

$^{66}\text{Zn}(\alpha, p\gamma), (\alpha, p)$ **1974Ha09**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	NDS 115, 1 (2014)	31-Jul-2013

($\alpha, p\gamma$): **1974Ha09**: $E\alpha=12.2, 14.2$ MeV; measured $E\gamma$, $I\gamma$, $\gamma\gamma$ and $p\gamma$ coincidences, $\gamma(\theta)$, γ -ray and p yields.

1974Iv03: $E\alpha=13$ MeV; measured $E\gamma$, $p\gamma$ coincidences and $T_{1/2}$ by DSA.

(α, p): **1970Bu23**: $E\alpha=16.4, 19.4$ MeV; measured $\sigma(\theta)$, $\theta=20^\circ-100^\circ$.

 ^{69}Ga Levels

E(level) [†]	J^π [‡]	$T_{1/2}$ [#]	L [@]	Comments
0.0	$3/2^-$		1	
318.3 3	$1/2^-$		1	J^π : 1/2 from the yield function of 318γ and p yield (1974Ha09).
574.10 21	$5/2^-$	>90 fs	3	J^π : 5/2 from the yield function of 574γ and p yield (1974Ha09).
871.9 3	$3/2^-$			J^π : 3/2 from the yield function of 872γ and p yield (1974Ha09).
1027.8 16	$1/2^-$	<0.11 ps		E(level): from 1974Iv03 . Not reported by 1974Ha09 .
1106.25 24	$5/2^-$	0.4 ps 3		J^π : 5/2 from the yield function of 1106γ and p yield (1974Ha09).
1336.32 23	$7/2^-$	0.6 ps 4		J^π : 7/2 from the yield function of 1336γ (1974Ha09).
1487.58 20	$7/2^-$			J^π : 7/2 from the yield function of 1488γ (1974Ha09).
1764.7 4	$9/2^-$			J^π : 9/2 from $\gamma(\theta)$ and yield function of 1191γ (1974Ha09).
1972.0 3	$9/2^{(+)}$		4	J^π : $9/2^+$ from $\gamma(\theta)$ and yields of 636γ and 484γ (1974Ha09); π from L=4 (1970Bu23).
				L: reported for a level at 1990 90 (1970Bu23).
2650 90	$3/2^-$		(4)	E(level): unresolved doublet (1970Bu23).
2717.6 5	$13/2^{(+)}$			J^π : $\gamma(\theta)$ consistent with 9/2 or 13/2. Yield function suggests 9/2 (1974Ha09).

[†] From least-squares fit to $E\gamma$ data, unless otherwise noted.

[‡] From Adopted Levels. Supporting arguments from these reaction data are indicated.

[#] From DSA in $p\gamma$ coincidence (**1974Iv03**).

[@] From inspection of $\sigma(\theta)$ (**1970Bu23**).

 $\gamma(^{69}\text{Ga})$

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [#]	δ [@]	Comments
318.3 3		318.3	$1/2^-$	0.0	$3/2^-$			
381.3 3		1487.58	$7/2^-$	1106.25	$5/2^-$			
484.3 4	38	1972.0	$9/2^{(+)}$	1487.58	$7/2^-$	(E1(+M2))	-0.03 3	
574.3 3		574.10	$5/2^-$	0.0	$3/2^-$			
635.8 3	64	1972.0	$9/2^{(+)}$	1336.32	$7/2^-$	(E1(+M2))	-0.03 3	
709.5		1027.8	$1/2^-$	318.3	$1/2^-$			E_γ : calculated from level energy difference; seen by 1974Iv03 .
745.6 3	68	2717.6	$13/2^{(+)}$	1972.0	$9/2^{(+)}$	(E2+M3)	-0.10 5	δ : for 13/2 to 9/2 transition.
762.4 3		1336.32	$7/2^-$	574.10	$5/2^-$			Mult.: if M2 $T_{1/2}>10$ ns.
871.9 3		871.9	$3/2^-$	0.0	$3/2^-$			E_γ : probable doublet (1974Ha09).
913.5 3		1487.58	$7/2^-$	574.10	$5/2^-$			
1106.2 3		1106.25	$5/2^-$	0.0	$3/2^-$			
1190.6 3	100	1764.7	$9/2^-$	574.10	$5/2^-$	(E2)		δ : $\delta(O/Q)=-0.03$ 3.
1336.2 3		1336.32	$7/2^-$	0.0	$3/2^-$			
1487.5 3		1487.58	$7/2^-$	0.0	$3/2^-$			

[†] From **1974Ha09**, unless otherwise noted.

[‡] At $\theta(\gamma)=90^\circ$, $E\alpha=14.2(?)$ MeV, given only for γ 's from levels which are not populated by ^{69}Ge ε decay (**1974Ha09**)

Continued on next page (footnotes at end of table)

$^{66}\text{Zn}(\alpha, \text{p}\gamma), (\alpha, \text{p})$ [1974Ha09](#) (continued)

$\gamma(^{69}\text{Ga})$ (continued)

uncertainties not given.

From $\gamma(\theta)$ of [1974Ha09](#); parity from J^π of initial and final levels, unless indicated otherwise.

@ From $\gamma(\theta)$ ([1974Ha09](#)).

$^{66}\text{Zn}(\alpha, p\gamma), (\alpha, p)$ 1974Ha09

Legend

Level Scheme

Intensities: Type not specified

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

