^{110}Mo β^- decay 1994Lh02,2004Wa03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	G. Gürdal and F. G. Kondev	NDS 113, 1315 (2012)	1-Aug-2011

Parent: ^{110}Mo: E=0; $J^\pi=0^+$; $T_{1/2}$=0.296 s *17*; Q(β^-)=6480 *30*; %β^- decay=100.0

1994Lh02: Source produced via ^{232}Th(p,F) reaction. Detection system : IGISOL on-line mass separator, collecting tape, one plastic scintillator, one γ-x Ge and one large Ge detectors. Production rate of ^{110}Mo was around 4 atoms/s (quoted by 2004Wa03). Measured: $\beta\gamma$, $\gamma\gamma$, $\beta\gamma$(t), $T_{1/2}$, ce.

2004Wa03: Source produced via ^{238}U(p,F) reaction. Detection system : IGISOL on-line mass separator, collecting tape, two plastic scintillators and three Ge detectors. Production rate of ^{110}Mo was 42 atoms/s. Measured: $\beta\gamma$, $\gamma\gamma$, $\beta\gamma$(t).

^{110}Tc Levels

E(level)[†]	J^π[‡]	$T_{1/2}$	Comments
0.0	(2,3$^+$)	0.900 s *13*	J^π,$T_{1/2}$: From Adopted Levels.
39.50 *9*			
53.30 *10*	(1$^+$)		J^π: From Adopted Levels.
142.05 *11*	(1$^+$)	<10 ns	$T_{1/2}$: From 1994Lh02.
185.00 *15*	(1$^+$)		
263.00 *10*	(1$^+$)		J^π: From Adopted Levels.
467.58 *12*	(1$^+$)		
589.6 *4*			
740.65 *11*	(1$^+$)		J^π: From Adopted Levels.
908.75 *15*	(1$^+$)		

[†] From a least-square fit to E_γ.

[‡] From 2004Wa03 and 1994Lh02, unless otherwise noted. However, since the decay scheme is incomplete such assignments should be considered as tentative.

β^- radiations

E(decay)	E(level)	Iβ^-[†#]	Log *ft*[‡]	Comments
(5.57×10^3 *3*)	908.75	3.3 *4*	5.35 *6*	av Eβ=2485 *15*
(5.74×10^3 *3*)	740.65	38 *3*	4.35 *5*	av Eβ=2566 *15*
(5.89×10^3 *3*)	589.6	1.15 *22*	5.92 *9*	av Eβ=2638 *15*
(6.01×10^3 *3*)	467.58	2.3 *5*	5.65 *10*	av Eβ=2697 *15*
(6.22×10^3 *3*)	263.00	24.9 *21*	4.69 *5*	av Eβ=2795 *15*
(6.30×10^3 *3*)	185.00	9.4 *7*	5.13 *5*	av Eβ=2832 *15*
(6.34×10^3 *3*)	142.05	4.2 *12*	5.50 *13*	av Eβ=2853 *15* Iβ^-: Quoted as 13% in the text, but listed as 2.5% 12 in Table 2 in 2004Wa03.
(6.43×10^3 *3*)	53.30	17.2 *17*	4.91 *6*	av Eβ=2895 *15*

[†] From intensity balances and the adopted level scheme by the evaluators. However, the decay scheme suffers from pandemonium, thus the quoted values should be considered as tentative.

[‡] Since the decay scheme is incomplete, due to pandemonium, the values are tentative.

[#] Absolute intensity per 100 decays.

^{110}Mo β^- decay 1994Lh02,2004Wa03 (continued)

$\gamma(^{110}Tc)$

Iγ normalization: From Σ Ti(g.s.)=100. Direct β^- feeding to g.s. is assumed to be negligible.

E_γ ‡	I_γ ‡#	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α †	Comments
39.4 *1*	<8	39.50		0.0	(2,3$^+$)	(M1)	4.05	α(K)=3.53 *6*; α(L)=0.430 *7*; α(M)=0.0781 *13*; α(N+..)=0.01316 *21* α(N)=0.01236 *20*; α(O)=0.000800 *13* Mult.: From α(K)exp=2.9 *18* (1994Lh02). However, E1 assignment is also possible.
53.3 *1*	19.8 *9*	53.30	(1$^+$)	0.0	(2,3$^+$)	(M1)	1.68	α(K)=1.464 *22*; α(L)=0.177 *3*; α(M)=0.0322 *5*; α(N+..)=0.00544 *9* α(N)=0.00511 *8*; α(O)=0.000332 *5* Mult.: From α(K)exp=1.4 *7* (1994Lh02). However, E1 assignment is also possible.
121.0 *1*	41.3 *6*	263.00	(1$^+$)	142.05	(1$^+$)	[M1]	0.1644	α(K)=0.1436 *21*; α(L)=0.01714 *25*; α(M)=0.00311 *5*; α(N+..)=0.000527 *8* α(N)=0.000494 *7*; α(O)=3.25×10^{-5} *5*
131.7 *1*	16.6 *5*	185.00	(1$^+$)	53.30	(1$^+$)	[M1]	0.1302	α(K)=0.1138 *17*; α(L)=0.01355 *20*; α(M)=0.00246 *4*; α(N+..)=0.000417 *6* α(N)=0.000391 *6*; α(O)=2.58×10^{-5} *4*
142.1 *2*	100	142.05	(1$^+$)	0.0	(2,3$^+$)	[M1]	0.1059	α(K)=0.0925 *14*; α(L)=0.01099 *16*; α(M)=0.00200 *3*; α(N+..)=0.000338 *5* α(N)=0.000317 *5*; α(O)=2.09×10^{-5} *3*
203.6 *2*	2.0 *4*	467.58	(1$^+$)	263.00	(1$^+$)			E_γ: The least-square fit gives 204.57 keV 9.
223.4 *1*	21.1 *21*	263.00	(1$^+$)	39.50				
262.9 *2*	8.2 *9*	263.00	(1$^+$)	0.0	(2,3$^+$)			
273.0 *1*	2.9 *8*	740.65	(1$^+$)	467.58	(1$^+$)			
325.7 *1*	5.4 *3*	467.58	(1$^+$)	142.05	(1$^+$)			
447.6 *3*	2.3 *4*	589.6		142.05	(1$^+$)			
477.8 *1*	25.6 *15*	740.65	(1$^+$)	263.00	(1$^+$)			
598.4 *1*	39.9 *20*	740.65	(1$^+$)	142.05	(1$^+$)			
741.1 *2*	8.2 *10*	740.65	(1$^+$)	0.0	(2,3$^+$)			
766.7 *1*	6.5 *6*	908.75	(1$^+$)	142.05	(1$^+$)			

† Additional information 1.
‡ From 2004Wa03.
# For absolute intensity per 100 decays, multiply by 0.50 *3*.

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Decay Scheme

Intensities: Relative I_γ