

²³⁸U(⁷⁶Ge,Xγ) 2009St12

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

2009St12: E=530 MeV ⁷⁶Ge beam from the ATLAS accelerator at Argonne National Laboratory. The γ rays were detected using the Gammasphere array consisting of 100 Compton-suppressed HPGe detectors. Measured Eγ, Iγ, γγ. Deduced levels, J, π, band structures, and shell-model configurations.

⁷¹Ga Levels

E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]
0.0	3/2 ⁻	1493.2 [@] 3	9/2 ⁺	3695.5 [#] 4	(17/2 ⁻)
390.2 4	1/2 ⁻	1498.4 [#] 3	(9/2 ⁻)	3998.0 7	
487.50 17	5/2 ⁻	2069.1 4	(11/2 ⁻)	4027.5 [@] 5	(21/2 ⁺)
511.30 16	3/2 ⁻	2081.5 [@] 4	(13/2 ⁺)	4165.2 [#] 7	(19/2 ⁻ ,21/2 ⁻)
963.8 3	5/2 ⁻	2684.0 [#] 4	(13/2 ⁻)		
1107.21 18	7/2 ⁻	2940.7 [@] 4	(17/2 ⁺)		

[†] From a least-squares fit to Eγ data.

[‡] As given by 2009St12 based on earlier assignments for low-lying levels and from band associations in their work.

[#] Band(A): γ cascade based on (9/2⁻). Possible configuration=πf_{5/2}⊗(even Zn core).

[@] Band(B): γ cascade based on 9/2⁺. Possible configuration=νg_{9/2}⊗(even Zn core).

γ(⁷¹Ga)

Eγ	Iγ	E _i (level)	J _i ^π	E _f	J _f ^π
121.1 5	3.9 5	511.30	3/2 ⁻	390.2	1/2 ⁻
143.4 5	4.4 4	1107.21	7/2 ⁻	963.8	5/2 ⁻
386.0 2	100	1493.2	9/2 ⁺	1107.21	7/2 ⁻
390.2 5	3.2 3	390.2	1/2 ⁻	0.0	3/2 ⁻
452.5 5	3.4 3	963.8	5/2 ⁻	511.30	3/2 ⁻
469.7 5	4.2 4	4165.2	(19/2 ⁻ ,21/2 ⁻)	3695.5	(17/2 ⁻)
487.5 2	72.3 8	487.50	5/2 ⁻	0.0	3/2 ⁻
511.3 2	31 5	511.30	3/2 ⁻	0.0	3/2 ⁻
570.7 5	1.1 2	2069.1	(11/2 ⁻)	1498.4	(9/2 ⁻)
588.3 2	18.2 3	2081.5	(13/2 ⁺)	1493.2	9/2 ⁺
595.9 2	33.9 5	1107.21	7/2 ⁻	511.30	3/2 ⁻
619.7 2	58.9 7	1107.21	7/2 ⁻	487.50	5/2 ⁻
859.2 2	10.2 5	2940.7	(17/2 ⁺)	2081.5	(13/2 ⁺)
961.9 5	2.7 2	2069.1	(11/2 ⁻)	1107.21	7/2 ⁻
963.8 5	3.4 4	963.8	5/2 ⁻	0.0	3/2 ⁻
1010.9 2	10.8 [†] 5	1498.4	(9/2 ⁻)	487.50	5/2 ⁻
1011.5 2	5.1 [†] 3	3695.5	(17/2 ⁻)	2684.0	(13/2 ⁻)
1057.3 5	4.1 5	3998.0		2940.7	(17/2 ⁺)
1086.8 2	5.2 3	4027.5	(21/2 ⁺)	2940.7	(17/2 ⁺)
1107.2 5	2.7 3	1107.21	7/2 ⁻	0.0	3/2 ⁻
1185.6 2	6.4 4	2684.0	(13/2 ⁻)	1498.4	(9/2 ⁻)

[†] Doublet, Iγ(1010.9γ+1011.5γ)=15 2.

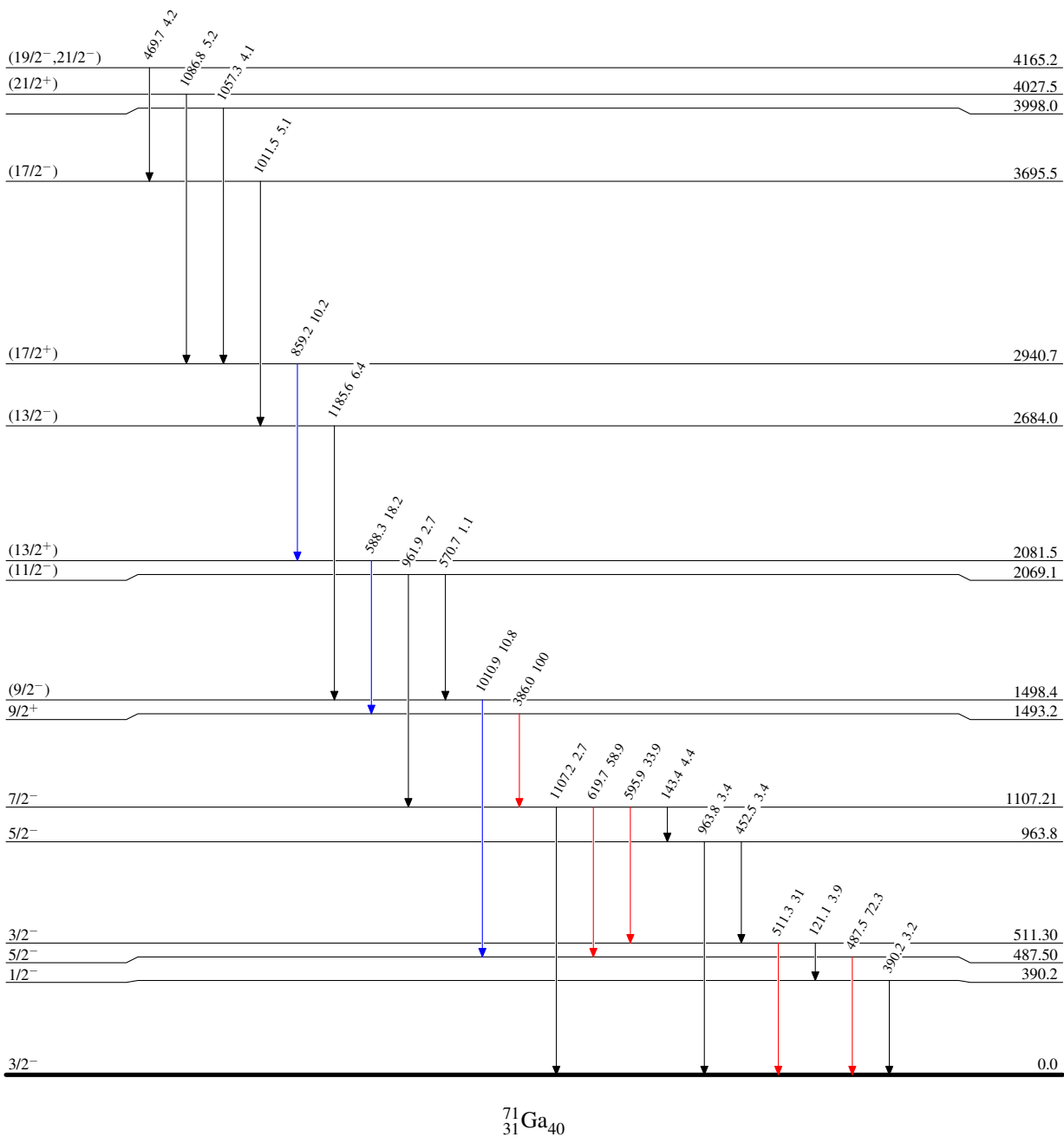
$^{238}\text{U}(^{76}\text{Ge},\text{X}\gamma)$ 2009St12

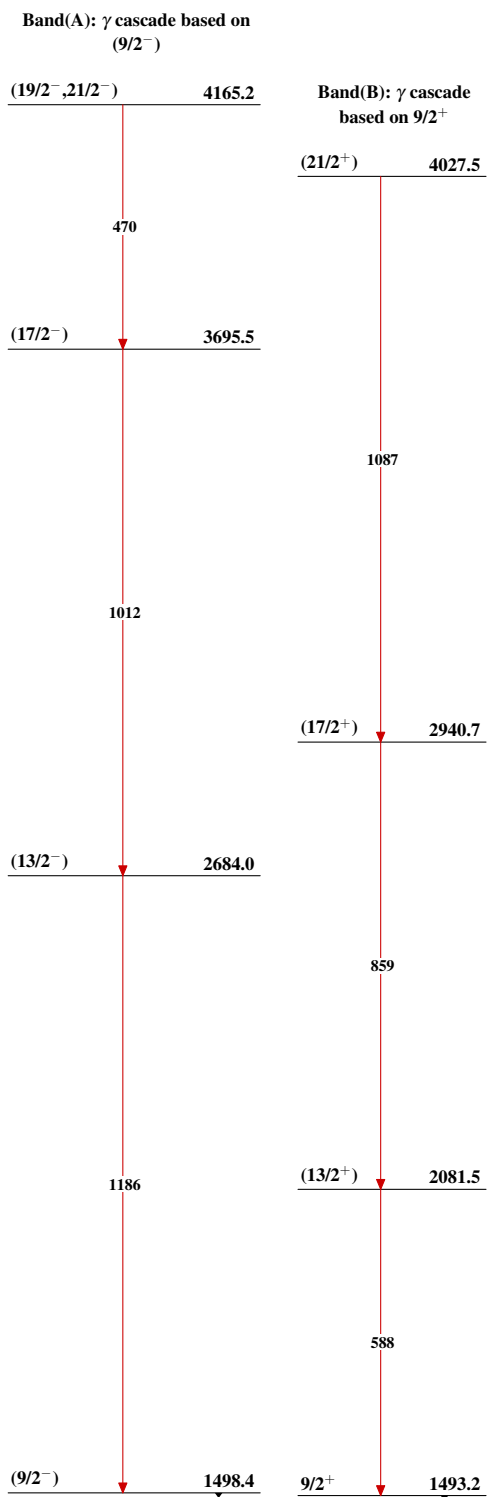
Level Scheme

Intensities: Relative I_γ

Legend

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



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