h excitations with 0⁺ pairing energy of $\nu 9/2[404]^{-2} \otimes \nu 1/2[431]^2$ configuration across N=50 shell (2011Hw03).

 $\gamma(^{82}\text{Ge})$

<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_γ[†]</u>	<u>I_γ[†]</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.[‡]</u>	<u>α[#]</u>	<u>Comments</u>
1348.3	2 ⁺	1348.3 1	100 7	0.0	0 ⁺	E2	2.21×10 ⁻⁴	α(K)=0.0001625 23; α(L)=1.654×10 ⁻⁵ 24; α(M)=2.47×10 ⁻⁶ 4 α(N)=1.621×10 ⁻⁷ 23; α(IPF)=3.96×10 ⁻⁵ 6 B(E2)(W.u.)=12.0 20 Mult.: Q from DCO, RUL.
1951.52?		1951.5@ 2	100	0.0	0 ⁺			
2028.6	(4 ⁺)	681.0 3	100	1348.3	2 ⁺			
2215.43	(2 ⁺)	867.0 1	54 7	1348.3	2 ⁺			
		2215.43 2	100 21	0.0	0 ⁺			
2286.61	4 ⁺	938.3 1	100	1348.3	2 ⁺	Q		
2333.61	0 ⁺	985.3 1	100	1348.3	2 ⁺			
2524.7	(2 ⁺)	191.4		2333.61	0 ⁺			
		1176.2		1348.3	2 ⁺	D+Q		
		2524.7		0.0	0 ⁺			
2661.0		1312.5	100	1348.3	2 ⁺			
2702.01		415.4 1	40 2	2286.61	4 ⁺			
		1354 1	100 18	1348.3	2 ⁺			
2713.74		1365.4 2	100 17	1348.3	2 ⁺			
		2714.3 9	91 16	0.0	0 ⁺			
2826.7?		2826.6@ 3	100	0.0	0 ⁺			
2882.9?		596.4@ 2	100	2286.61	4 ⁺			
2884.6	(4 ⁺)	359.9	100	2524.7	(2 ⁺)			
2933.0		646.0	100	2286.61	4 ⁺	D		
2957.6		1609.1	100	1348.3	2 ⁺			
3014.3?		727.8 4	100	2286.61	4 ⁺			E _γ : Observed only in 2010Wi03.
3055.5	(0 ⁺)	1707.0	100	1348.3	2 ⁺			
3075.78		1727.4 2	100 27	1348.3	2 ⁺			
		3076.3 6	87 20	0.0	0 ⁺			
3225	6 ⁺	940 1	100	2286.61	4 ⁺	Q		
3257.4	(2 ⁺)	201.9		3055.5	(0 ⁺)			
		1908.9		1348.3	2 ⁺			
		3257.4		0.0	0 ⁺			

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Adopted Levels, Gammas (continued) $\gamma(^{82}\text{Ge})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\dagger	E_f	J_f^π	$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\dagger	E_f	J_f^π
3397.2	(6 ⁺)	512.6	100	2884.6	(4 ⁺)	4220.95		2872.6 2	100	1348.3	2 ⁺
3571.5?		3571.4 @ 5	100	0.0	0 ⁺	5617.82	(1 ⁻ ,2 ⁻ ,3 ⁻)	4269.4 2	100	1348.3	2 ⁺
3606.1	(6 ⁺)	1577.5 3	100	2028.6	(4 ⁺)	6012.5	(1 ⁻ ,2 ⁻ ,3 ⁻)	4664.1 4	100	1348.3	2 ⁺
3627.0	(4 ⁺)	369.6	100	3257.4	(2 ⁺)	6062.7	(1 ⁻ ,2 ⁻ ,3 ⁻)	3360.6 3	100	2702.01	
3681.8		1468.0 5	100	2215.43	(2 ⁺)	6675.19	(1 ⁻ ,2 ⁻ ,3 ⁻)	5326.7 2	100	1348.3	2 ⁺
3689.2		756.2	100	2933.0		6818.7	(1 ⁻ ,2 ⁻ ,3 ⁻)	3560.1 5	100	3257.4	(2 ⁺)
3848.5?		3848.4 @ 3	100	0.0	0 ⁺						

[†] γ -ray data for γ seen in ^{82}Ga β^- decay are from [2016Al10](#), Gamma rays not seen in β^- decay are from SF decay or $^{192}\text{Os}(^{82}\text{Se},X\gamma)$ studies.

[‡] From $^{192}\text{Os}(^{82}\text{Se},X\gamma)$.

[Additional information 1](#).

@ Placement of transition in the level scheme is uncertain.

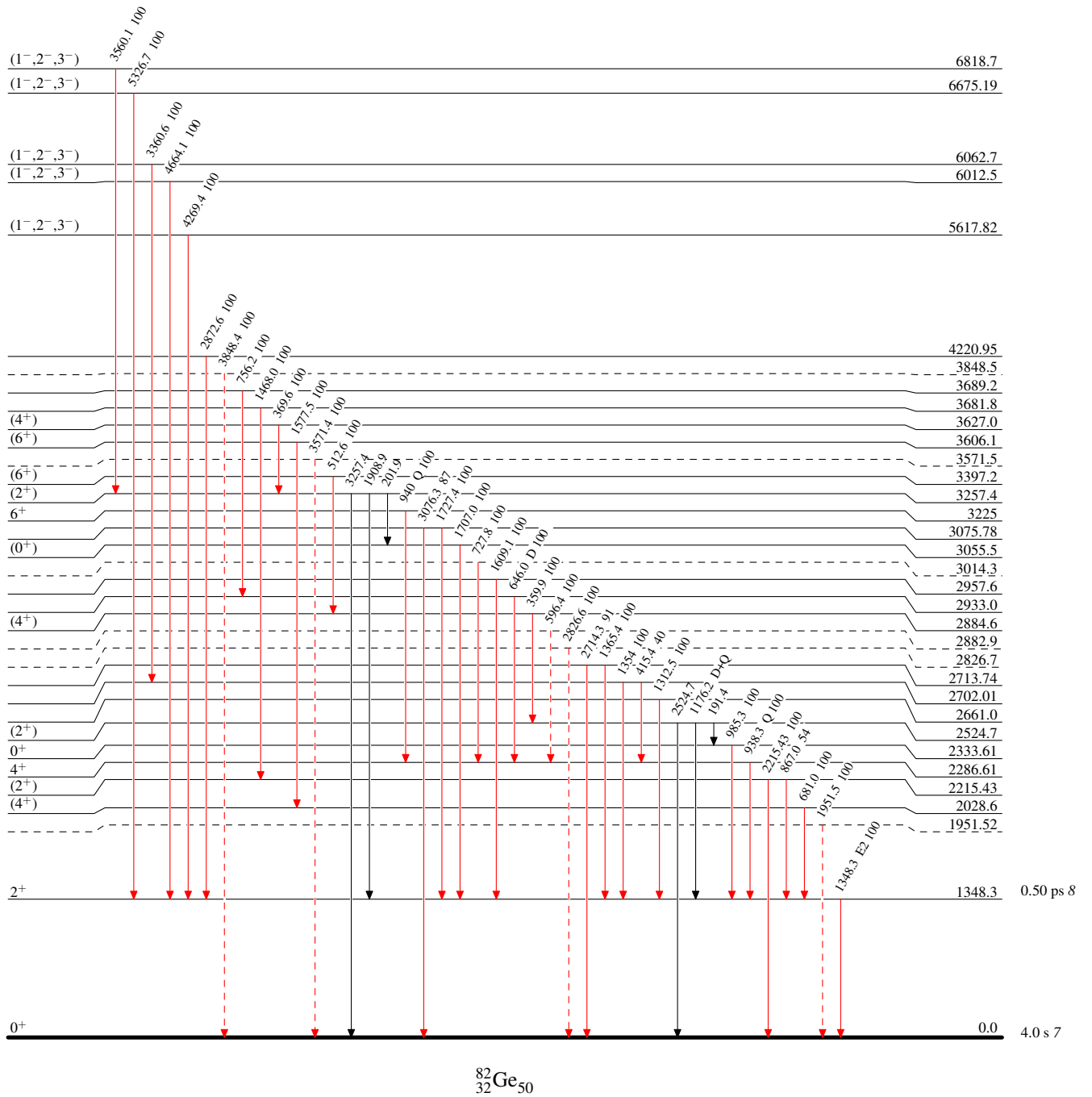
Adopted Levels, Gammas

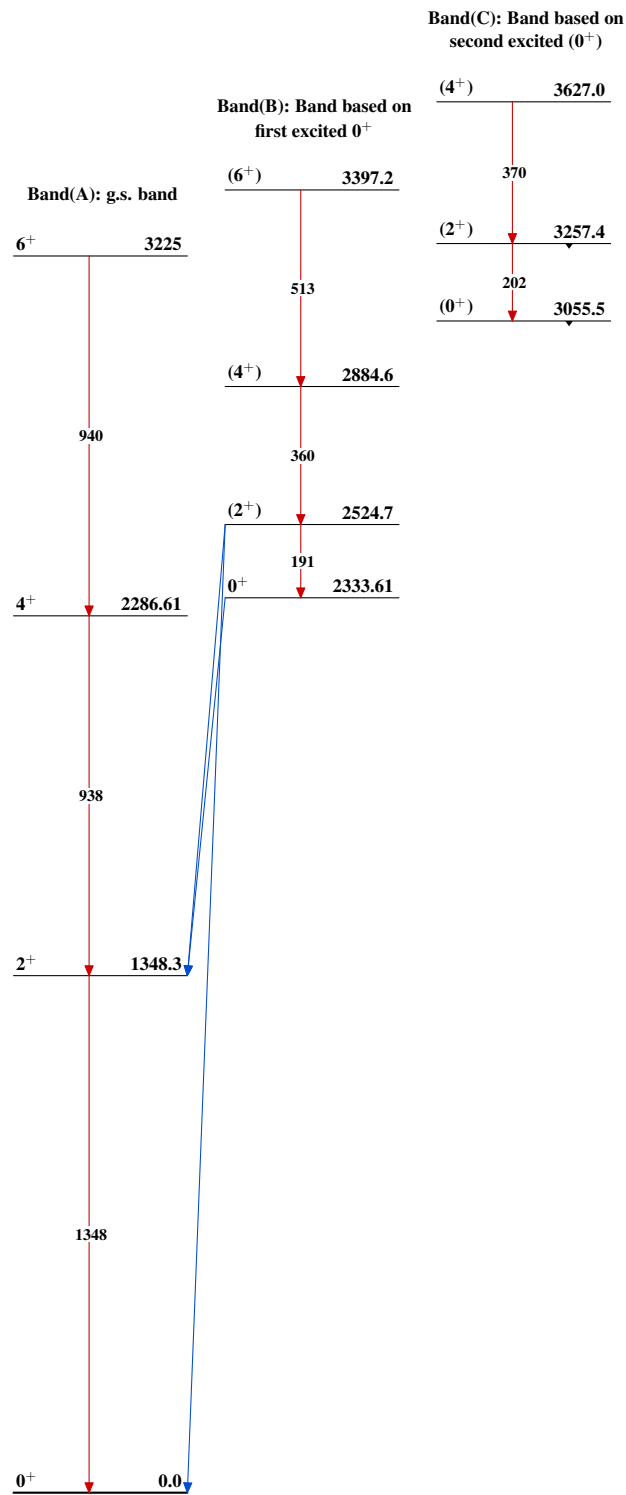
Legend

Level Scheme

Intensities: Type not specified

- ▶ $I_\gamma < 2\% \times I_\gamma^{\max}$
- ▶ $I_\gamma < 10\% \times I_\gamma^{\max}$
- ▶ $I_\gamma > 10\% \times I_\gamma^{\max}$
- - - -▶ γ Decay (Uncertain)



Adopted Levels, Gammas $^{82}_{32}\text{Ge}_{50}$