^{107}Ag(α,2nγ) 1979Va13

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. Kumar(a), J. Chen(b) and F. G. Kondev	NDS 137, 1 (2016)	31-May-2016

1979Va13: Eα=20-30 MeV, AVF Cyclotron, Free University, Amsterdam. Target: ^{107}Ag≈5 mg/cm^2 for γ measurement,≈0.5 mg/cm^2 for α(K)exp. Detectors: two 65 cm^3 Ge(Li), Si(Li),mini-orange electron spectrometer. Measured: γ, $\gamma\gamma$(t), $\gamma(\theta)$, linear polarization (three-crystal Compton polarimeter), $T_{1/2}$.

1988Vi07,1987KuZV, 1986KuZV: Eα=21.5, 26.1 MeV, measured $T_{1/2}$.

Others: 1976EiZY, 1976PoZU, 1968Sm08.

^{109}In Levels

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$[#]	Comments
0.0	9/2$^+$		configuration: $\nu(g_{9/2})^{-1}$.
649.8 *3*	1/2$^-$	1.34 min *7*	$T_{1/2}$: from 649.8γ(t) in 1968Sm08. configuration: $\nu(p_{1/2})^{-1}$.
980.8 *5*	3/2$^-$	0.62 ps *+30−15*	$T_{1/2}$: from 1986KuZV by DSAM.
1026.36 *7*	11/2$^+$	0.17 ps *7*	
1099.5 *3*	5/2$^+$	0.45 ps *21*	
1428.33 *7*	13/2$^+$	0.28 ps *14*	
1463.36 *21*	(5/2,7/2,9/2)	0.21 ps *7*	
1713.7 *5*	(5/2,7/2,9/2)		
1900.25 *12*	13/2$^+$	0.14 ps *7*	
2101.83 *11*	19/2$^+$	210 ms *4*	$T_{1/2}$: using 673γ(t) (216 ms *2*), 402γ(t) (202 ms *5*), 1026γ(t) (204 ms *6*) and 1428γ(t) (218 ms *3*) in 1979Va13. configuration: $\nu(g_{9/2})^{-1}\otimes\nu 6^+$, where $\nu 6^+$ is a mixture of $\nu(d_{5/2},g_{7/2})$ and $\nu(g_{7/2})^{+2}$.
2195.23 *22*	15/2$^+$	0.35 ps *14*	
2272.61 *25*	13/2$^-$		
2321.93 *15*	15/2		
2532.40 *11*	15/2$^-$	0.24 ps *10*	
2868.72 *12*	17/2$^-$	0.38 ps *17*	
2957.99 *13*	19/2$^-$		
3067.30 *23*	17/2$^-$	0.17 ps *10*	
3092.05 *14*	19/2$^-$	0.49 ps *21*	
3122.47 *14*	21/2$^-$		
3202.43 *15*	21/2$^-$		
3285.8 *3*	(19/2$^-$)	>1.0 ps	
3374.69 *24*	(19/2$^-$)	0.21 ps *10*	
3410.32 *15*	23/2$^-$	0.69 ps *21*	
3461.94 *16*	23/2$^-$		
3517.1 *4*	(21/2$^-$)	0.45 ps *14*	
3800.12 *17*	25/2$^-$	1.4 ps *7*	
4037.2 *3*	(25/2$^-$)	0.6 ps *3*	

[†] From a least-squares fit to Eγ.

[‡] From 1979Va13, based on deduced γ-ray transition multipolarities. Configurations of the π=− states are most likely $\nu(g_{9/2})^{-1}\otimes J^\pi$=3$^-$,5$^-$,7$^-$ and 9$^-$ core states.

[#] From 1987KuZV (and 1988Vi07) by DSAM, unless otherwise noted.

^{107}Ag(α,2nγ) 1979Va13 (continued)

$\gamma(^{109}In)$

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[#]	Comments
89.24 *8*	12.4 *6*	2957.99	19/2$^-$	2868.72	17/2$^-$	M1+E2	+0.01 *4*	Mult.: A_2/A_0=−0.206 *9*, A_4/A_0=+0.01 *2* (1979Va13).
110.42 *10*	4.2 *2*	3202.43	21/2$^-$	3092.05	19/2$^-$	M1+E2	−0.05 *7*	Mult.: A_2/A_0=−0.24 *2*, A_4/A_0=+0.04 *2* (1979Va13).
164.47 *6*	12.0 *6*	3122.47	21/2$^-$	2957.99	19/2$^-$	M1+E2	+0.01 *5*	Mult.: α(K)exp =0.16 *5*, A_2/A_0=−0.197 *9*, A_4/A_0=−0.017 *15* (1979Va13).
207.90 *6*	9.8 *5*	3410.32	23/2$^-$	3202.43	21/2$^-$	M1+E2	−0.02 *7*	Mult.: α(K)exp=59×10^{-3} *20*, pol=−0.42 *15*, A_2/A_0=−0.217 *10*, A_4/A_0=−0.032 *17* (1979Va13).
218.48 *11*	2.1 *2*	3285.8	(19/2$^-$)	3067.30	17/2$^-$	(M1)		Mult.: α(K)exp=36.E−3 *18*, A_2/A_0=−0.18 *3*, A_4/A_0=+0.13 *4* (1979Va13).
223.4 *3*	1.7 *2*	3092.05	19/2$^-$	2868.72	17/2$^-$			Mult.: α(K)exp=24×10^{-3} *12*, A_2/A_0=−0.18 *3*, A_4/A_0=+0.09 *5* (1979Va13).
231.3 *2*	1.1 *2*	3517.1	(21/2$^-$)	3285.8	(19/2$^-$)			Mult.: A_2/A_0=−0.25 *5*, A_4/A_0=+0.12 *3* (1979Va13).
244.5 *3*	7.5 *4*	3202.43	21/2$^-$	2957.99	19/2$^-$	M1+E2	0.00 *4*	Mult.: α(K)exp=34×10^{-3} *12*, pol=−0.27 *13*, A_2/A_0=−0.21 *2*, A_4/A_0=+0.01 *2* (1979Va13).
259.0 *4*	2.0 *10*	2532.40	15/2$^-$	2272.61	13/2$^-$			Mult.: A_2/A_0=−0.14 *7*, A_4/A_0=−0.16 *14* (1979Va13).
287.79 *12*	1.7 *3*	3410.32	23/2$^-$	3122.47	21/2$^-$			Mult.: A_2/A_0=−0.13 *5*, A_4/A_0=−0.02 *8* (1979Va13).
331.0 *4*	3.5 *6*	980.8	3/2$^-$	649.8	1/2$^-$			Mult.: A_2/A_0=−0.14 *4*, A_4/A_0=+0.08 *5* (1979Va13).
336.30 *6*	24.5 *10*	2868.72	17/2$^-$	2532.40	15/2$^-$	M1+E2	+0.03 *3*	Mult.: α(K)exp=18×10^{-3} *8*, pol=−0.14 *4*, A_2/A_0=−0.113 *8*, A_4/A_0=−0.033 *14* (1979Va13).
339.47 *8*	9.0 *4*	3461.94	23/2$^-$	3122.47	21/2$^-$	M1+E2	+0.05 *3*	Mult.: α(K)exp=19×10^{-3} *8*, pol=−0.26 *10*, A_2/A_0=−0.097 *11*, A_4/A_0=−0.018 *9* (1979Va13).
389.80 *8*	7.1 *3*	3800.12	25/2$^-$	3410.32	23/2$^-$	M1+E2	+0.04 *3*	Mult.: α(K)exp=13×10^{-3} *4*, pol=−0.35 *6*, A_2/A_0=−0.151 *12*, A_4/A_0=−0.027 *20* (1979Va13).
401.97 *6*	23.8 *10*	1428.33	13/2$^+$	1026.36	11/2$^+$	M1+E2	+0.07 *3*	I_γ: for prompt+delayed components of this transition, 14 *4* for the prompt component only. Mult.: α(K)exp=10×10^{-3} *4*, pol=−0.25 *3*, A_2/A_0=−0.080 *8*, A_4/A_0=−0.017 *14* for prompt+delayed components, A_2/A_0=−0.11 *2*, A_4/A_0=−0.03 *3* for prompt component only (1979Va13).
416.7 *2*	3.3 *4*	3374.69	(19/2$^-$)	2957.99	19/2$^-$			Mult.: A_2/A_0=−0.27 *2*, A_4/A_0=−0.09 *4* (1979Va13).
421.9 *2*	6.7 *4*	2321.93	15/2	1900.25	13/2$^+$			Mult.: A_2/A_0=−0.19 *2*, A_4/A_0=−0.05 *4* (1979Va13).
437.0 *2*	1.5 *5*	1463.36	(5/2,7/2,9/2)	1026.36	11/2$^+$			
534.9 *2*	3.0 *2*	3067.30	17/2$^-$	2532.40	15/2$^-$	M1+E2	+0.14 *7*	Mult.: pol=−0.64 *15*, A_2/A_0=−0.04 *3*, A_4/A_0=−0.06 *5* (1979Va13).
547.1 *3*	3.3 *3*	2868.72	17/2$^-$	2321.93	15/2			Mult.: A_2/A_0=−0.30 *5*, A_4/A_0=−0.02 *8* (1979Va13).
575.3 *2*	2.5 *3*	4037.2	(25/2$^-$)	3461.94	23/2$^-$			Mult.: α(K)exp=3×10^{-3} *2*, A_2/A_0=−0.29 *4*, A_4/A_0=−0.09 *6* (1979Va13).
614.2 *3*	3.0 *4*	1713.7	(5/2,7/2,9/2)	1099.5	5/2$^+$			A_2/A_0=−0.12 *6*, A_4/A_0=+0.02 *4* (1979Va13).

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^{107}Ag(α,2nγ) 1979Va13 (continued)

$\gamma(^{109}In)$ (continued)

E_γ [†]	I_γ [†]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	δ [#]	Comments
649.8 *3*	4.8 *5*	649.8	1/2$^-$	0.0	9/2$^+$	M4		Mult.: From Adopted Gammas.
673.52 *8*	46.7 *10*	2101.83	19/2$^+$	1428.33	13/2$^+$	M3		Mult.: α(K)exp=19.9×10^{-3} *20*, K/L=7.5 *7* (1979Va13).
[x]673.85 *12*	21.0 *15*					E2		E_γ: This prompt γ ray fits well between the 2869 keV and 2195 keV levels on the basis of coincidence and energy relations, but the intensity and angular distribution coefficients are not in agreement with such a placement (1979Va13). Mult.: α(K)exp=2.4×10^{-3} *5*, A_2/A_0=+0.26 *2*, A_4/A_0=−0.18 *3* (1979Va13).
766.9 *2*	9.3 *5*	2195.23	15/2$^+$	1428.33	13/2$^+$	M1+E2	+0.19 *+1−3*	Mult.: α(K)exp=2.1×10^{-3} *4*, pol=−0.85 *9* , A_2/A_0=+0.05 *2*, A_4/A_0=−0.04 *3* (1979Va13).
856.2 *2*	5.2 *3*	2957.99	19/2$^-$	2101.83	19/2$^+$	E1		Mult.: α(K)exp≤1.0×10^{-3}, pol=−0.48 *6*, A_2/A_0=+0.38 *3*, A_4/A_0=−0.04 *5* (1979Va13).
873.95 *10*	12.5 *6*	1900.25	13/2$^+$	1026.36	11/2$^+$	M1+E2	+0.32 *+17−7*	Mult.: α(K)exp=1.3×10^{-3} *3*, pol=−0.48 *6*, A_2/A_0=+0.19 *2*, A_4/A_0=0.00 *3* (1979Va13).
893.5 *2*	8.4 *5*	2321.93	15/2	1428.33	13/2$^+$			Mult.: α(K)exp=1.7×10^{-3} *4*, pol=−0.51 *8*, A_2/A_0=+0.10 *2*, A_4/A_0=−0.06 *3* (1979Va13).
990.25 *12*	8.7 *5*	3092.05	19/2$^-$	2101.83	19/2$^+$	E1		Mult.: α(K)exp=0.45×10^{-3} *15*, pol=−0.62 *14*, A_2/A_0=+0.32 *3*, A_4/A_0=−0.01 *5* (1979Va13).
1026.35 *8*	64 *3*	1026.36	11/2$^+$	0.0	9/2$^+$	M1+E2	+0.40 *+9−4*	I_γ: for prompt+delayed components of this transition, 50 *3* for the prompt component only. Mult.: α(K)exp=1.1×10^{-3} *3*, pol=−0.47 *5*, A_2/A_0=+0.215 *9*, A_4/A_0=−0.030*13* for prompt+delayed components, A_2/A_0=+0.25 *1*, A_4/A_0=−0.04 *2* for prompt component only (1979Va13).
1099.5 *3*	10.3 *5*	1099.5	5/2$^+$	0.0	9/2$^+$			Mult.: α(K)exp=0.89×10^{-3} *20*, pol=+0.11 *13*, A_2/A_0=+0.01 *2*, A_4/A_0=−0.03*3* (1979Va13).
1104.04 *10*	29.1 *12*	2532.40	15/2$^-$	1428.33	13/2$^+$	E1		Mult.: α(K)exp=0.38×10^{-3} *9*, pol=+0.35 *5*, A_2/A_0=−0.266 *10*, A_4/A_0=−0.022 *17* (1979Va13).
1245.8 *3*	5.7 *4*	2272.61	13/2$^-$	1026.36	11/2$^+$	E1		Mult.: α(K)exp<0.34×10^{-3}, pol=+0.14 *5*, A_2/A_0=−0.26 *3*, A_4/A_0=−0.09 *6* (1979Va13).
1428.32 *10*	100	1428.33	13/2$^+$	0.0	9/2$^+$	E2		I_γ: for prompt+delayed components of this transition, 61 *3* for the prompt component only. Mult.: α(K)exp=0.53×10^{-3} *8*, pol=+0.33 *6*, A_2/A_0=+0.191 *11*, A_4/A_0=−0.097*11* for prompt+delayed components, A_2/A_0=+0.32 *1*, A_4/A_0=−0.16 *2* for prompt component only (1979Va13).

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^{107}Ag(α,2nγ) 1979Va13 (continued)

$\gamma(^{109}In)$ (continued)

† From 1979Va13.
‡ From 1979Va13, based on $\gamma(\theta)$, pol, α(K)exp, unless otherwise noted. The theoretical M4 value of 649.8γ was used for normalization of ce data in 1979Va13 (renormalized by evaluators using α(K)=0.0582, calculated using the BrIcc program).
# From $\gamma(\theta)$ in 1979Va13.
x γ ray not placed in level scheme.

^{107}Ag(α,2nγ) 1979Va13

Level Scheme

Intensities: Relative I_γ

Legend

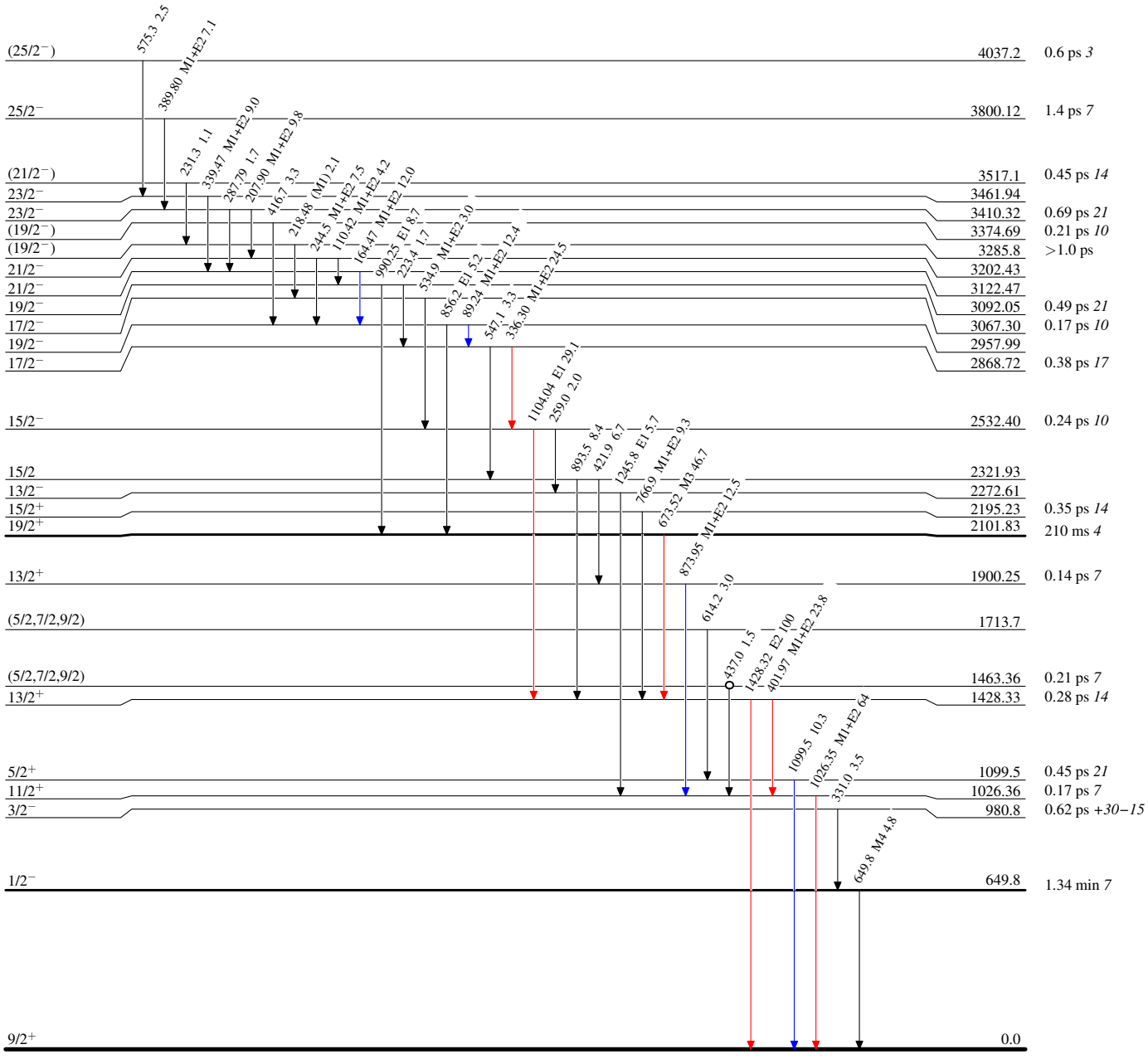
$I_\gamma < 2\% \times I_\gamma^{max}$

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

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

Coincidence

Coincidence (Uncertain)



$^{109}_{49}In_{60}$