^{98}Mo(^{3}He,pnγ) 1998Cr01

History

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

E=13.5, 15, 16.5 and 18 MeV. Measured Eγ, Iγ, $\gamma\gamma$, excitation functions, $\gamma(\theta)$, and $\gamma\gamma(\theta)$(DCO) using two Ge detectors.
1947.3 level shown in figure 4 of 1998Cr01 decaying by 475.9 gamma does not exist.
Additional information 1.

^{99}Tc Levels

E(level)[†]	J$^{\pi}$[‡]	Comments
0.0[#]	9/2$^+$	
140.641[#] *23*	7/2$^+$	
142.69[@] *4*	1/2$^-$	
181.207[#] *25*	5/2$^+$	
509.03[@] *4*	3/2$^-$	
612.40[@] *4*	5/2$^-$	
625.60 *4*	(9/2)$^+$	
671.53[&] *4*	3/2$^-$	
719.51 *5*	7/2$^+$	
726.80[#] *4*	11/2$^+$	
739.30 *3*	(7/2$^+$)	
761.90 *4*	5/2$^+$	
761.99[#] *4*	13/2$^+$	
884.31[a] *4*	(5/2$^-$)	
920.61[b] *5*	1/2$^+$	
986.25[@] *4*	(7/2$^-$)	
1004.19 *6*	3/2$^{(-)}$	J$^{\pi}$: assignment to π1/2[431] band not correct if π=−.
1019.88[b] *4*	(5/2$^+$,7/2$^+$)	
1081.32 *4*	(11/2$^+$)	
1127.33 *21*		
1129.13 *6*	(3/2)$^-$	
1135.05[&] *4*	(5/2$^-$)	
1141.85 *5*	3/2$^+$	
1149.57 *4*	(9/2$^+$)	
1176.53[@] *5*	9/2$^-$	
1198.64 *7*	(3/2$^-$)	
1203.47 *5*	(9/2$^+$)	
1207.31[a] *4*	(7/2$^-$)	
1243.89[b] *5*	(7/2$^+$)	
1306.40 *6*	(7/2$^+$)	
1309.23 *15*		
1320.72 *5*	3/2$^-$	
1329.49[&] *4*	(7/2$^-$)	E(level): 1320.77, J^{π}=3/2$^-$ in Figure 3 of 1998Cr01 is a misprint.
1405.50 *6*	(1/2$^-$,3/2$^-$)	
1426.27 *6*	(9/2$^+$,7/2$^+$)	
1444.23 *6*	(1/2$^+$,3/2$^+$,5/2)	
1494.24 *12*		
1503.82 *5*	(3/2$^+$,5/2$^+$)	
1507.09 *5*	(13/2$^+$,15/2$^+$)	
1526.51[#] *5*	(15/2$^+$)	
1552.13 *15*	(3/2$^+$)	
1552.59 *6*	(7/2$^+$)	

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^{98}Mo(^{3}He,pnγ) 1998Cr01 (continued)

^{99}Tc Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	Comments
1554.55 *21*	1/2$^+$	
1563.25 *6*	(5/2$^+$,7/2$^+$,9/2$^+$)	
1565.19 *6*	(5/2$^+$,7/2$^+$,9/2$^+$)	
1566.21 *20*	(11/2$^+$)	
1581.26 *5*	(11/2$^+$,13/2$^+$)	
1585.04 *6*	17/2$^+$	
1604.98[@] *7*	(11/2$^-$)	
1611.41 *15*	(1/2$^-$,3/2$^-$,5/2$^-$)	E(level): 1604.91, J^{π}=(11/2$^-$) in Figure 4 of 1998Cr01 is a misprint.
1622.05 *21*		
1659.13 *6*	(3/2$^+$,5/2$^+$,7/2$^+$)	
1678.27 *6*	(5/2)$^+$	
1747.45[@] *7*	13/2$^-$	
1753.00 *21*		
1790.40 *21*		
1808.42 *21*	(3/2$^+$,5/2$^+$)	
1823.75 *15*	(3/2$^+$,5/2$^+$)	
1853.33 *21*		
1875.00 *21*		Additional information 2.
1947.33 *21*		
2329.96 *21*	17/2$^-$	Additional information 3.
2367.24 *21*		

[†] Deduced by evaluators from least-squares fit to Eγ's.
[‡] As proposed in 1998Cr01 based on their $\gamma(\theta)$, $\gamma\gamma(\theta)$ (DCO), and excitation measurements. See also Adopted Levels.
[#] Band(A): π5/2[422] Quasi band.
[@] Band(B): π1/2[301] band.
[&] Band(C): π3/2[301] band.
[a] Band(D): π5/2[303] band.
[b] Band(E): π1/2[431] band.

γ(^{99}Tc)

E$_{\gamma}$[†]	I$_{\gamma}$	E$_i$(level)	J$_i^{\pi}$	E$_f$	J$_f^{\pi}$	Comments
103.6 *2*	0.7	612.40	5/2$^-$	509.03	3/2$^-$	
140.77 *5*	100	140.641	7/2$^+$	0.0	9/2$^+$	A$_2$=+0.02 *3*.
142.68 *5*		142.69	1/2$^-$	0.0	9/2$^+$	
162.64 *5*	4.2	671.53	3/2$^-$	509.03	3/2$^-$	A$_2$=+0.09 *5*.
181.23 *5*	47.7	181.207	5/2$^+$	0.0	9/2$^+$	A$_2$=+0.10 *2*.
190.6 *2*	0.4[#]	1176.53	9/2$^-$	986.25	(7/2$^-$)	
212.94 *5*	4.4	884.31	(5/2$^-$)	671.53	3/2$^-$	E$_{\gamma}$: level-energy difference=212.78. A$_2$=0.00 *3*.
250.82[&] *5*	0.8	1135.05	(5/2$^-$)	884.31	(5/2$^-$)	
266.7[b] *2*	0.9[b]	986.25	(7/2$^-$)	719.51	7/2$^+$	
271.94 *5*	5.1	884.31	(5/2$^-$)	612.40	5/2$^-$	A$_2$=+0.13 *3*.
323.00 *5*	2.1	1207.31	(7/2$^-$)	884.31	(5/2$^-$)	A$_2$=+0.23 *10*.
366.39 *5*	33.9	509.03	3/2$^-$	142.69	1/2$^-$	A$_2$=+0.01 *2*.
373.80 *5*	5.4	986.25	(7/2$^-$)	612.40	5/2$^-$	A$_2$=−0.17 *3*.
375.7[b] *2*	0.4[b]	884.31	(5/2$^-$)	509.03	3/2$^-$	
379.97 *5*	1.0	1141.85	3/2$^+$	761.90	5/2$^+$	A$_2$=−0.02 *5*.

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^{98}Mo(^{3}He,pnγ) 1998Cr01 (continued)

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

E_γ [†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
410.3[&] 2	0.6[@]	1552.13	(3/2$^+$)	1141.85	3/2$^+$	A_2=+0.10 *10*.
412.7 2	0.6[#]	1554.55	1/2$^+$	1141.85	3/2$^+$	
437.15[b] 5	1.3[b]	1176.53	9/2$^-$	739.30	(7/2$^+$)	A_2=−0.10 *6*.
444.4 2	0.3	625.60	(9/2)$^+$	181.207	5/2$^+$	
457.59 5	2.3	1129.13	(3/2)$^-$	671.53	3/2$^-$	A_2=+0.09 *5*.
469.70 5	45.1	612.40	5/2$^-$	142.69	1/2$^-$	A_2=+0.20 *2*.
477.1 2	0.8	986.25	(7/2$^-$)	509.03	3/2$^-$	
484.98 5	3.0	625.60	(9/2)$^+$	140.641	7/2$^+$	A_2=+0.36 *7*.
508.1[&] 2	0.4	1494.24		986.25	(7/2$^-$)	
522.71 5	4.0	1135.05	(5/2$^-$)	612.40	5/2$^-$	A_2=−0.13 *3*.
528.80 5	18.7	671.53	3/2$^-$	142.69	1/2$^-$	A_2=+0.06 *2*.
535.72[&] 5	1.9	1207.31	(7/2$^-$)	671.53	3/2$^-$	A_2=+0.19 *8*.
538.31 5	11.9	719.51	7/2$^+$	181.207	5/2$^+$	A_2=+0.18 *2*.
558.17 5	1.6	739.30	(7/2$^+$)	181.207	5/2$^+$	A_2=−0.10 *9*.
564.17 5	10.7	1176.53	9/2$^-$	612.40	5/2$^-$	A_2=+0.29 *3*.
570.90 5	3.9	1747.45	13/2$^-$	1176.53	9/2$^-$	A_2=+0.37 *5*.
578.9 2	0.8[‡]	719.51	7/2$^+$	140.641	7/2$^+$	A_2=0.00 *11*.
581.1 2	1.7[‡]	761.90	5/2$^+$	181.207	5/2$^+$	A_2=−0.06 *8*.
581.7[&b] 2	0.4[b]	1207.31	(7/2$^-$)	625.60	(9/2)$^+$	
582.5 2	0.7	2329.96	17/2$^-$	1747.45	13/2$^-$	
586.23 5	2.3	726.80	11/2$^+$	140.641	7/2$^+$	A_2=+0.40 *6*.
598.68 5	5.0	739.30	(7/2$^+$)	140.641	7/2$^+$	A_2=+0.05 *4*.
609.8[&] 2	0.6[@]	1494.24		884.31	(5/2$^-$)	
609.98[b] 5	1.5[@b]	1329.49	(7/2$^-$)	719.51	7/2$^+$	A_2=+0.13 *6*.
618.2[b] 2	0.4[‡b]	1243.89	(7/2$^+$)	625.60	(9/2)$^+$	
618.3 2	0.7[‡]	1127.33		509.03	3/2$^-$	
618.73 5	2.1[‡]	1604.98	(11/2$^-$)	986.25	(7/2$^-$)	A_2=+0.30 *7*.
620.2[&] 2	0.7[‡]	1129.13	(3/2)$^-$	509.03	3/2$^-$	
621.18 5	14.5	761.90	5/2$^+$	140.641	7/2$^+$	A_2=+0.005 *2*.
625.57 5	15.1[‡]	625.60	(9/2)$^+$	0.0	9/2$^+$	A_2=+0.23 *2*.
625.87[&] 5	1.4[‡]	1135.05	(5/2$^-$)	509.03	3/2$^-$	
631.5 2	1.1[#]	1552.13	(3/2$^+$)	920.61	1/2$^+$	A_2=−0.15 *5*.
676.8 2	0.9[#]	1853.33		1176.53	9/2$^-$	
689.61 5	1.5	1198.64	(3/2$^-$)	509.03	3/2$^-$	A_2=+0.10 *4*.
699.47 5	1.5	1426.27	(9/2$^+$,7/2$^+$)	726.80	11/2$^+$	A_2=+0.09 *9*.
702.94 5	2.1	884.31	(5/2$^-$)	181.207	5/2$^+$	E_γ: level-energy difference=703.10. A_2=+0.14 *5*.
708.30[&] 5	1.1	1320.72	3/2$^-$	612.40	5/2$^-$	
716.97[&] 5	1.4	1329.49	(7/2$^-$)	612.40	5/2$^-$	A_2=+0.21 *10*.
726.71 5	16.4	726.80	11/2$^+$	0.0	9/2$^+$	A_2=+0.46 *2*.
726.9[&] 2	0.5[‡]	1611.41	(1/2$^-$,3/2$^-$,5/2$^-$)	884.31	(5/2$^-$)	
733.95 5	1.5	1405.50	(1/2$^-$,3/2$^-$)	671.53	3/2$^-$	
739.15 5	14.8[‡]	739.30	(7/2$^+$)	0.0	9/2$^+$	
739.39 5	7.1[‡]	920.61	1/2$^+$	181.207	5/2$^+$	
743.8 2	2.2[‡]	884.31	(5/2$^-$)	140.641	7/2$^+$	A_2=−0.06 *7*.
745.10[&] 5	1.3[@]	1507.09	(13/2$^+$,15/2$^+$)	761.99	13/2$^+$	A_2=+0.34 *17*.
761.98[c] 5	3.2[c]	761.90	5/2$^+$	0.0	9/2$^+$	
761.98[c] 5	19.8[c]	761.99	13/2$^+$	0.0	9/2$^+$	A_2=+0.31 *2*.
764.48 5	3.2	1526.51	(15/2$^+$)	761.99	13/2$^+$	A_2=+0.32 *10*.

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^{98}Mo(^{3}He,pnγ) 1998Cr01 (continued)

γ(^{99}Tc) (continued)

E_γ †	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
764.55 *5*	1.5‡	1503.82	(3/2$^+$,5/2$^+$)	739.30	(7/2$^+$)	A_2=+0.05 *9*.
770.8 *2*	0.5#	1947.33		1176.53	9/2$^-$	
777.92 *5*	3.3	920.61	1/2$^+$	142.69	1/2$^-$	
780.28 *5*	1.5#	1507.09	(13/2$^+$,15/2$^+$)	726.80	11/2$^+$	A_2=+0.29 *14*.
782.2 *2*	0.8‡	2367.24		1585.04	17/2$^+$	
799.74& *5*	1.6	1526.51	(15/2$^+$)	726.80	11/2$^+$	A_2=+0.32 *10*.
805.12 *5*	2.2	986.25	(7/2$^-$)	181.207	5/2$^+$	A_2=−0.18 *5*.
811.70 *5*	1.6	1320.72	3/2$^-$	509.03	3/2$^-$	A_2=+0.14 *6*.
819.28& *5*	1.0#	1581.26	(11/2$^+$,13/2$^+$)	761.99	13/2$^+$	A_2=−0.27 *13*.
822.98 *5*	11.3‡	1004.19	3/2$^{(-)}$	181.207	5/2$^+$	A_2=−0.03 *3*.
823.04 *5*	3.7‡	1585.04	17/2$^+$	761.99	13/2$^+$	A_2=+0.31 *5*.
832.2& *2*	0.5#	1444.23	(1/2$^+$,3/2$^+$,5/2)	612.40	5/2$^-$	
838.65& *5*	5.1	1019.88	(5/2$^+$,7/2$^+$)	181.207	5/2$^+$	A_2=+0.10 *4*.
845.6 *2*	1.0‡	986.25	(7/2$^-$)	140.641	7/2$^+$	
854.0& *2*	0.3	1581.26	(11/2$^+$,13/2$^+$)	726.80	11/2$^+$	
879.26 *5*	7.6	1019.88	(5/2$^+$,7/2$^+$)	140.641	7/2$^+$	A_2=+0.04 *4*.
896.6& *2*	0.6	1405.50	(1/2$^-$,3/2$^-$)	509.03	3/2$^-$	
935.2& *2*	0.6#	1444.23	(1/2$^+$,3/2$^+$,5/2)	509.03	3/2$^-$	
939.4& *2*	0.5‡	1678.27	(5/2)$^+$	739.30	(7/2$^+$)	
940.65& *5*	2.9	1081.32	(11/2$^+$)	140.641	7/2$^+$	A_2=+0.22 *4*.
953.9& *2*	1.0#	1135.05	(5/2$^-$)	181.207	5/2$^+$	A_2=+0.21 *15*.
955.67 *5*	1.4	1581.26	(11/2$^+$,13/2$^+$)	625.60	(9/2)$^+$	A_2=+0.42 *22*.
960.62 *5*	8.4	1141.85	3/2$^+$	181.207	5/2$^+$	A_2=+0.05 *6*.
968.31 *5*	3.3	1149.57	(9/2$^+$)	181.207	5/2$^+$	A_2=+0.26 *5*.
985.9*b*& *2*	0.6#*b*	1747.45	13/2$^-$	761.99	13/2$^+$	
999.2 *2*	0.8	1611.41	(1/2$^-$,3/2$^-$,5/2$^-$)	612.40	5/2$^-$	A_2=+0.10 *18*.
1008.98& *5*	3.0#	1149.57	(9/2$^+$)	140.641	7/2$^+$	A_2=−0.29 *4*.
1026.14&*b* *5*	1.4*b*	1207.31	(7/2$^-$)	181.207	5/2$^+$	A_2=−0.10 *7*.
1061.9& *2*	0.8‡	1823.75	(3/2$^+$,5/2$^+$)	761.90	5/2$^+$	
1062.5& *2*	3.7‡	1203.47	(9/2$^+$)	140.641	7/2$^+$	A_2=−0.01 *5*.
1062.72 *5*	3.0‡	1243.89	(7/2$^+$)	181.207	5/2$^+$	A_2=−0.14 *2*.
1081.33 *5*	5.0	1081.32	(11/2$^+$)	0.0	9/2$^+$	A_2=−0.41 *5*.
1084.4 *2*	0.9	1823.75	(3/2$^+$,5/2$^+$)	739.30	(7/2$^+$)	
1103.1& *2*	0.6#	1243.89	(7/2$^+$)	140.641	7/2$^+$	
1113.1 *2*	0.8	1875.00		761.90	5/2$^+$	
1125.20 *5*	3.2	1306.40	(7/2$^+$)	181.207	5/2$^+$	Additional information 4. A_2=−0.14 *8*.
1127.4 *2*	0.8‡	1753.00		625.60	(9/2)$^+$	
1128.4 *2*	0.9‡	1309.23		181.207	5/2$^+$	
1164.8 *2*	0.8‡	1790.40		625.60	(9/2)$^+$	
1165.5& *2*	0.7‡	1306.40	(7/2$^+$)	140.641	7/2$^+$	Additional information 5. A_2=+0.24 *9*.
1168.2& *2*	0.6	1309.23		140.641	7/2$^+$	
1188.94& *5*	1.5#	1329.49	(7/2$^-$)	140.641	7/2$^+$	A_2=+0.24 *10*.
1203.48 *5*	1.5	1203.47	(9/2$^+$)	0.0	9/2$^+$	A_2=+0.22 *9*.
1207.32*ab* *5*	1.3*b*	1207.31	(7/2$^-$)	0.0	9/2$^+$	
1243.4&*a* *2*	1.7	1243.89	(7/2$^+$)	0.0	9/2$^+$	
1262.99 *5*	1.3#	1444.23	(1/2$^+$,3/2$^+$,5/2)	181.207	5/2$^+$	A_2=+0.17 *14*.

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^{98}Mo(^{3}He,pnγ) 1998Cr01 (continued)

γ(^{99}Tc) (continued)

E_γ[†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
1285.7[&] *2*	1.4	1426.27	(9/2$^+$,7/2$^+$)	140.641	7/2$^+$	A_2=−0.29 *17*.
1353.6 *2*	0.7[#]	1494.24		140.641	7/2$^+$	
1363.13[&] *5*	1.2[#]	1503.82	(3/2$^+$,5/2$^+$)	140.641	7/2$^+$	A_2=+0.04 *11*.
1371.36 *5*	2.0	1552.59	(7/2$^+$)	181.207	5/2$^+$	A_2=0.00 *7*.
1412.2[&] *2*	1.2	1552.59	(7/2$^+$)	140.641	7/2$^+$	
1422.60 *5*	1.1[@]	1563.25	(5/2$^+$,7/2$^+$,9/2$^+$)	140.641	7/2$^+$	A_2=−0.37 *12*.
1424.54 *5*	1.1	1565.19	(5/2$^+$,7/2$^+$,9/2$^+$)	140.641	7/2$^+$	A_2=−0.21 *11*.
1477.91 *5*	1.7	1659.13	(3/2$^+$,5/2$^+$,7/2$^+$)	181.207	5/2$^+$	A_2=−0.13 *13*.
1481.4 *2*	0.9[#]	1622.05		140.641	7/2$^+$	
1507.1[a] *2*	1.1	1507.09	(13/2$^+$,15/2$^+$)	0.0	9/2$^+$	
1537.59 *5*	1.1[#]	1678.27	(5/2)$^+$	140.641	7/2$^+$	A_2=−0.07 *21*.
1566.2 *2*	1.7	1566.21	(11/2$^+$)	0.0	9/2$^+$	A_2=−0.34 *10*.
1627.2 *2*	1.1	1808.42	(3/2$^+$,5/2$^+$)	181.207	5/2$^+$	

[†] Uncertainties of 0.05 and 0.2 keV are assigned based on a general comment in 1998Cr01.
[‡] Separate intensity is given for different components of closely spaced peaks in the spectrum, based on singles and coincidence data.
[#] The quoted intensity accounts for contribution from an impurity line.
[@] Contribution from an impurity and the other component of the doublet in ^{99}Tc has been subtracted in 1998Cr01.
[&] Observed in coincidence with following γ-rays, but placement is based on level-energy difference. In footnote 'b' in Table I of 1998Cr01, ^{97}Tc should read ^{99}Tc.
[a] Placement based on level-energy difference.
[b] γ missing in branching ratios given in Table V of 1998Cr01.
[c] Multiply placed with intensity suitably divided.

^{98}Mo(^{3}He,pnγ) 1998Cr01

Level Scheme

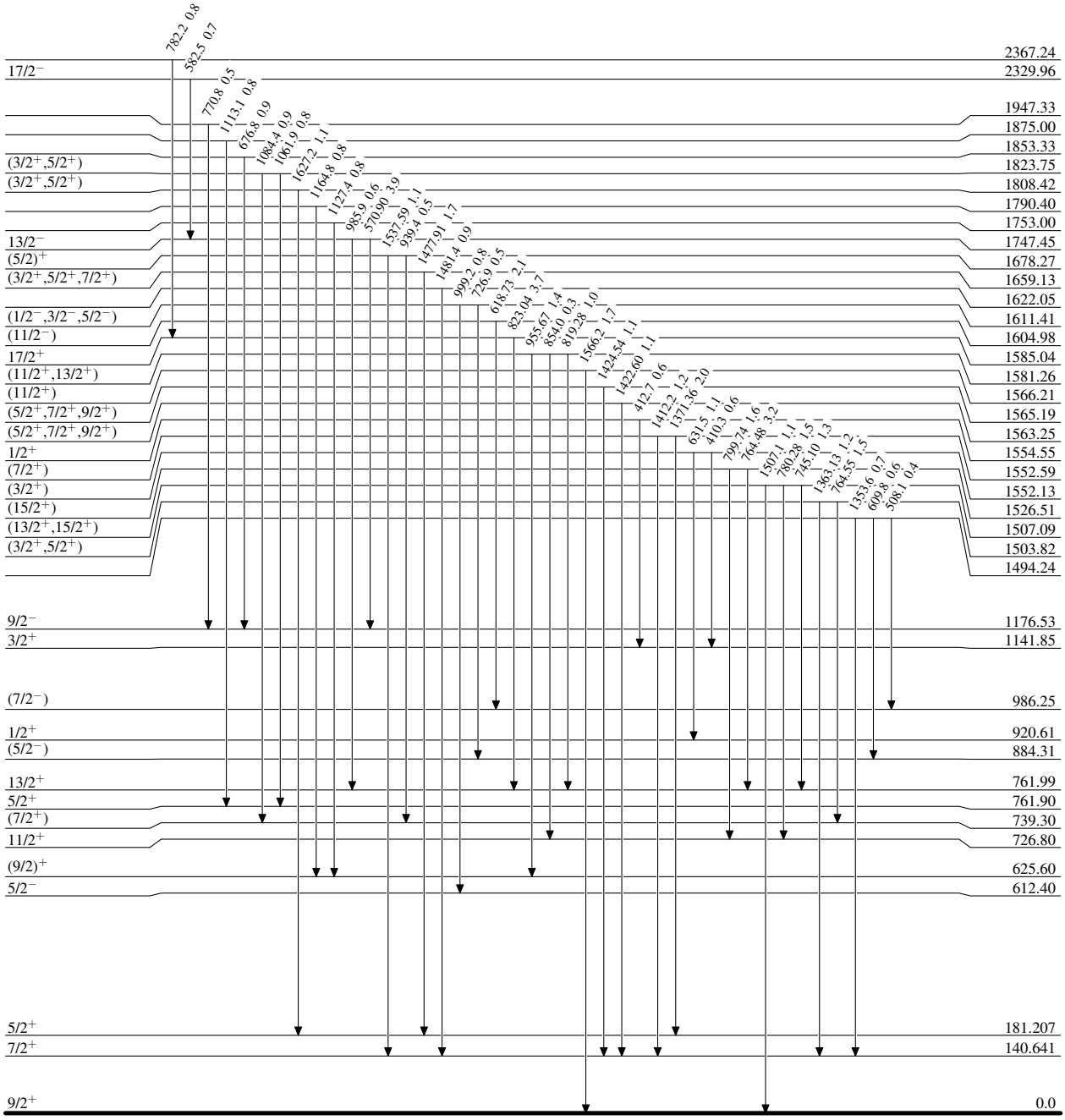
Intensities: Relative I_γ

Legend

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

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

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



$^{99}_{43}Tc_{56}$

^{98}Mo(^{3}He,pnγ) 1998Cr01

Level Scheme (continued)

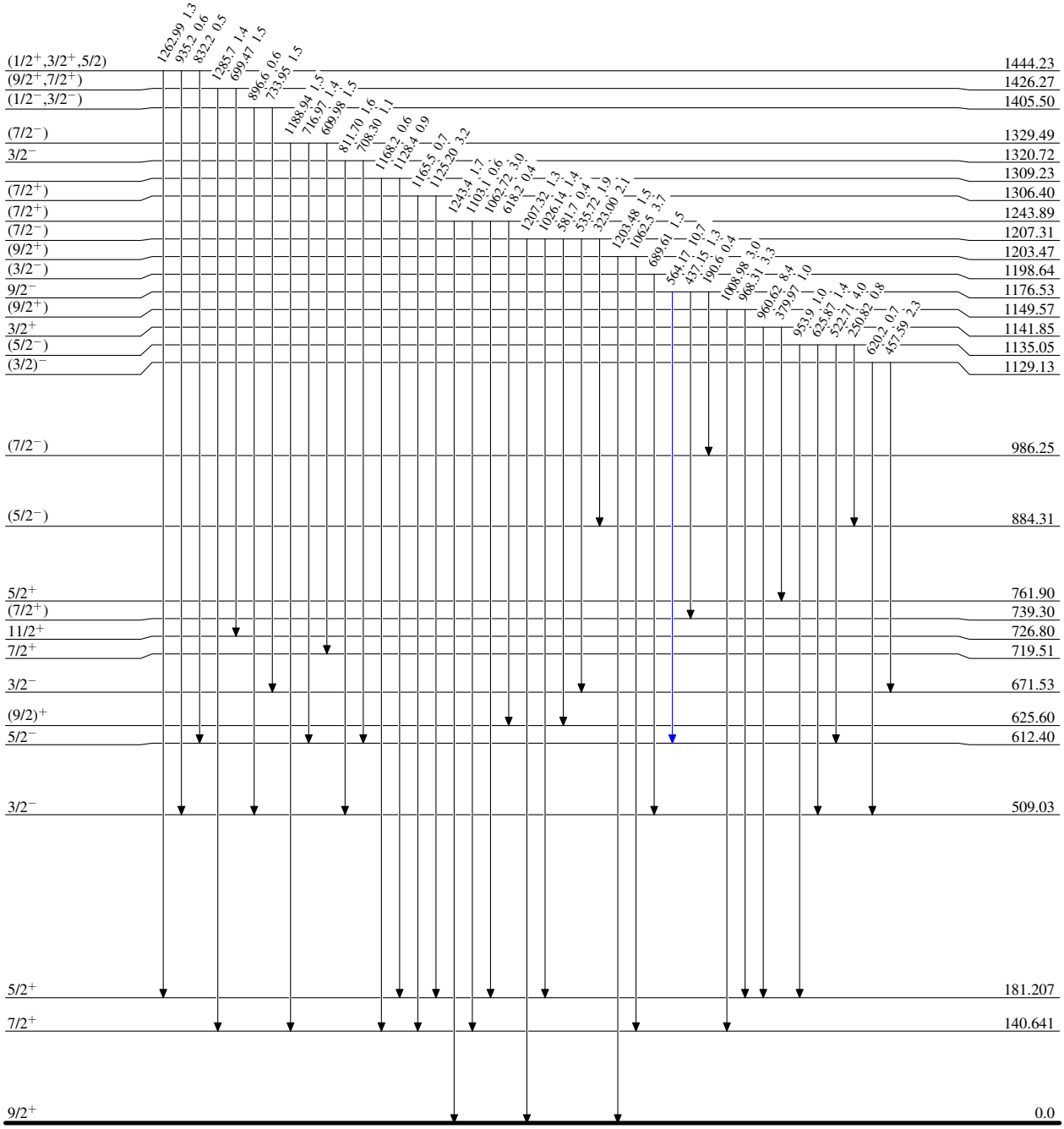
Intensities: Relative I_γ

Legend

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

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

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



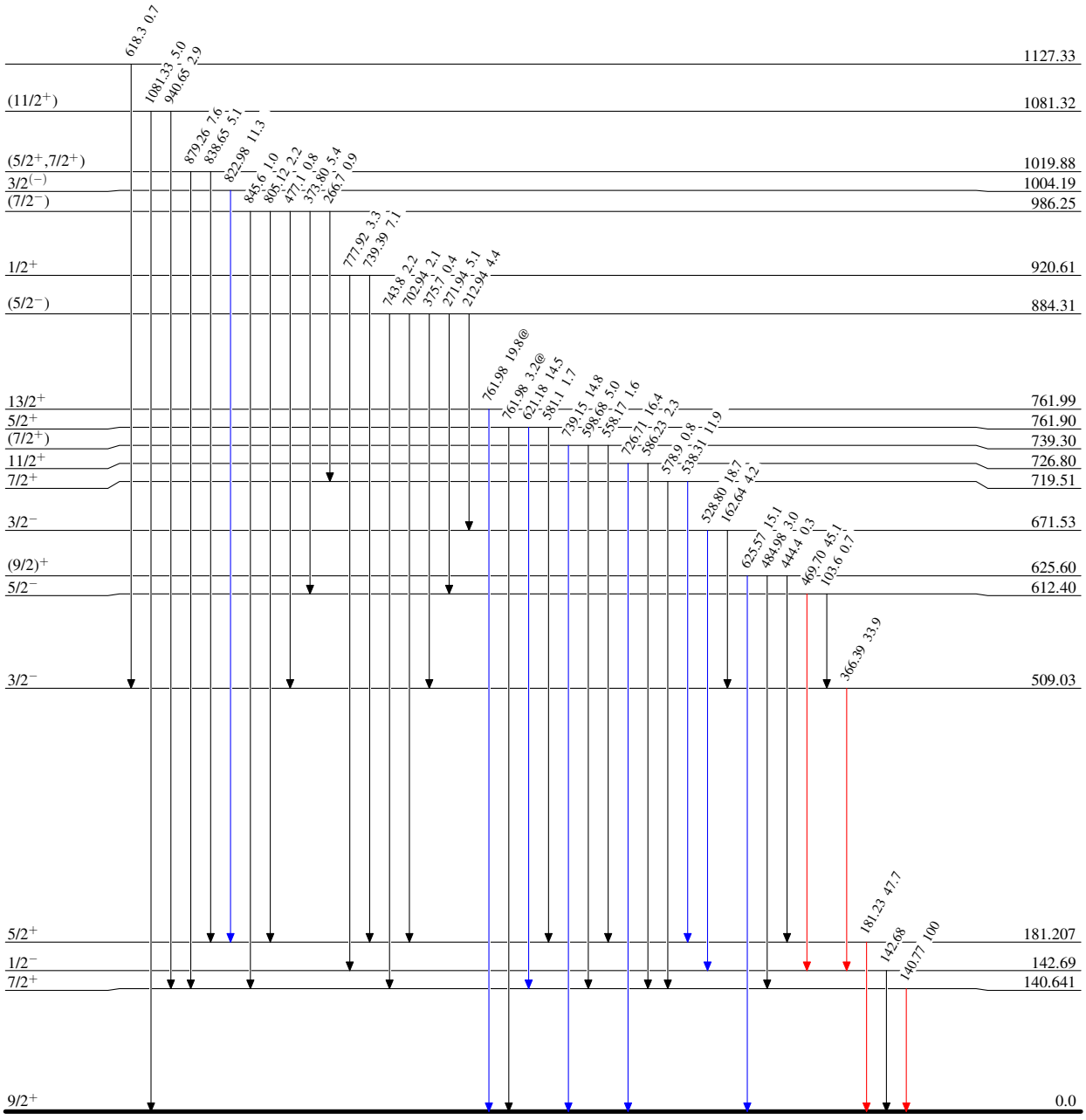
$^{99}_{43}Tc_{56}$

^{98}Mo(^{3}He,pnγ) 1998Cr01

Level Scheme (continued)

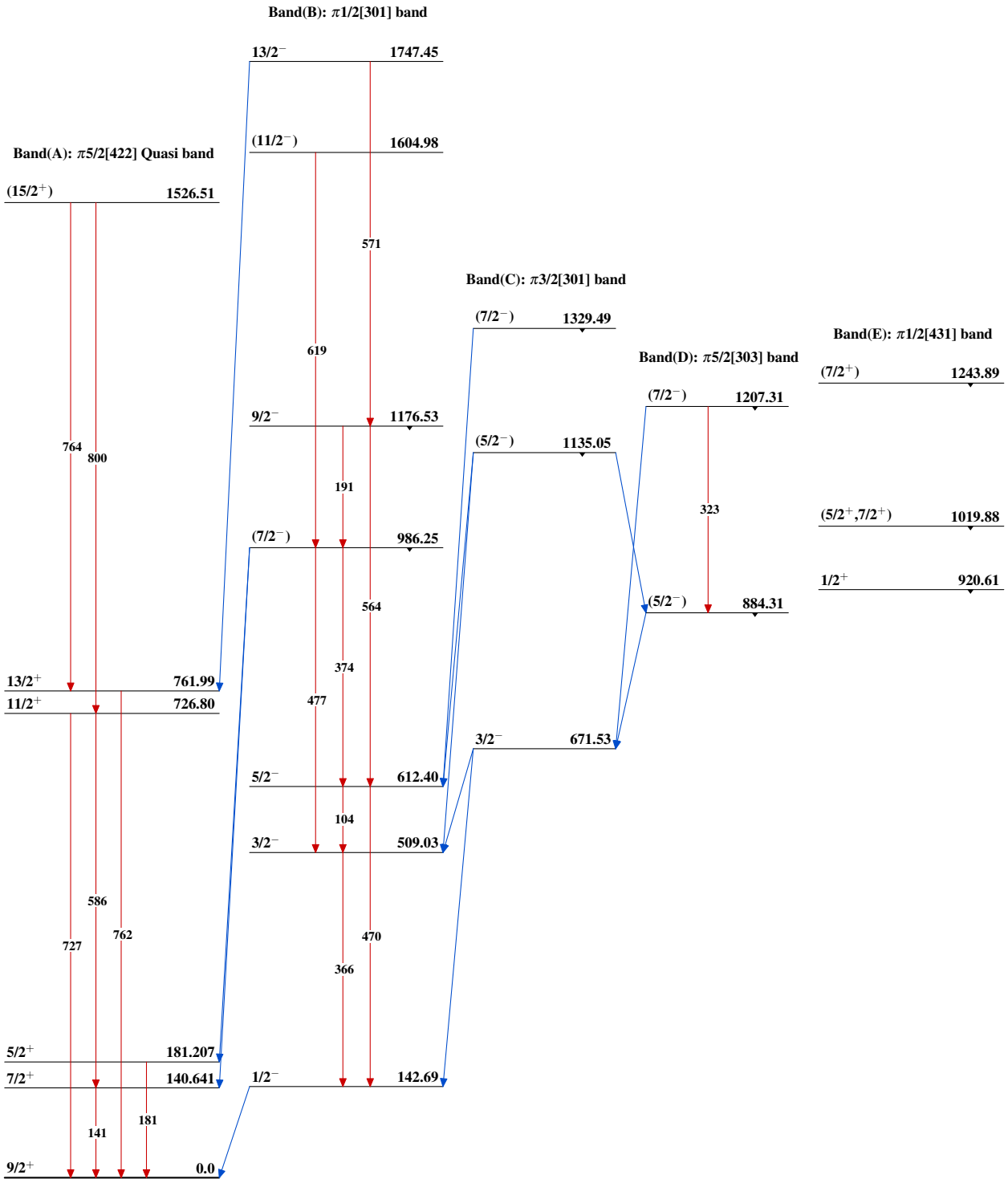
Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



$^{99}_{43}Tc_{56}$

^{98}Mo(^{3}He,pnγ) 1998Cr01



$^{99}_{43}Tc_{56}$