

$^{24}\text{Mg}(^{40}\text{Ca}, 2n\gamma)$  2023Wi05, 2005Ru06

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, Huang Xiaolong, and Wang Xianghan		NDS 204,1 (2025)	30-Jun-2023

Includes data on the  $^{12}\text{C}(^{62}\text{Ge}, ^{62}\text{Ge}')$  reaction and the  $^{12}\text{C}(^{63}\text{Ge}, ^{62}\text{Ge})$  reaction.

[2023Wi05](#): E( $^{40}\text{Ca}$ )=106 MeV incident on a  $^{24}\text{Mg}$  target. Measured  $E\gamma$ ,  $I\gamma$ ,  $\gamma\gamma$  using the JUROGAM3 array. Recoils separated with the MARA vacuum-mode mass separator. Data include inelastic scattering on natural carbon target as well as nucleon removal reaction from  $^{63}\text{Ge}$ . Comparison with the shell-model calculations with the K3BGR (GXPF1A) effective interactions.

[2005Ru06](#): E=104 MeV. Measured  $E\gamma$ ,  $I\gamma$ ,  $\gamma\gamma$ , (recoil) $\gamma$  coin using Fragment mass analyzer, Gammasphere array with 77 Ge detectors and 30 neutron detectors, eight Si-strip telescopes, and two rings of the CsI array of Microball.

 $^{62}\text{Ge}$  Levels

E(level)	$J\pi^\dagger$	Comments
0	$0^+$	
965 1	$2^+$	
1756 13	$(2^+)$	
2185 12	$(4^+)$	
2285?		$J\pi$ : In comparison to low-lying structures in $^{62}\text{Zn}$ and $^{62}\text{Ga}$ , the spin may be assigned as $4^+$ , However as pointed out by <a href="#">2005Ru06</a> , much better statistics are needed to make definitive assignments.
3197 20	$(3^-)$	
3697 2	$(6^+)$	

$^\dagger$  Proposed in [2023Wi05](#) based on comparisons with mirror nucleus  $^{62}\text{Zn}$  and shell-model predictions.

 $\gamma(^{62}\text{Ge})$ 

$E_\gamma^\dagger$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Comments
965 1	965	$2^+$	0	$0^+$	$E_\gamma$ : others: 965 3 in inelastic scattering; 964 in <a href="#">2005Ru06</a> .
1220 12	2185	$(4^+)$	965	$2^+$	$E_\gamma$ : from inelastic scattering.
1321 $^\ddagger$	2285?		965	$2^+$	$E_\gamma$ : From <a href="#">2005Ru06</a> .
1505 2	3697	$(6^+)$	2185	$(4^+)$	
1756 13	1756	$(2^+)$	0	$0^+$	$E_\gamma$ : from the $^{12}\text{C}(^{63}\text{Ge}, ^{62}\text{Ge})$ reaction.
2232 20	3197	$(3^-)$	965	$2^+$	

$^\dagger$  From fusion evaporation reaction in [2023Wi05](#), except where noted.

$^\ddagger$  Placement of transition in the level scheme is uncertain.

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Legend

Level Scheme

-----►  $\gamma$  Decay (Uncertain)

