^{98}Mo(d,pγ) 1975Di15

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 145, 25 (2017)	1-Jul-2017

E=4 MeV to 12 MeV.
Measured: Eγ, Iγ, pγ, $\gamma\gamma$, excit, $\gamma(\theta)$, γ(t), ce.

^{99}Mo Levels

E(level)	J$^{\pi}$[†]	T$_{1/2}$[‡]	Comments
0	1/2$^+$		
97.79 *7*	5/2$^+$		g=−0.3092 *10* g: From d,$\gamma(\theta$,H,t). Only statistical uncertainty quoted (1978Ra21).
235.47 *12*	7/2$^+$		
351.30 *7*	3/2$^+$		
525.34 *10*	1/2$^+$		
548.60 *12*	3/2$^+$		
615.03 *16*	5/2$^+$		
631.56 *16*	3/2$^+$		
683.9 *4*	11/2$^-$	0.75 μs *30*	
697.95 *19*	(7/2$^+$)		
753.2 *4*	(5/2$^+$)		
754.09 *22*	7/2$^-$		
792.47 *20*	3/2$^+$		
889.1 *3*	3/2$^+$		
905.43 *17*	1/2$^+$		
944.53 *16*	(5/2)$^+$		
1025.51 *20*	(3/2$^+$,5/2$^+$)		
1047.4 *5*	7/2$^+$		
1166.1 *4*	5/2$^+$		
1254.3 *5*	5/2$^+$		
1280.4 *6*			
1352.5 *6*			
1441.8 *7*	(3/2,5/2)$^+$		
1570.3 *10*	1/2,3/2,5/2$^+$		

[†] From Adopted Levels.
[‡] From d,γ(t).

$\gamma(^{99}Mo)$

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡c]	α[b]	Comments
97.8 *1*	254 *20*	97.79	5/2$^+$	0	1/2$^+$	E2		1.307	α(K)exp=1.09 *10* α(K)=1.055 *16*; α(L)=0.209 *3*; α(M)=0.0379 *6* α(N)=0.00533 *8*; α(O)=0.0001502 *22* Mult.: E2(+M1), δ>3 from α(K)exp.
137.7 *1*	110 *10*	235.47	7/2$^+$	97.79	5/2$^+$	M1(+E2)	<0.2	0.109 *6*	α(K)exp=0.088 *15* α(K)=0.095 *5*; α(L)=0.0115 *8*; α(M)=0.00206 *15* α(N)=0.000312 *21*; α(O)=1.68×10^{-5} *7*
174.2 *2*	6[#] *1*	525.34	1/2$^+$	351.30	3/2$^+$	M1+E2	0.8 *4*	0.097 *27*	α(K)exp=0.082 *21* α(K)=0.083 *23*; α(L)=0.0114 *37*; α(M)=0.00205 *67* α(N)=3.01×10^{-4} *96*; α(O)=1.4×10^{-5} *4*
197.3 *2*	6[#] *1*	548.60	3/2$^+$	351.30	3/2$^+$				
253.5 *1*	100	351.30	3/2$^+$	97.79	5/2$^+$	(M1)		0.0207	α(K)exp=(0.0183) α(K)=0.0182 *3*; α(L)=0.00210 *3*; α(M)=0.000376 *6* α(N)=5.71×10^{-5} *8*; α(O)=3.21×10^{-6} *5*
263.5[@] *2*	23[#] *5*	615.03	5/2$^+$	351.30	3/2$^+$	M1(+E2)	<0.5	0.0206 *20*	α(K)exp=0.016 *4* α(K)=0.0181 *17*; α(L)=0.00214 *24*; α(M)=0.00038 *5* α(N)=5.8×10^{-5} *7*; α(O)=3.14×10^{-6} *24*
280.0 *3*	2.2[#] *5*	631.56	3/2$^+$	351.30	3/2$^+$				
351.2 *1*	71 *4*	351.30	3/2$^+$	0	1/2$^+$	M1(+E2)	0.2 *2*	0.0093 *6*	α(K)exp=0.0081 *7* α(K)=0.0082 *5*; α(L)=0.00094 *7*; α(M)=0.000168 *12* α(N)=2.55×10^{-5} *17*; α(O)=1.43×10^{-6} *7*
379.8 *2*	8 *1*	615.03	5/2$^+$	235.47	7/2$^+$	E2(+M1)	>2	0.0107 *4*	α(K)exp=0.011 *2* α(K)=0.0094 *4*; α(L)=0.00115 *5*; α(M)=0.000206 *9* α(N)=3.09×10^{-5} *13*; α(O)=1.55×10^{-6} *5*
393.7 *6*	≈2[#]	1025.51	(3/2$^+$,5/2$^+$)	631.56	3/2$^+$				
395.5 *4*	14 *4*	944.53	(5/2)$^+$	548.60	3/2$^+$	M1		0.00679	α(K)exp=0.0052 *8* α(K)=0.00597 *9*; α(L)=0.000681 *10*; α(M)=0.0001218 *18* α(N)=1.85×10^{-5} *3*; α(O)=1.050×10^{-6} *15*
427.5 *1*	20 *2*	525.34	1/2$^+$	97.79	5/2$^+$	(E2)		0.00764	α(K)exp=0.0051 *6* α(K)=0.00666 *10*; α(L)=0.000813 *12*; α(M)=0.0001454 *21* α(N)=2.18×10^{-5} *3*; α(O)=1.109×10^{-6} *16* α(K)exp suggests mult.=M1+E2, but only E2 is allowed by J^π.
432.4 *4*	7 *3*	1047.4	7/2$^+$	615.03	5/2$^+$				α(K)exp=0.0097 *44*
441.2 *2*	18 *1*	792.47	3/2$^+$	351.30	3/2$^+$	M1(+E2)	<0.4	0.00533 *14*	α(K)exp=0.0043 *5* α(K)=0.00468 *12*; α(L)=0.000536 *17*; α(M)=9.6×10^{-5} *3* α(N)=1.46×10^{-5} *5*; α(O)=8.19×10^{-7} *19*
448.4 *3*	39 *4*	683.9	11/2$^-$	235.47	7/2$^+$				α(K)exp=0.0014 *2*
450.7 *2*	62 *5*	548.60	3/2$^+$	97.79	5/2$^+$	M1(+E2)	<0.3	0.00501 *10*	α(K)exp=0.0040 *5* α(K)=0.00441 *9*; α(L)=0.000503 *11*; α(M)=8.98×10^{-5} *19* α(N)=1.37×10^{-5} *3*; α(O)=7.72×10^{-7} *14*

$^{99}_{42}Mo_{57}$-2

^{98}Mo(d,pγ) 1975Di15 (continued)

$\gamma(^{99}Mo)$ (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡c]	α[b]	Comments
462.5 *2*	8[&] *3*	697.95	(7/2$^+$)	235.47	7/2$^+$				α(K)exp=0.0030 *13*
500.2 *7*	≈5[#]	1025.51	(3/2$^+$,5/2$^+$)	525.34	1/2$^+$	(M1,E2)		0.0043 *5*	α(K)exp≈0.003 α(K)=0.0038 *4*; α(L)=0.00044 *6*; α(M)=7.9×10^{-5} *10* α(N)=1.19×10^{-5} *15*; α(O)=6.5×10^{-7} *5*
517.8 *4*	20 *2*	753.2	(5/2$^+$)	235.47	7/2$^+$	M1+E2[a]	≈1.2	≈0.00398	α(K)exp=0.0035 *6* α(K)≈0.00349; α(L)≈0.000409; α(M)≈7.31×10^{-5} α(N)≈1.104×10^{-5}; α(O)≈5.97×10^{-7}
525.4 *2*	40 *4*	525.34	1/2$^+$	0	1/2$^+$	M1[a]		0.00344	α(K)exp=0.0032 *6* α(K)=0.00302 *5*; α(L)=0.000342 *5*; α(M)=6.11×10^{-5} *9* α(N)=9.31×10^{-6} *13*; α(O)=5.30×10^{-7} *8*
533.2 *7*	10 *4*	631.56	3/2$^+$	97.79	5/2$^+$				
534.6 *6*	8 *4*	1166.1	5/2$^+$	631.56	3/2$^+$				
537.9 *4*	≈4[#]	889.1	3/2$^+$	351.30	3/2$^+$				
548.6 *2*	17 *1*	548.60	3/2$^+$	0	1/2$^+$	M1(+E2)[a]	≈0.8	≈0.00330	α(K)exp=0.0029 *5* α(K)≈0.00290; α(L)≈0.000335; α(M)≈5.99×10^{-5} α(N)≈9.07×10^{-6}; α(O)≈5.01×10^{-7}
553.7 *3*	8 *1*	905.43	1/2$^+$	351.30	3/2$^+$				α(K)exp≈0.0014
593.2 *4*	8 *2*	944.53	(5/2)$^+$	351.30	3/2$^+$	(M1,E2)		0.00274 *17*	α(K)exp=0.0021 *7* α(K)=0.00241 *14*; α(L)=0.000278 *22*; α(M)=5.0×10^{-5} *4* α(N)=7.5×10^{-6} *6*; α(O)=4.14×10^{-7} *17*
600.1 *3*	35 *5*	697.95	(7/2$^+$)	97.79	5/2$^+$				α(K)exp=0.0024 *7*
631.7 *2*	33 *2*	631.56	3/2$^+$	0	1/2$^+$	M1[a]		0.00224	α(K)=0.00197 *3*; α(L)=0.000222 *4*; α(M)=3.96×10^{-5} *6* α(N)=6.04×10^{-6} *9*; α(O)=3.45×10^{-7} *5*
654.6 *5*	≈7[#]	1352.5		697.95	(7/2$^+$)				
656.3[@] *2*	28[&] *5*	754.09	7/2$^-$	97.79	5/2$^+$	E1		7.89×10^{-4}	α(K)exp≈0.0013 α(K)=0.000696 *10*; α(L)=7.74×10^{-5} *11*; α(M)=1.378×10^{-5} *20* α(N)=2.10×10^{-6} *3*; α(O)=1.180×10^{-7} *17* Mult.: E1 or M1 from α(K)exp, but only E1 is allowed by J^π.
674.0 *3*	11 *2*	1025.51	(3/2$^+$,5/2$^+$)	351.30	3/2$^+$				α(K)exp≈0.0010
694.2 *6*	22 *4*	792.47	3/2$^+$	97.79	5/2$^+$	M1,E2		0.00185 *6*	α(K)exp=0.0020 *4* α(K)=0.00162 *5*; α(L)=0.000186 *8*; α(M)=3.32×10^{-5} *14* α(N)=5.03×10^{-6} *19*; α(O)=2.80×10^{-7} *5*
791.2 *7*	16 *7*	889.1	3/2$^+$	97.79	5/2$^+$				α(K)exp≈0.0008
792.8 *7*	16 *7*	792.47	3/2$^+$	0	1/2$^+$	(M1,E2)		1.34×10^{-3} *2*	α(K)exp=0.0016 *7* α(K)=0.001180 *17*; α(L)=0.000134 *3*; α(M)=2.39×10^{-5} *5* α(N)=3.63×10^{-6} *7*; α(O)=2.04×10^{-7} *4*
807.8 *2*	14 *2*	905.43	1/2$^+$	97.79	5/2$^+$	E2		1.28×10^{-3}	α(K)exp=0.0013 *3* α(K)=0.001128 *16*; α(L)=0.0001296 *19*; α(M)=2.31×10^{-5} *4*

$^{99}_{42}Mo_{57}$-3

^{98}Mo(d,pγ) 1975Di15 (continued)

$\gamma(^{99}Mo)$ (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[b]	Comments
								α(N)=3.51×10^{-6} *5*; α(O)=1.93×10^{-7} *3* Mult.: M1 or E2 from α(K)exp, but only E2 is allowed by J^π.
846.8 *2*	17[&] *4*	944.53	(5/2)$^+$	97.79	5/2$^+$	M1,E2	1.15×10^{-3} *2*	α(K)exp=0.0011 *3* α(K)=0.001011 *16*; α(L)=0.0001145 *18*; α(M)=2.04×10^{-5} *4* α(N)=3.11×10^{-6} *5*; α(O)=1.75×10^{-7} *4*
889.1 *4*	12 *3*	889.1	3/2$^+$	0	1/2$^+$	M1,E2	1.03×10^{-3} *2*	α(K)exp=0.0007 *2* α(K)=0.000904 *17*; α(L)=0.0001021 *15*; α(M)=1.82×10^{-5} *3* α(N)=2.77×10^{-6} *4*; α(O)=1.56×10^{-7} *4*
903.0 *5*	4[#]	1254.3	5/2$^+$	351.30	3/2$^+$			α(K)exp≈0.0014
905.6 *5*	6 *2*	905.43	1/2$^+$	0	1/2$^+$	M1,E2	9.85×10^{-4} *18*	α(K)exp=0.0009 *4* α(K)=0.000867 *17*; α(L)=9.78×10^{-5} *14*; α(M)=1.745×10^{-5} *25* α(N)=2.66×10^{-6} *4*; α(O)=1.50×10^{-7} *4*
928.0 *5*	12 *2*	1025.51	(3/2$^+$,5/2$^+$)	97.79	5/2$^+$	(M1,E2)	9.31×10^{-4} *19*	α(K)exp=0.0006 *2* α(K)=0.000820 *17*; α(L)=9.24×10^{-5} *14*; α(M)=1.649×10^{-5} *25* α(N)=2.51×10^{-6} *4*; α(O)=1.42×10^{-7} *4*
944.7 *4*	7 *2*	944.53	(5/2)$^+$	0	1/2$^+$			α(K)exp≈0.0005
1025.8 *4*	7 *2*	1025.51	(3/2$^+$,5/2$^+$)	0	1/2$^+$	(M1,E2)	7.44×10^{-4} *19*	α(K)exp=0.0008 *3* α(K)=0.000656 *17*; α(L)=7.36×10^{-5} *15*; α(M)=1.31×10^{-5} *3* α(N)=2.00×10^{-6} *5*; α(O)=1.13×10^{-7} *4*
1044.9 *5*	7 *3*	1280.4		235.47	7/2$^+$			
1090.5 *7*	8 *3*	1441.8	(3/2,5/2)$^+$	351.30	3/2$^+$			
1166.1 *4*	8 *2*	1166.1	5/2$^+$	0	1/2$^+$			
1219.0 *10*	≈9[#]	1570.3	1/2,3/2,5/2$^+$	351.30	3/2$^+$			

[†] In-beam intensity at E=8 MeV.
[‡] From α(K)exp.
[#] Derived from $\gamma\gamma$.
[@] Strongly affected by ^{99}Tc γ.
[&] Deduced from pγ.
[a] Both pure M1 and E1 are within experimental uncertainty limits.
[b] Additional information 1.
[c] If No value given it was assumed δ=1.00 for E2/M1, δ=1.00 for E3/M2 and δ=0.10 for the other multipolarities.

$^{99}_{42}Mo_{57}$-4

^{98}Mo(d,pγ) 1975Di15

Level Scheme

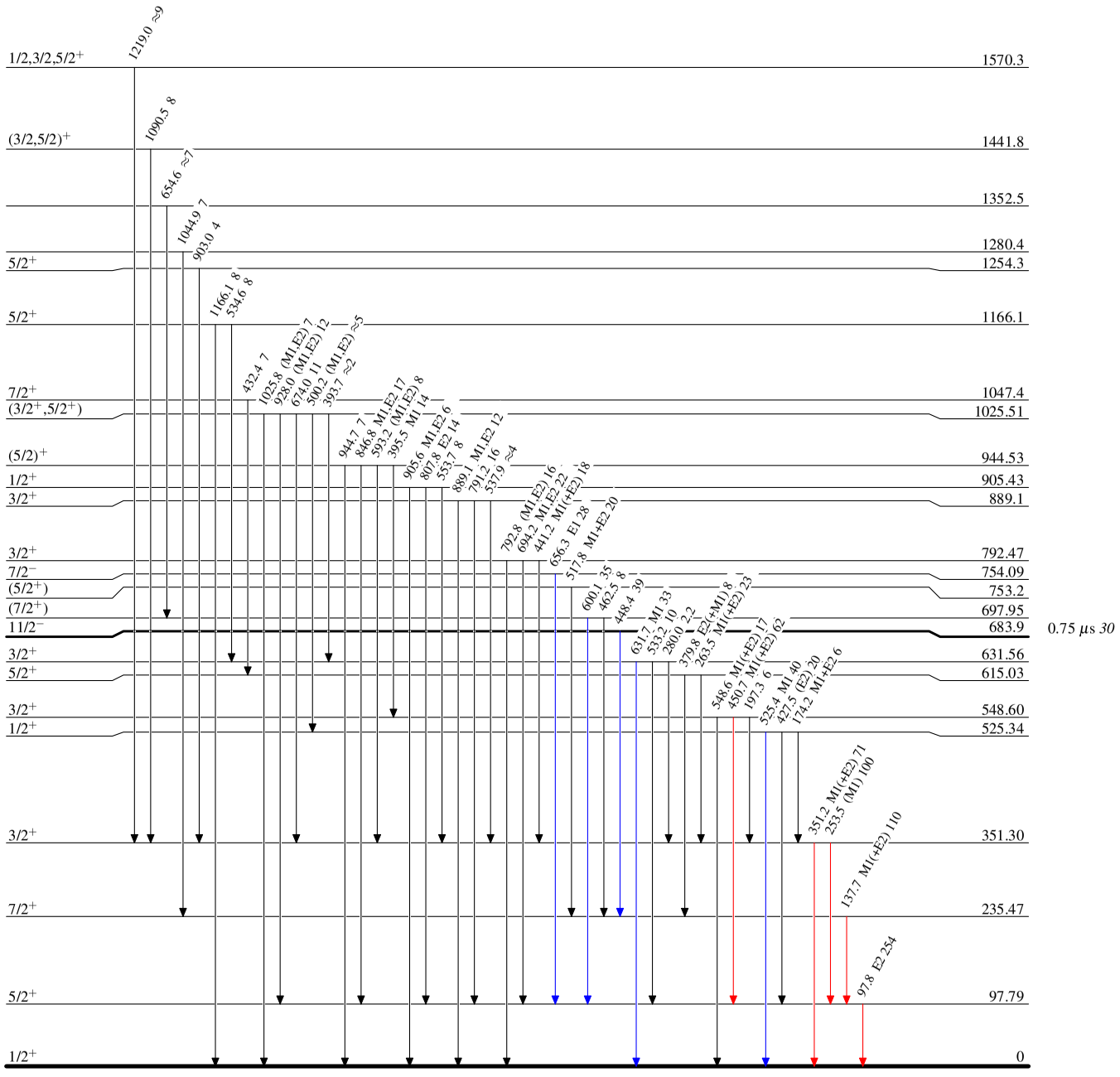
Intensities: Relative I_γ

Legend

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

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

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



$^{99}_{42}Mo_{57}$