^{55}Mn(^{18}O,3nγ) 2015Ha25

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	G. Gürdal, E. A. Mccutchan	NDS 136, 1 (2016)	1-Jul-2016

2015Ha25: ^{55}Mn(^{18}O,3nγ) with E(^{18}O)=50 MeV. Measured Eγ, Iγ, $\gamma\gamma$-coin, $\gamma(\theta)$, DCO ratios using an array of 10 Compton-suppressed Ge detectors consisting of 3 Clover and 7 single-crystal detectors; deduced $T_{1/2}$ using Doppler shift attenuation method (DSAM).

α: Additional information 1.

^{70}As Levels

E(level)[†]	J^π[‡]	E(level)[†]	J^π[‡]	$T_{1/2}$[#]	E(level)[†]	J^π[‡]	$T_{1/2}$[#]
0.0	4^+	1752.23[a] *24*	9^+		3695.0 *11*	$10^{(+)}$	
32.05 *3*	2^+	1765.8 *4*			3772.4[d] *3*	11^-	
166.77 *8*	3^+	1807.0 *4*	7^-		3792.5[b] *4*	12^+	<0.31[@] ps
390.45 *19*	3^+	1983.6[c] *3*	8^-		4076.0[a] *4*	13^+	0.069 ps *7*
485.52 *9*	4^-	2282.3[e] *3*	9^-		4114.6 *5*	11^-	
566.72[d] *13*	5^-	2379.5 *8*	$9^{(+)}$		4206.8[c] *3*	12^-	<0.76[&] ps
869.51[c] *16*	6^-	2467.7 *4*	$9^{(+)}$		4604.8 *3*	13^-	
887.83[e] *20*	7^-	2579.3[d] *3*	9^-		4819.2 *4*	14^-	<2.2[&] ps
898.52 *24*	(5)	2580.0[b] *3*	10^+	0.53 ps *4*	5365.2? *6*	(14^-)	
1045.93 *16*	6^-	2691.1 *4*	$9^{(+)}$		5457.8[a] *9*	(15^+)	<0.18[@] ps
1454.21 *21*	6^+	2733.0[a] *3*	11^+	0.527 ps *14*	5498.7 *5*	15^-	
1496.51[d] *23*	7^-	2873.6 *4*	$10^{(+)}$		5884.5 *6*	$15^{(-)}$	
1676.03[b] *22*	8^+	3273.1 *4*	$11^{(+)}$		6246.9 *7*	(16^-)	
1726.0 *4*	$7^{(+)}$	3300.9[c] *5*	10^-				

[†] From a least-squares fit to Eγ, by the evaluators.

[‡] As given in 2015Ha25. Authors state that J^π assignments for low-lying states taken from 1997Po03, while other J^π assignments based on decay patterns and multipolarities determined through DCO measurements.

[#] From Doppler shift attenuation method using coin. data at $\gamma(35°)$ and $\gamma(145°)$ by gating on transitions below the transition of interest. The quoted values are the weighted averages of the $T_{1/2}$ at $\gamma(35°)$ and $\gamma(145°)$ and were corrected for both direct and side feedings.

[@] Effective lifetime, not corrected for feedings. The weighted average of the $T_{1/2}$ at $\gamma(35°)$ and $\gamma(145°)$.

[&] Effective lifetime, not corrected for feedings. The $T_{1/2}$ measured at $\gamma(145°)$ only.

[a] Band(A): Based on 1752.23 keV *9+*. Conf = $\pi g_{9/2} \otimes \nu g_{9/2}$, α=1.

[b] Band(B): Conf = $\pi g_{9/2} \otimes \nu g_{9/2}$, α=0.

[c] Band(C): Negative parity band based 869.51 keV *6-* state.

[d] Band(D): Negative parity band based 566.72 keV *5-* state.

[e] Band(E): Negative parity band based 887.83keV 7^- state.

γ(^{70}As)

The R_{DCO} were measured by gating on stretched E2 transitions, unless otherwise stated. Based on the symmetry of the Ge array used, the expected R_{DCO} for stretched E2 transitions and for ΔJ=0 transitions were ≈1, for ΔJ=1 transitions were ≈0.5 (if the δ is small).

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$^{55}Mn(^{18}O,3n\gamma)$ 2015Ha25 (continued)

$\gamma(^{70}As)$ (continued)

E_γ †	I_γ †	E_i(level)	J^π_i	E_f	J^π_f	Mult. ‡	Comments
32.05 *3*		32.05	2^+	0.0	4^+		E_γ: from the Adopted Gammas.
76.2 *1*	64# *10*	1752.23	9^+	1676.03	8^+		
81.2 *1*	148# *12*	566.72	5^-	485.52	4^-		
95.0 *2*	3.8# *6*	485.52	4^-	390.45	3^+		
134.7 *2*	87# *4*	166.77	3^+	32.05	2^+		
153.0 *3*	2.0# *4*	2733.0	11^+	2580.0	10^+		
166.8 *1*	22.1# *11*	166.77	3^+	0.0	4^+		
221.8 *4*	1.4 *4*	1676.03	8^+	1454.21	6^+		
223.4 *4*	2.4 *8*	390.45	3^+	166.77	3^+		
271.8 *3*	2.4 *3*	1726.0	$7^{(+)}$	1454.21	6^+	D+Q	Mult.: R_{DCO} = 0.49 *10* (2015Ha25).
302.8 *1*	31 *2*	869.51	6^-	566.72	5^-	D+Q	Mult.: R_{DCO} = 1.47 *31*. Obtained by gating on the 788.2γ E1 transition, assuming δ = 0 (2015Ha25).
312.0 *6*	1.3 *4*	1765.8		1454.21	6^+		
318.9 *2*	90 *9*	485.52	4^-	166.77	3^+	D	Mult.: R_{DCO} = 0.65 *14* (2015Ha25).
321.1 *2*	113 *11*	887.83	7^-	566.72	5^-	Q	Mult.: R_{DCO} = 1.16 *18* (2015Ha25).
331.8 *2*	2.0 *9*	898.52	(5)	566.72	5^-		
398.0 *1*	3.2 *4*	4604.8	13^-	4206.8	12^-	D+Q	Mult.: R_{DCO} = 0.46 *9* (2015Ha25).
406.1 *4*	0.6 *4*	2873.6	$10^{(+)}$	2467.7	$9^{(+)}$		
408.2 *3*	1.8 *4*	1454.21	6^+	1045.93	6^-		
479.2 *1*	11.3 *4*	1045.93	6^-	566.72	5^-	D+Q	Mult.: R_{DCO} = 0.87 *10* (2015Ha25).
485.5 *1*	72 *4*	485.52	4^-	0.0	4^+	D	Mult.: R_{DCO} = 0.87 *2* (2015Ha25).
490.3 *4*	2.8 *10*	4604.8	13^-	4114.6	11^-		
566.4 *1*	9.9 *8*	1454.21	6^+	887.83	7^-	D	Mult.: R_{DCO} = 0.48 *5* (2015Ha25).
596.3 *3*	11 *3*	2579.3	9^-	1983.6	8^-	D+Q	Mult.: R_{DCO} = 0.55 *18* (2015Ha25).
612.3 *3*	10 *2*	4819.2	14^-	4206.8	12^-	Q	Mult.: R_{DCO} = 0.92 *11* (2015Ha25). I_γ: 2015Ha25 gives branching ratio of Iγ(612γ):Iγ(743γ)=58 *6*: 42 *6*.
626.9 *2*	9.4 *9*	1496.51	7^-	869.51	6^-	D+Q	Mult.: R_{DCO} = 0.88 *14*. Obtained by gating on the 318.9γ E1 transition, assuming δ = 0 (2015Ha25).
693.2 *3*	9 *2*	3273.1	$11^{(+)}$	2580.0	10^+	D+Q	Mult.: R_{DCO} = 0.27 *6* (2015Ha25).
703.5 *8*	1.6 *5*	2379.5	$9^{(+)}$	1676.03	8^+	D+Q	Mult.: R_{DCO} = 1.24 *29*. Obtained by gating on the 788.2γ E1 transition, assuming δ = 0 (2015Ha25).
719.5 *5*	1.2 *5*	1765.8		1045.93	6^-		
741.5 *8*	2.2 *10*	2467.7	$9^{(+)}$	1726.0	$7^{(+)}$		
743.2 *2*	7.1 *10*	4819.2	14^-	4076.0	13^+	D	Mult.: R_{DCO} = 0.56 *3* (2015Ha25).
759.9 *6*	2.2 *9*	5365.2?	(14^-)	4604.8	13^-	D+Q	Mult.: R_{DCO} = 0.18 *7* (2015Ha25).
771.5 *8*	1.0 *3*	2579.3	9^-	1807.0	7^-	Q	Mult.: R_{DCO} = 1.02 *22* (2015Ha25).
788.2 *1*	100 *3*	1676.03	8^+	887.83	7^-	D	Mult.: R_{DCO} = 0.44 *1* (2015Ha25). I_γ: 2015Ha25 gives branching ratio of Iγ(788γ):Iγ(221γ)=98.6 *4*: 1.4 *4*.
791.5 *9*	7 *2*	2467.7	$9^{(+)}$	1676.03	8^+	D+Q	Mult.: R_{DCO} = 0.52 *6*. Obtained by gating on the 788.2γ E1 transition, assuming δ = 0 (2015Ha25).
805.1 *4*	3.5 *10*	3273.1	$11^{(+)}$	2467.7	$9^{(+)}$		
812.1 *3*	1.6 *4*	4604.8	13^-	3792.5	12^+	D	Mult.: R_{DCO} = 0.47 *6* (2015Ha25).
827.9 *3*	13 *2*	2580.0	10^+	1752.23	9^+	D+Q	Mult.: R_{DCO} = 1.21 *34*. Obtained by gating on the 788.2γ E1 transition, assuming δ = 0 (2015Ha25).
832.4 *3*	13 *3*	4604.8	13^-	3772.4	11^-	Q	Mult.: R_{DCO} = 1.10 *10* (2015Ha25).
893.9 *4*	9 *2*	5498.7	15^-	4604.8	13^-	Q	Mult.: R_{DCO} = 0.87 *10* (2015Ha25).
896.4 *6*	5.2 *10*	1765.8		869.51	6^-		
904.0 *4*	20 *5*	2580.0	10^+	1676.03	8^+	Q	Mult.: R_{DCO} = 0.80 *17* (2015Ha25). I_γ: 2015Ha25 gives branching ratio of Iγ(905γ):Iγ(828γ)=62 *7*: 38 *7*.
905.7 *6*	7 *2*	4206.8	12^-	3300.9	10^-	Q	Mult.: R_{DCO} = 1.27 *18* (2015Ha25).

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^{55}Mn(^{18}O,3nγ) 2015Ha25 (continued)

γ(^{70}As) (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult. ‡	Comments
							I_γ: 2015Ha25 gives branching ratio of $I\gamma(906\gamma):I\gamma(934\gamma):I\gamma(1474\gamma)$=52 *7*: 4 *2*: 44 *7*.
919.0 *4*	5.0 *10*	1807.0	7^-	887.83	7^-	D+Q	Mult.: R_{DCO} = 0.81 *8* (2015Ha25).
929.6 *4*	5.8 *18*	1496.51	7^-	566.72	5^-	Q	Mult.: R_{DCO} = 0.91 *31*.
934.1 *8*	0.6 *3*	4206.8	12^-	3273.1	$11^{(+)}$		
938.4 *6*	4.7 *14*	1983.6	8^-	1045.93	6^-	Q	Mult.: R_{DCO} = 0.83 *22* (2015Ha25).
980.7 *3*	47 *4*	2733.0	11^+	1752.23	9^+	Q	Mult.: R_{DCO} = 0.95 *14* (2015Ha25). I_γ: 2015Ha25 gives branching ratio of $I\gamma(981\gamma):I\gamma(153\gamma)$=95.9 *8*: 4.1 *8*.
1015.1 *3*	6.0 *12*	2691.1	$9^{(+)}$	1676.03	8^+	D+Q	Mult.: R_{DCO} = 0.35 *10* (2015Ha25).
1058.9 *6*	4.6 *14*	3792.5	12^+	2733.0	11^+	D+Q	Mult.: R_{DCO} = 0.68 *14* (2015Ha25).
1065.3 *5*	2.5 *8*	5884.5	$15^{(-)}$	4819.2	14^-	D+Q	Mult.: R_{DCO} = 0.64 *18* (2015Ha25).
1081.9 *5*	5.8 *16*	2579.3	9^-	1496.51	7^-	Q	Mult.: R_{DCO} = 1.62 *28* (2015Ha25).
1114.7 *4*	15.6 *15*	1983.6	8^-	869.51	6^-	Q	Mult.: R_{DCO} = 0.84 *20* (2015Ha25).
1121.1 *4*	6.1 *15*	2873.6	$10^{(+)}$	1752.23	9^+	D+Q	Mult.: R_{DCO} = 0.30 *10* (2015Ha25).
1159.2 *8*	1.8 *9*	5365.2?	(14^-)	4206.8	12^-		
1194.0 *8*	4.0 *10*	3772.4	11^-	2579.3	9^-	Q	Mult.: R_{DCO} = 0.88 *23* (2015Ha25).
1212.0 *6*	12 *4*	3792.5	12^+	2580.0	10^+	Q	Mult.: R_{DCO} = 0.85 *16* (2015Ha25). I_γ: 2015Ha25 gives branching ratio of $I\gamma(1212\gamma):I\gamma(1059\gamma)$=72 *10*: 28 *10*.
1227.3 *10*	4.3 *10*	3695.0	$10^{(+)}$	2467.7	$9^{(+)}$	D+Q	Mult.: R_{DCO} = 0.50 *12* (2015Ha25).
1317.0 *7*	7.4 *15*	3300.9	10^-	1983.6	8^-	Q	Mult.: R_{DCO} = 1.26 *26* (2015Ha25).
1343.3 *6*	19 *2*	4076.0	13^+	2733.0	11^+	Q	Mult.: R_{DCO} = 0.96 *5* (2015Ha25).
1381.8 *8*	3.9 *15*	5457.8	(15^+)	4076.0	13^+		
1394.4 *3*	15 *2*	2282.3	9^-	887.83	7^-	Q	Mult.: R_{DCO} = 0.88 *10* (2015Ha25).
1427.7 *6*	1.9 *9*	6246.9	(16^-)	4819.2	14^-		
1454.2 *8*	1.3 *6*	1454.21	6^+	0.0	4^+		
1474.0 *3*	6.2 *9*	4206.8	12^-	2733.0	11^+	D	Mult.: R_{DCO} = 0.55 *4* (2015Ha25).
1490.0 *3*	9.0 *15*	3772.4	11^-	2282.3	9^-	Q	Mult.: R_{DCO} = 0.80 *15* (2015Ha25).
1521.3 *8*	3.0 *5*	3273.1	$11^{(+)}$	1752.23	9^+		
1832.8 *10*	1.3 *6*	4114.6	11^-	2282.3	9^-		

† From $\gamma\gamma$-coin. data (projected from matrices at 90°) in 2015Ha25, unless otherwise stated. Intensities were normalized to I(788.2γ) = 100.

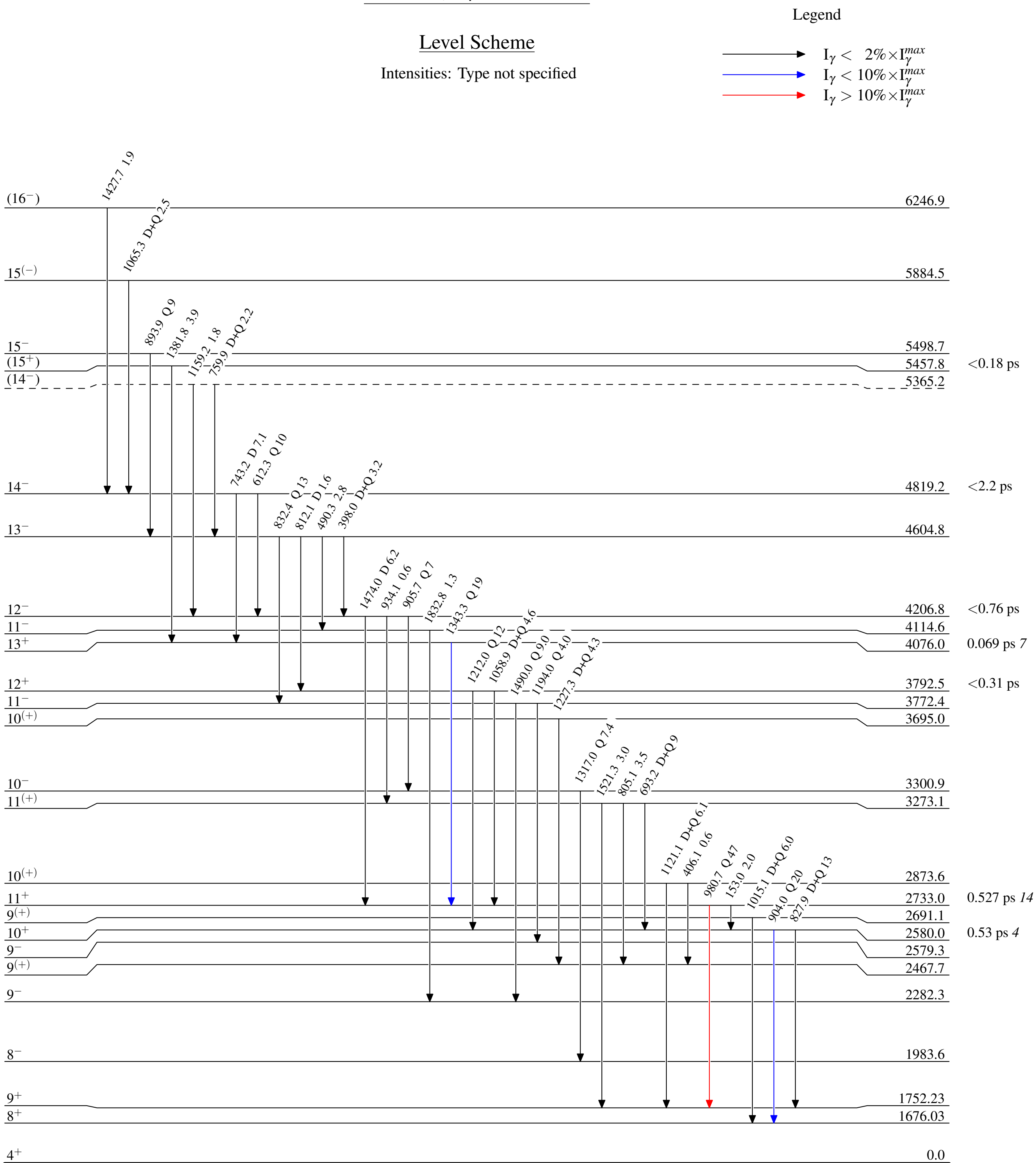
‡ From R(DCO) measurements (2015Ha25).

\# Determined using γ(35°) singles spectrum and corrected for angular distribution effects.

$^{55}Mn(^{18}O,3n\gamma)$ 2015Ha25

Level Scheme

Intensities: Type not specified

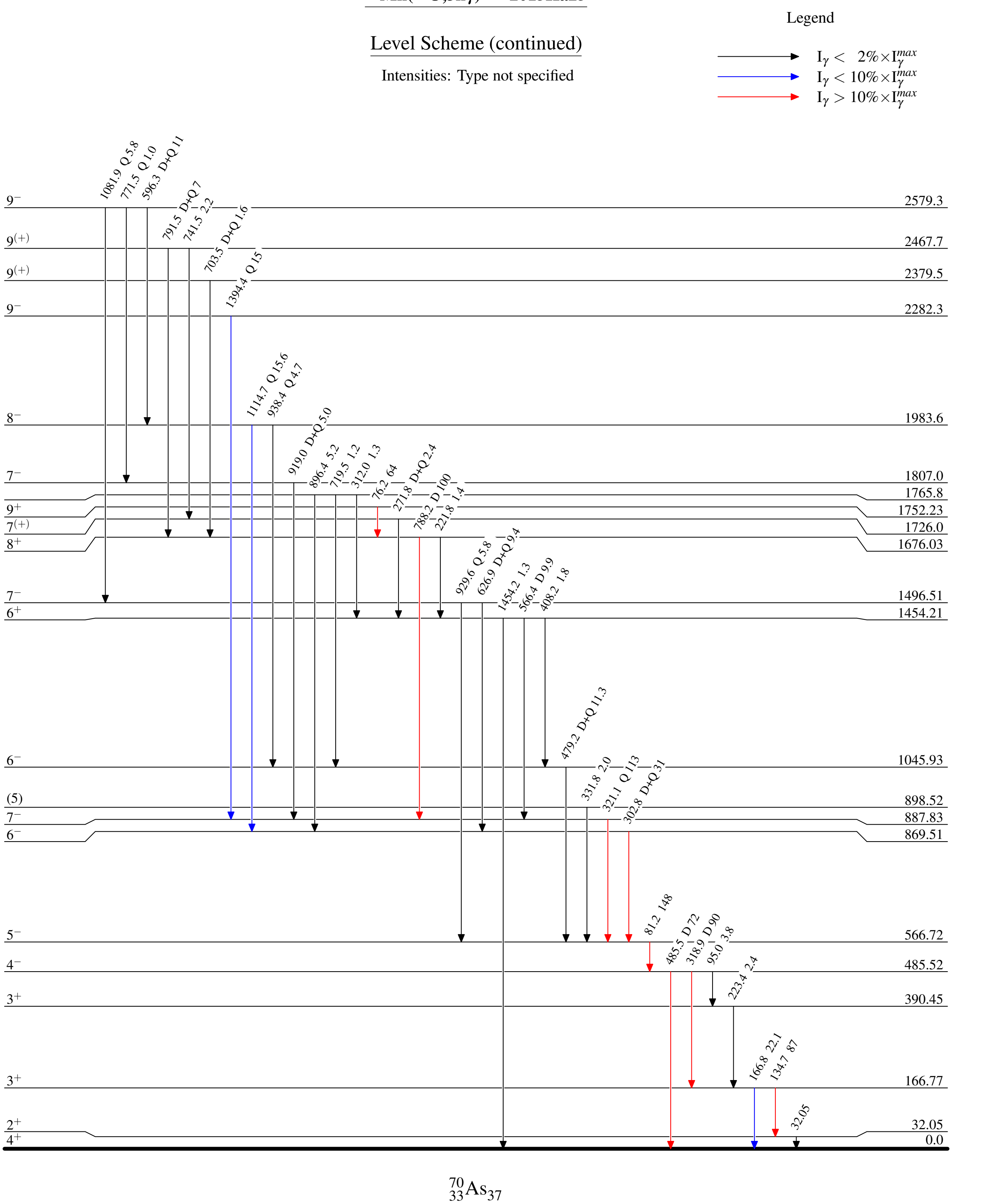


$^{70}_{33}As_{37}$

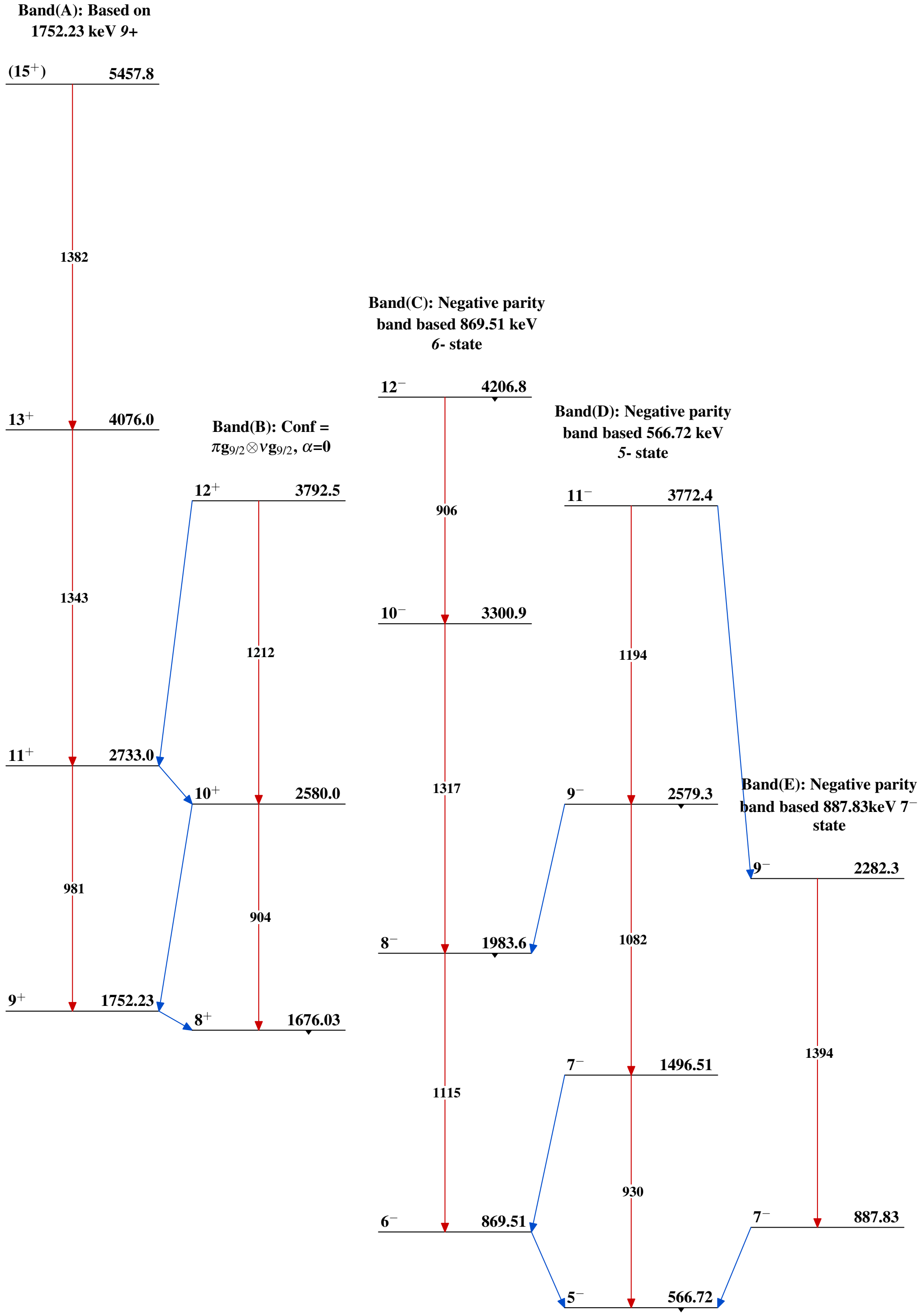
$^{55}Mn(^{18}O,3n\gamma)$ 2015Ha25

Level Scheme (continued)

Intensities: Type not specified



$^{55}Mn(^{18}O,3n\gamma)$ 2015Ha25



$^{70}_{33}As_{37}$