^{100}Mo(^{16}O,p3nγ) 2012Tr01

History

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

Facility: 15-UD Pelletron accelerator at IUAC, New Delhi; Beam: E(^{18}O)=80 MeV; Target: 2.7 mg/cm^2 enriched in ^{100}Mo and deposited on a 12 mg/cm^2 Pb backing; Detectors: INGA γ-ray array comprising 18 Compton-suppressed Clover detectors working in add-back mode. The Clovers were also used as Compton polarimeters; Measured: Eγ, Iγ, γ-γ, γ-γ-γ coinc., γ-$\gamma(\theta)$, γ-γ(lin pol); Deduced: ^{112}In level scheme, DCO, γ-polarization asymmetry (pol), J^π, $T_{1/2}$; Also, from the same collaboration: 2012Tr11.

^{112}In Levels

E(level)[†]	J^π[‡]	$T_{1/2}$[#]	Comments
162.89[&] 4	5^+		Additional information 1. E(level),J^π: from the Adopted Levels.
350.82[&] 3	7^+		
613.9[@] 3	8^-		
670.02[&] 24	8^+		
801.0[@] 4	9^-		
1389.2[@] 5	10^-		
1754.82[&] 24	9^+		
2113.6[@] 5	11^-		
2115.2[&] 4	10^+		
2493.5 5	11^-		
2666.0[@] 5	12^-		
2802.1[&] 4	11^+		
3062.7[a] 5	12^+		
3103.1[@] 6	13^-		
3127.4 6	13^-		
3153.7[b] 6	12^-		
3191.0[a] 6	13^+		
3262.7[@] 6	14^-		
3347.9[b] 6	13^-		
3369.5[a] 6	14^+		
3607.3[@] 7	15^-		
3642.2[a] 7	15^+	0.58 ps 11	
3644.8[b] 6	14^-		
3991.9[b] 7	15^-	0.50 ps +25−19	
4035.5[a] 8	16^+	0.34 ps 7	
4354.3[b] 10	16^-	<0.42 ps	
4395.2[@] 10	16^-		
4589.7[a] 8	17^+	0.15 ps 4	
4759.0[b] 12	17^-		
5168.2[b] 14	18^-		
5297.3[a] 9	18^+	<0.17 ps	
5638.2[b] 16	19^-		

[†] From a least-squares fit to Eγ.
[‡] From 2012Tr01, based on γ-ray Mult.
[#] From DSAM measurements in 2012Tr01. Systematic error of 15% as estimated by the authors was taken into account by the

Continued on next page (footnotes at end of table)

^{100}Mo(^{16}O,p3nγ) 2012Tr01 (continued)

^{112}In Levels (continued)

evaluators.
[@] Band(A): ΔJ=1 structure based on 8^-.
[&] Band(B): ΔJ=1 structure based on 5^+.
[a] Band(C): ΔJ=1 band based on 12^+; configuration=$\pi g_{9/2}^{-1}\otimes\nu(h_{11/2}^2)(g_{7/2}/d_{5/2})$.
[b] Band(D): ΔJ=1 band based on 12^-; configuration=$\pi g_{9/2}^{-1}\otimes\nu(h_{11/2}^3)$.

γ(^{112}In)

DCO ratios were obtained by sorting the detectors at 32° on one axis and the detectors at 90° on the other axis, with gate on ΔJ=1, dipole transition. Expected values are 2.0 for ΔJ=2, quadrupole and 1.0 for ΔJ=1, dipole.
Polarization asymmetry (pol) is positive for electric and negative for magnetic transitions.

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ	Comments
128.3 *3*	60.1 *2*	3191.0	13^+	3062.7	12^+	D		Mult.: DCO=1.21 *13* (2012Tr01).
135.3 *7*	6.1 *1*	3262.7	14^-	3127.4	13^-	D		Mult.: DCO=1.09 *11* (2012Tr01).
159.6 *3*	26.7 *2*	3262.7	14^-	3103.1	13^-	D		Mult.: DCO=0.97 *9* (2012Tr01).
178.5 *3*	59.3 *2*	3369.5	14^+	3191.0	13^+	D		Mult.: DCO=1.06 *9* (2012Tr01).
187.1 *3*		801.0	9^-	613.9	8^-			
187.93 *3*		350.82	7^+	162.89	5^+			E_γ: from the adopted gammas.
194.2 *3*	10.8 *1*	3347.9	13^-	3153.7	12^-	D		Mult.: DCO=0.99 *9* (2012Tr01).
260.6 *3*	56.9 *2*	3062.7	12^+	2802.1	11^+	M1		Mult.: DCO=0.97 *7* (2012Tr01); pol=−0.03 *4* (2012Tr01).
263.1 *3*		613.9	8^-	350.82	7^+	E1+M2	0.09 *4*	Mult.,δ: from the adopted gammas; DCO=1.17 *10* (2012Tr01).
272.7 *3*	47.2 *2*	3642.2	15^+	3369.5	14^+	M1		Mult.: DCO=0.91 *6* (2012Tr01); pol=−0.09 *4* (2012Tr01).
296.9 *3*	17.0 *2*	3644.8	14^-	3347.9	13^-	M1		Mult.: DCO=0.86 *7* (2012Tr01); pol=−0.04 *4* (2012Tr01).
319.2 *3*	104.3 *8*	670.02	8^+	350.82	7^+	M1		Mult.: DCO=1.06 *7* (2012Tr01); pol=−0.079 *28* (2012Tr01).
344.6 *3*	20.7 *1*	3607.3	15^-	3262.7	14^-	D		Mult.: DCO=1.01 *9* (2012Tr01).
347.1 *3*	10.4 *1*	3991.9	15^-	3644.8	14^-	(M1)		Mult.: DCO=1.01 *9* (2012Tr01).
360.4 *7*	6.1 *1*	2115.2	10^+	1754.82	9^+	D		Mult.: DCO=1.21 *11* (2012Tr01).
362.4 *7*	7.8 *1*	4354.3	16^-	3991.9	15^-	(M1)		Mult.: DCO=0.91 *7* (2012Tr01).
393.3 *3*	34.5 *2*	4035.5	16^+	3642.2	15^+	M1		Mult.: DCO=1.10 *7* (2012Tr01); pol=−0.14 *3* (2012Tr01).
404.7 *7*	5.4 *1*	4759.0	17^-	4354.3	16^-	D		Mult.: DCO=0.74 *7* (2012Tr01).
409.2 *7*	3.9 *1*	5168.2	18^-	4759.0	17^-	D		Mult.: DCO=1.00 *9* (2012Tr01).
437.1 *3*	35.6 *3*	3103.1	13^-	2666.0	12^-	M1		Mult.: DCO=0.98 *6* (2012Tr01); pol=−0.01 *4* (2012Tr01).
461.4 *3*	30.3 *2*	3127.4	13^-	2666.0	12^-	M1		Mult.: DCO=0.80 *5* (2012Tr01); pol=−0.13 *3* (2012Tr01).
470.0 *7*	2.0 *1*	5638.2	19^-	5168.2	18^-	D		Mult.: DCO=0.92 *7*.
487.7 *7*	2.2 *1*	3153.7	12^-	2666.0	12^-			
552.4 *3*	59.4 *4*	2666.0	12^-	2113.6	11^-	M1		Mult.: DCO=1.02 *6* (2012Tr01); pol=−0.10 *4* (2012Tr01).
554.2 *3*	20.3 *2*	4589.7	17^+	4035.5	16^+	M1		Mult.: DCO=0.89 *6* (2012Tr01); pol=−0.16 *4* (2012Tr01).
588.2 *3*	134.8 *9*	1389.2	10^-	801.0	9^-	M1		Mult.: DCO=0.96 *7* (2012Tr01); pol=−0.037 *23*; (2012Tr01).
660.2 *3*	11.7 *3*	3153.7	12^-	2493.5	11^-	M1		Mult.: DCO=0.94 *9* (2012Tr01); pol=−0.05 *5* (2012Tr01).
681.9 *3*	12.1 *2*	3347.9	13^-	2666.0	12^-	D		Mult.: DCO=0.95 *6* (2012Tr01).

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^{100}Mo(^{16}O,p3nγ) 2012Tr01 (continued)

γ(^{112}In) (continued)

E_γ †	I_γ †	E_i(level)	J^π_i	E_f	J^π_f	Mult. ‡	Comments
686.9 *3*	53.9 *3*	2802.1	11+	2115.2	10+	M1	Mult.: DCO=1.03 *7* (2012Tr01); pol=−0.08 *3* (2012Tr01).
707.6 *3*	15.6 *1*	5297.3	18+	4589.7	17+	[M1]	
724.3 *3*	100 *6*	2113.6	11−	1389.2	10−	M1	Mult.: DCO=1.02 *6* (2012Tr01); pol=−0.057 *25* (2012Tr01).
787.9 *7*	3.8 *1*	4395.2	16−	3607.3	15−	D	Mult.: DCO=0.89 *7* (2012Tr01).
947.4 *7*	4.2 *2*	3062.7	12+	2115.2	10+		
949.1 *7*	6.8 *3*	3062.7	12+	2113.6	11−		
1047.4 *7*	9.1 *1*	2802.1	11+	1754.82	9+	E2	Mult.: DCO=1.78 *13* (2012Tr01); pol=+0.12 *4* (2012Tr01).
1084.8 *3*	13.1 *1*	1754.82	9+	670.02	8+	M1	Mult.: DCO=1.22 *10* (2012Tr01); pol=−0.10 *6* (2012Tr01).
1104.2 *3*	17.2 *2*	2493.5	11−	1389.2	10−	M1	Mult.: DCO=1.16 *9* (2012Tr01); pol=−0.02 *5* (2012Tr01).
1276.7 *3*	19.6 *2*	2666.0	12−	1389.2	10−	E2	Mult.: DCO=1.85 *18* (2012Tr01); pol=+0.16 *7* (2012Tr01).
1312.5 *3*	24.8 *4*	2113.6	11−	801.0	9−	E2	Mult.: DCO=1.69 *14* (2012Tr01); pol=+0.24 *4* (2012Tr01).
1404.0 *3*	29.1 *13*	1754.82	9+	350.82	7+	E2	Mult.: DCO=1.96 *15* (2012Tr01); pol=+0.08 *3* (2012Tr01).
1445.2 *3*	75.1 *4*	2115.2	10+	670.02	8+	E2	Mult.: DCO=1.69 *12* (2012Tr01); pol=+0.06 *3* (2012Tr01).

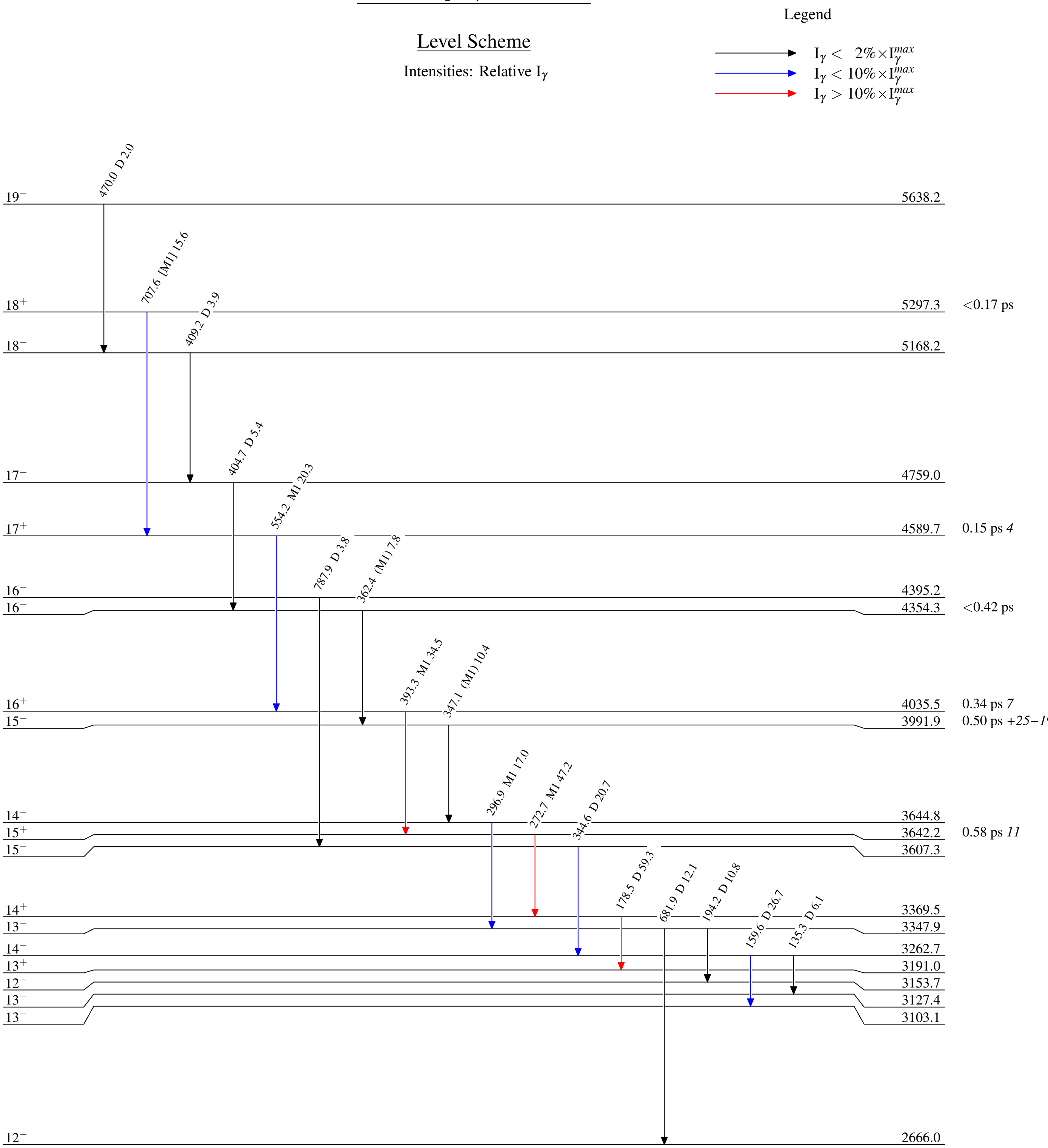
† From 2012Tr01; ΔE=0.3 keV for intense lines and 0.7 keV for weak lines. The evaluators assign 0.3 keV for Iγ≥10 and 0.7 keV for Iγ<10.

‡ From 2012Tr01, based on DCO and pol measurements.

$^{100}Mo(^{16}O,p3n\gamma)$ 2012Tr01

Level Scheme

Intensities: Relative I_γ

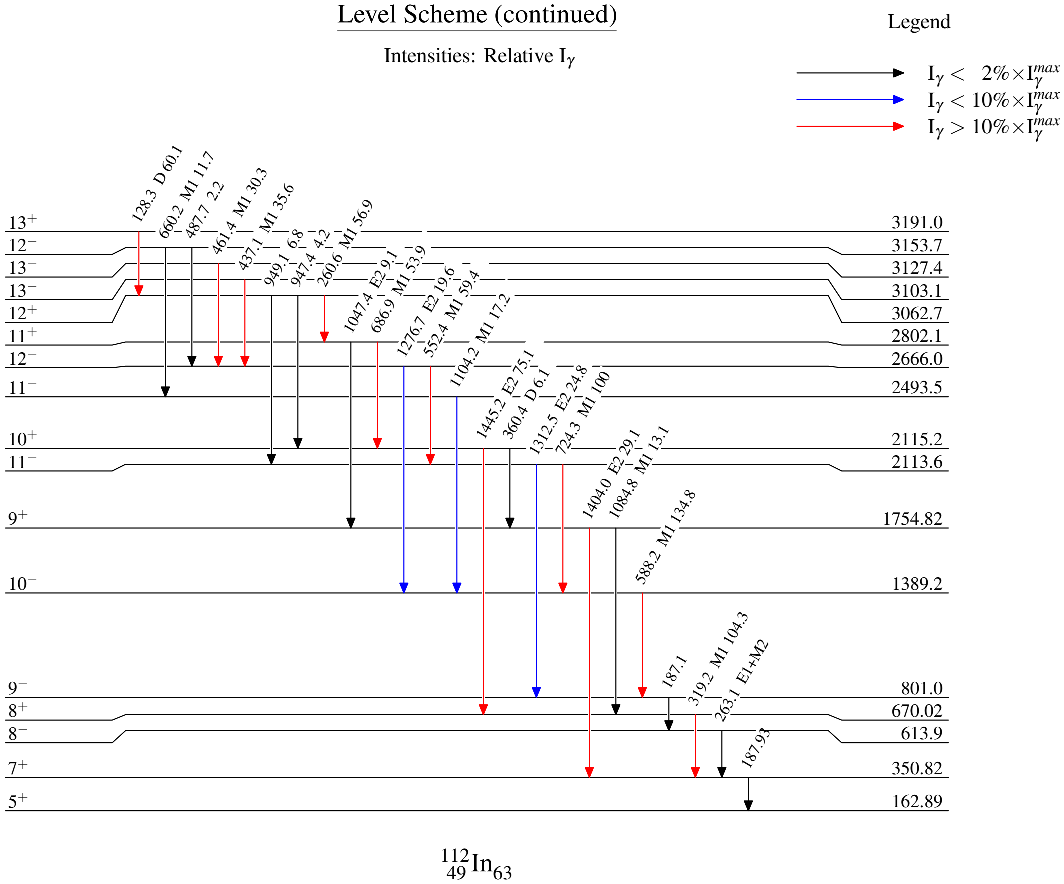


$^{112}_{49}In_{63}$

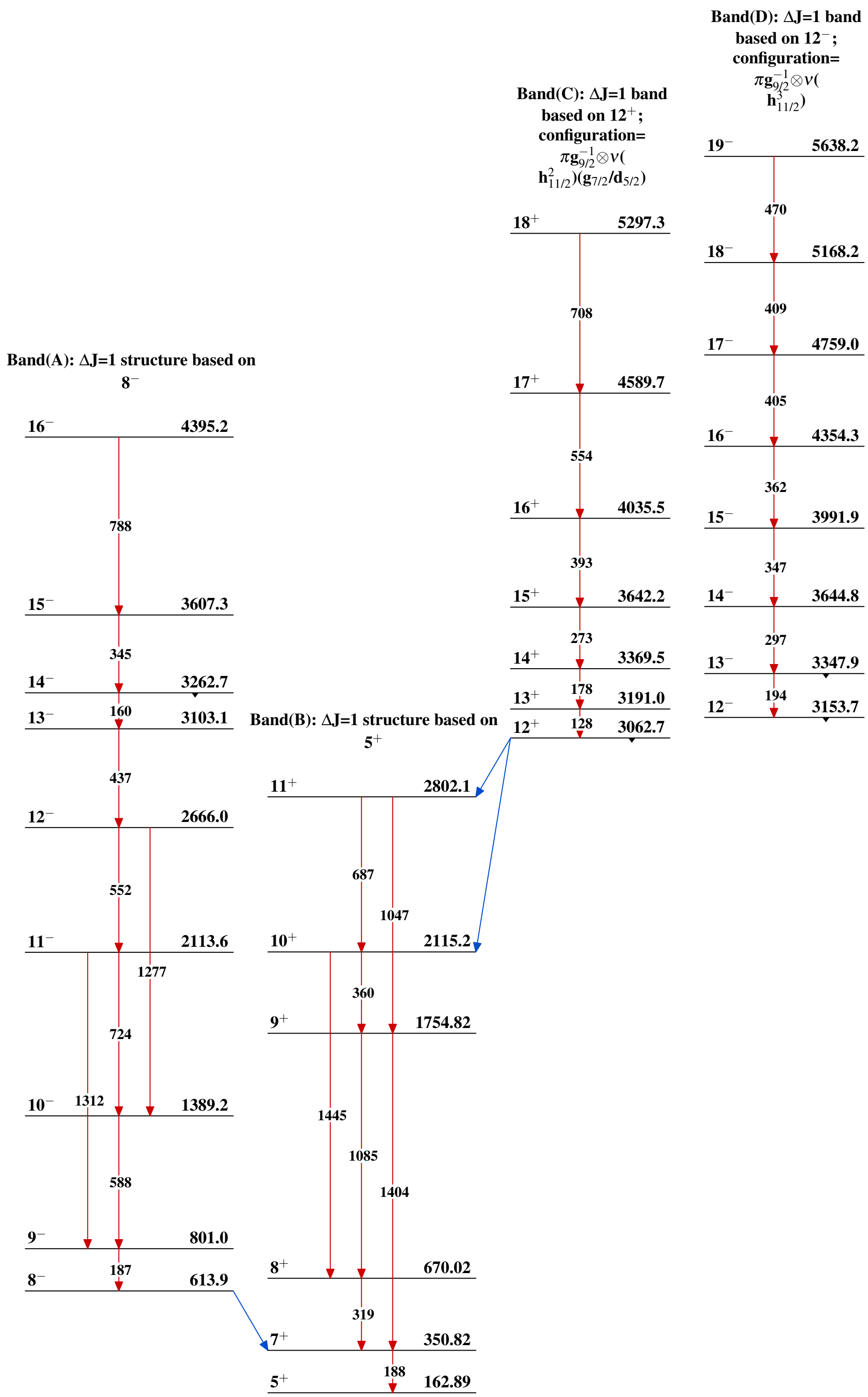
$^{100}Mo(^{16}O,p3n\gamma)$ 2012Tr01

Level Scheme (continued)

Intensities: Relative I_γ



$^{100}Mo(^{16}O,p3n\gamma)$ 2012Tr01



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