^{109}Ag(α,nγ) 1988Ki04,1978EmZT,1991Kr14

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. Lalkovski, F. G. Kondev	NDS 124, 157 (2015)	1-Aug-2014

1988Ki04: Facility: 90-cm Jyvaskyla cyclotron and 103-cm Debrecen cyclotron; Beam: E(α)=17.1 MeV; Target: selfsupporting 0.4-0.8 mg/cm^2 thick, enriched to 99% in ^{109}Ag; Detectors: one HPGe, one Si(Li), superconducting magnetic lens; Measured: γ, Iγ, ce; Deduced: ^{112}In level scheme, J^π, α, γ-ray mult.

1978EmZT: Beam: E(α)=16.7 MeV; Target: 3.3 mg/cm^2 thick, enriched to 99.3% in ^{109}Ag; Detectors: two Ge(Li), two HPGe; Measured: γ, γ-γ γ-γ(t) coinc., Eγ, Iγ; Deduced: DCO, ^{112}In level scheme.

1991Kr14: Facility: Variable Energy Cyclotron Center, Calcutta; Beam: E(α)=14 MeV; Target: 4.5 mg/cm^2 thick natural silver; Detectors: one Si(Li), one HPGe; Measured: x-rays, γ-rays; Deduced: α(K)exp for 156.61γ.

Others: 1990Io01, 1990TuZX, 1986Wa10, 1984Ba15, 1981Io07, 1979EmZX, 1976Io04, 1976Ei04, 1965Fu07, NP36 (1962) 431.

^{112}In Levels

E(level)[†]	J^π[‡]	$T_{1/2}$	Comments
0.0[#]	1$^+$[#]		
156.594[@] *25*	4$^+$[@]		
162.89[@] *4*	(5)$^+$[@]		
206.720[#] *20*	2$^+$[#]		
350.80[&] *5*	7$^+$[&]	0.69 μs *5*	J^π: 6$^+$ in 1976Io04. $T_{1/2}$: from 263.01γ-187.93γ(t) in 1976Io04. Q: 0.75 *15* from PAD in (1981Io07). configuration: $\pi(1g_{9/2})^{-1}\otimes\nu(2d_{5/2})^{+1}$.
456.41[#] *3*	3$^+$[#]		
562.78[a] *4*	5$^+$[a]		
592.06[#] *4*	4$^+$[#]		
594.896[&] *23*	2$^+$[&]		
613.81[c] *6*	(8)$^-$[c]	2.81 μs *3*	$T_{1/2}$: from 187.93γ(t) in 1976Io04; Other: 2.8 μs (1987Iw04), 1.25 μs (1973FrYM), 1.6 μs *2* (1972BrYL). μ: +3.08 *3* from DPAD in 1976Io04.
624.42 *5*	7$^{(+)}$		
670.23 *6*	(6,7,8)$^+$		
676.28 *6*	6$^{(+)}$		
728.99 *3*	(1)$^-$,2$^-$		
729.88[b] *4*	3$^+$[b]		
790.27 *6*	(7,8)$^+$		
795.23[#] *5*	5$^+$[#]		
800.55[c] *7*	(9$^-$)[c]		
822.31 *6*	(5$^+$)		
833.10 *5*	(6)$^+$		
883.82[&] *4*	3$^+$[&]		
918.82 *5*	(2)$^-$		
924.72 *5*	(3)$^-$		
1007.41 *7*	(4$^+$)		
1062.96 *5*	1$^+$,(2)$^+$		
1221.48 *5*	(3,4)$^+$		
1250.92 *7*	(2,3)$^+$		
1260.47 *8*	$\leq$3$^-$		
1261.57 *8*	$\leq$4$^+$		
1286.92 *7*	(3$^+$)		
1388.89[c] *8*	(10$^-$)[c]		

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^{109}Ag(α,nγ) 1988Ki04,1978EmZT,1991Kr14 (continued)

^{112}In Levels (continued)

† From a least-squares fit to Eγ.
‡ From 1988Ki04, based on γ-ray multipolarity.
# Member of the $\pi g_{9/2}\otimes\nu g_{7/2}$ multiplet.
@ Member of the $\pi g_{9/2}\otimes\nu s_{1/2}$ multiplet.
& Member of the $\pi g_{9/2}\otimes\nu d_{5/2}$ multiplet.
a Member of the $\pi g_{9/2}\otimes\nu d_{3/2}$ multiplet.
b Member of the $\pi g_{5/2}\otimes\nu s_{1/2}$ multiplet.
c Member of the $\pi g_{9/2}\otimes\nu h_{11/2}$ multiplet.

$\gamma(^{112}In)$

E$_\gamma$ †	I$_\gamma$ †	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult. ‡	Comments
(6.30 *5*)		162.89	(5)$^+$	156.594	4$^+$		E$_\gamma$: from the Adopted Levels.
51.87 *3*	8.2 *4*	676.28	6$^{(+)}$	624.42	7$^{(+)}$	M1+E2	Mult.: A$_2$=−0.084 *14*; A$_4$=−0.008 *18* (1978EmZT).
x99.66 *6*	1.3 *1*						
120.01 *4*	1.7 *3*	790.27	(7,8)$^+$	670.23	(6,7,8)$^+$		
x130.44 *4*	1.5 *1*						
135.64 *3*	24.4 *6*	592.06	4$^+$	456.41	3$^+$	M1	Mult.: α(K)exp=0.18 *2* (1988Ki04). Mult.: A$_2$=−0.184 *7*, A$_4$=−0.006 *10* (1978EmZT).
146.04 *3*	30.5 *8*	822.31	(5$^+$)	676.28	6$^{(+)}$	M1	Mult.: α(K)exp=0.17 *4*; α(L)exp=0.022 *9* (1988Ki04). Mult.: A$_2$=−0.104 *8*, A$_4$=0.023 *12* (1978EmZT).
156.61 *3*	60 *2*	156.594	4$^+$	0.0	1$^+$	M3	Mult.: α(K)exp=4.8 *3* (1991Kr14).
185.10 *3*	17.4 *5*	1007.41	(4$^+$)	822.31	(5$^+$)	M1	Mult.: α(K)exp=0.10 *2* (1988Ki04). Mult.: A$_2$=0.126 *14*, A$_4$=0.011 *19* (1978EmZT).
186.74 *4*	95 *3*	800.55	(9$^-$)	613.81	(8)$^-$	M1+E2	Mult.: A$_2$=−0.105 *14*, A$_4$=0.010 *20* (1978EmZT).
187.93 *3*	222 *6*	350.80	7$^+$	162.89	(5)$^+$	E2	Mult.: α(K)exp=0.11 *1*; α(L)exp=0.021 *3*; α(M)exp=0.0056 *6* (1988Ki04). Mult.: A$_2$=0.073 *5*, A$_4$=0.001 *7* (1978EmZT).
195.74 *10*	1.9 *1*	924.72	(3)$^-$	728.99	(1)$^-$,2$^-$	M1	Mult.: α(K)exp=0.060 *6* (1988Ki04).
203.17 *3*	11.5 *3*	795.23	5$^+$	592.06	4$^+$	M1	Mult.: α(K)exp=0.072 *12*; α(L)exp=0.0097 *10* (1988Ki04); M1(+E2) with δ=−0.01 *11* in the adopted gammas. Mult.: A$_2$=−0.254 *37*, A$_4$=0.046 *49* (1978EmZT).
206.75 *3*	100 *3*	206.720	2$^+$	0.0	1$^+$	M1	Mult.: α(K)exp=0.059 *7*; α(L)exp=0.0068 *7*; α(M)exp= 0.0015 *4* (1988Ki04). Mult.: A$_2$=−0.105 *5*, A$_4$=0.004 *6* (1978EmZT).
214.12 *9*	1.4 *1*	1221.48	(3,4)$^+$	1007.41	(4$^+$)		
x215.85 *9*	0.9 *1*						
249.68 *3*	56 *2*	456.41	3$^+$	206.720	2$^+$	M1	Mult.: α(K)exp=0.036 *4* (1988Ki04). Mult.: A$_2$=−0.131 *12*, A$_4$=0.016 *16* (1978EmZT).
263.01 *3*	172 *10*	613.81	(8)$^-$	350.80	7$^+$	E1+M2	Mult.: α(K)exp=0.015 *2*; α(L)exp=0.0015 *2* (1988Ki04). Mult.: A$_2$=0.046 *4*, A$_4$=0.000 *8* (1978EmZT).
270.22 *8*	1.3 *3*	833.10	(6)$^+$	562.78	5$^+$		
273.49 *8*	18.8 *3*	729.88	3$^+$	456.41	3$^+$		
273.62 *3*	18.8 *3*	624.42	7$^{(+)}$	350.80	7$^+$	E1+M2	Mult.: A$_2$=0.176 *35*, A$_4$=−0.019 *47* (1978EmZT).
279.51 *3*	2.3 *3*	1286.92	(3$^+$)	1007.41	(4$^+$)	M1	Mult.: α(K)exp=0.029 *5* (1988Ki04).
288.92 *3*	4.7 *4*	883.82	3$^+$	594.896	2$^+$		
319.41 *3*	27.1 *13*	670.23	(6,7,8)$^+$	350.80	7$^+$	M1	Mult.: α(K)exp=0.022 *3*; α(L)exp=0.0019 *3* (1988Ki04).
323.90 *5*	4.1 *2*	918.82	(2)$^-$	594.896	2$^+$	E1	Mult.: α(K)exp=0.007 *2* (1988Ki04).
326.19 *10*	1.0 *2*	1250.92	(2,3)$^+$	924.72	(3)$^-$		
333.2 *1*	0.8 *2*	1062.96	1$^+$,(2)$^+$	729.88	3$^+$		

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^{109}Ag(α,nγ) 1988Ki04,1978EmZT,1991Kr14 (continued)

$\gamma(^{112}In)$ (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	Comments
x357.1 *3*	0.5 *2*						
385.5 *1*	1.5 *1*	592.06	4^+	206.720	2^+		
388.20 *3*	5.0 *3*	594.896	2^+	206.720	2^+	M1,E2	Mult.: α(K)exp=0.0111 *11* (1988Ki04). Mult.: pure M1 in the adopted.
399.88 *4*	10.6 *4*	562.78	5^+	162.89	$(5)^+$	M1,E2	Mult.: α(K)exp=0.0125 *15* (1988Ki04).
406.18 *3*	21.2 *7*	562.78	5^+	156.594	4^+	M1,E2	Mult.: α(K)exp=0.0123 *14* (1988Ki04).
x422.29 *8*	1.4 *1*						
429.17 *5*	2.3 *1*	592.06	4^+	162.89	$(5)^+$		
439.49 *3*	16.5 *4*	790.27	$(7,8)^+$	350.80	7^+	M1,E2	Mult.: α(K)exp=0.0090 *16* (1988Ki04).
456.40 *5*	1.7 *3*	456.41	3^+	0.0	1^+		
482.31 *3*	17.3 *11*	833.10	$(6)^+$	350.80	7^+	M1,E2	Mult.: α(K)exp=0.0081 *13* (1988Ki04).
521.94 *8*	1.0 *3*	1250.92	$(2,3)^+$	728.99	$(1)^-,2^-$		I_γ: From Iγ(521.94)/Iγ(326.19)=0.96 *22* in the adopted gammas and Iγ(326.19)=1.0 *2* in 1988Ki04.
522.29 *8*	1.59 *19*	728.99	$(1)^-,2^-$	206.720	2^+		I_γ: from the Iγ(522.29)/Iγ(728.98) in the adopted gammas and Iγ(728.98)=16.7 in 1988Ki04.
523.13 *8*	6.0 *8*	729.88	3^+	206.720	2^+	M1,E2	I_γ: from Iγ(523.13)/Iγ(573.29)=0.83 *10* in the adopted and Iγ(573.29) in 1988Ki04.
531.44 *11*	1.9 *2*	1260.47	$\leq 3^-$	728.99	$(1)^-,2^-$		
573.29 *3*	7.2 *4*	729.88	3^+	156.594	4^+	M1,E2	Mult.: α(K)exp=0.0042 *10* (1988Ki04).
x581.17 *7*	2.7 *2*					M1,E2	Mult.: α(K)exp=0.0047 *12* (1988Ki04).
588.34 *3*	11.6 *6*	1388.89	(10^-)	800.55	(9^-)	M1,E2	Mult.: α(K)exp=0.0046 *11* (1988Ki04).
594.85 *3*	11.6 *6*	594.896	2^+	0.0	1^+	M1,(E2)	Mult.: α(K)exp=0.0046 *6* (1988Ki04).
x632.47 *7*	2.6 *2*						
666.6 *1*	0.8 *2*	1261.57	$\leq 4^+$	594.896	2^+		
670.19 *13*	1.7 *2*	833.10	$(6)^+$	162.89	$(5)^+$	M1	Mult.: α(K)exp=0.0036 *8* (1988Ki04).
717.99 *5*	3.5 *2*	924.72	$(3)^-$	206.720	2^+		
727.25 *10*	4.4 *4*	883.82	3^+	156.594	4^+		
728.98 *3*	16.7 *6*	728.99	$(1)^-,2^-$	0.0	1^+	E1	Mult.: α(K)exp=0.00100 *9* (1988Ki04).
x758.88 *3*	7.8 *3*					M1	Mult.: α(K)exp=0.0024 *5* (1988Ki04).
765.06 *4*	7.8 *3*	1221.48	$(3,4)^+$	456.41	3^+	M1	Mult.: α(K)exp=0.0025 *4* (1988Ki04).
x824.18 *5*	3.6 *2*						
x836.26 *4*	8.7 *5*					M1,(E2)	Mult.: α(K)exp=0.0020 *5* (1988Ki04).
856.22 *6*	3.8 *3*	1062.96	$1^+,(2)^+$	206.720	2^+		
918.89 *8*	3.0 *2*	918.82	$(2)^-$	0.0	1^+		
x930.27 *11*	2.7 *2*						
1054.92 *10*	4.0 *3*	1261.57	$\leq 4^+$	206.720	2^+		
1062.92 *7*	11.2 *8*	1062.96	$1^+,(2)^+$	0.0	1^+	E2	Mult.: α(K)exp=0.00083 *13* (1988Ki04).
1260.51 *11*	2.3 *4*	1260.47	$\leq 3^-$	0.0	1^+		
x1264.65 *9*	7.4 *4*						

† From 1988Ki04, unless otherwise noted.
‡ From α(K)exp in 1988Ki04, unless otherwise noted.
x γ ray not placed in level scheme.

^{109}Ag(α,nγ) 1988Ki04,1978EmZT,1991Kr14

Level Scheme

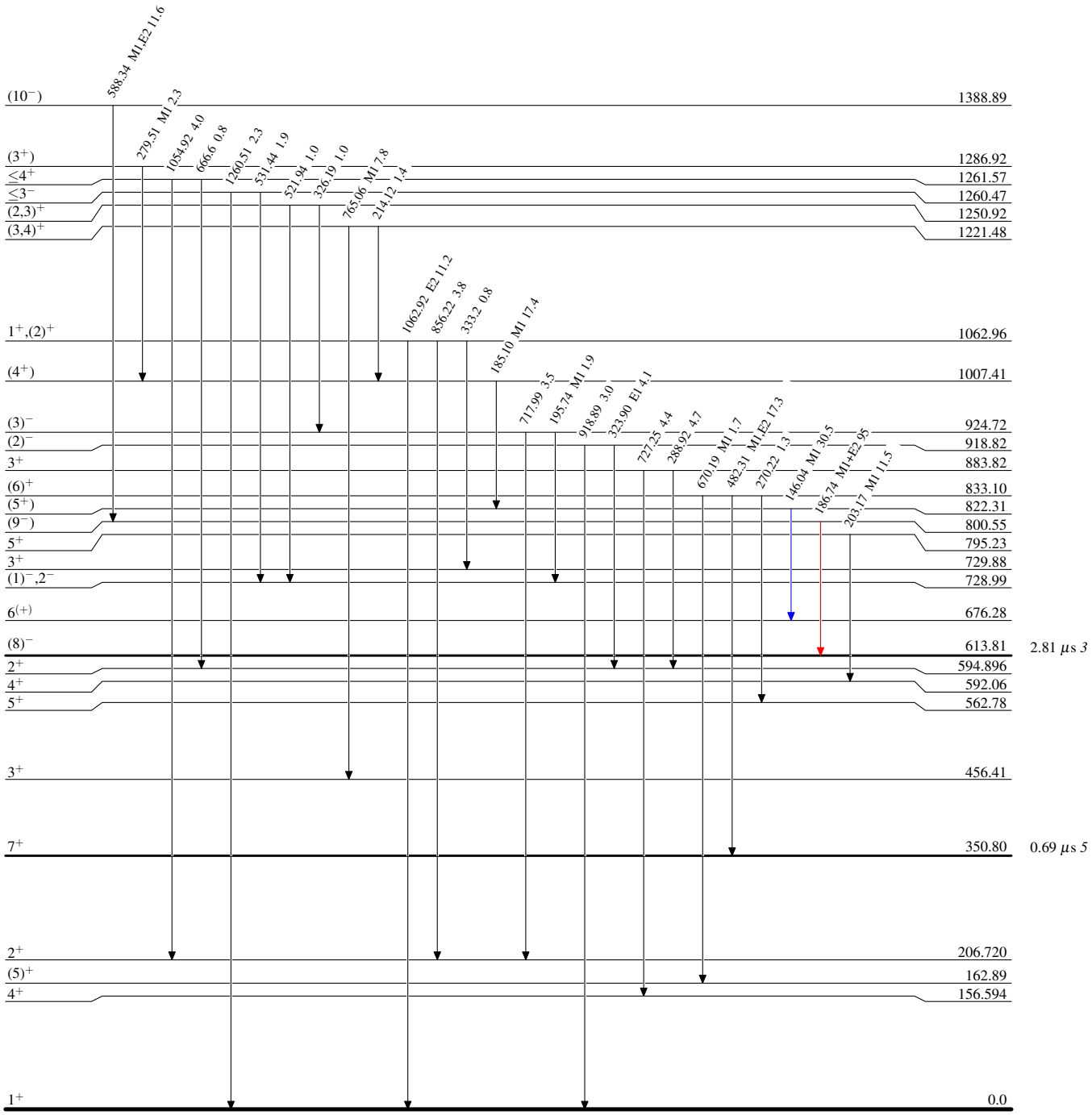
Intensities: Type not specified

Legend

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

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

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



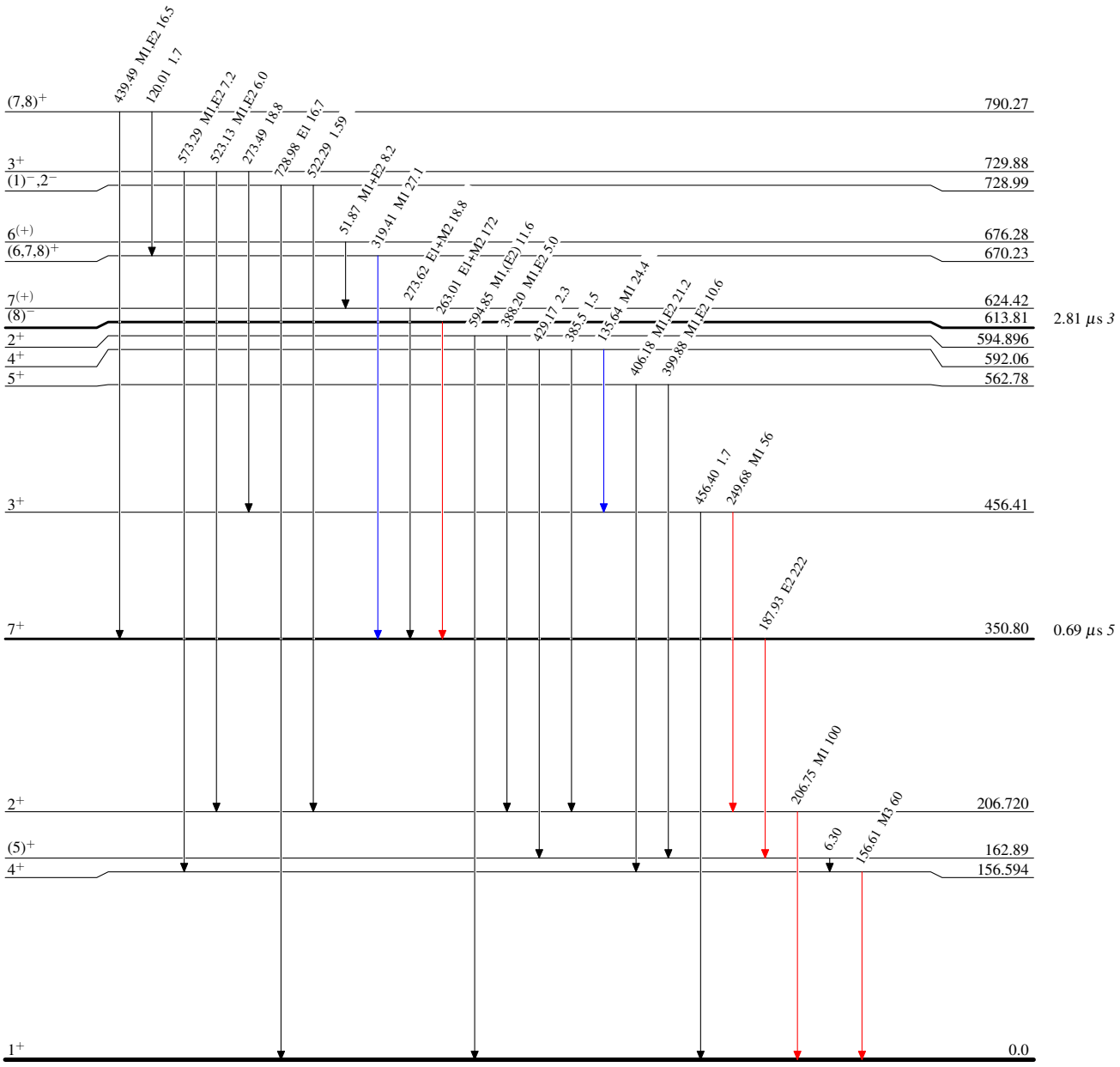
$^{112}_{49}In_{63}$

^{109}Ag(α,nγ) **1988Ki04,1978EmZT,1991Kr14**

Level Scheme (continued)

Intensities: Type not specified

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



$^{112}_{49}In_{63}$