^{108}Mo β^- decay 1995Jo02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	ENSDF	1-Jul-2008

Parent: ^{108}Mo: E=0.0; $J^\pi=0^+$; $T_{1/2}$=1.09 s *2*; Q(β^-)=4650 *SY*; %β^- decay=100.0

^{108}Mo-Q(β^-): 1995Jo02 measured Q(g.s.)= 5120 *40*.

Activity: ^{238}U(p,f), E= 20 MeV, on-line isotope separator IGISOL.

Measured: γ, $\gamma\gamma$, γ(t), ce, Ge(Li), Ge, Si(Li), Elli spectrometer.

Others: 1972Tr08, rapid technetium chem on fission product mixture 1969WiZX; coin measurements with ^{252}Cf SF products 1977Ti02: (268γ)≤ 2 s rapid molybdenum chem on fission product mixture.

The level scheme is as given by 1995Jo02.

^{108}Tc Levels

E(level)	J^π	E(level)	J^π	E(level)	J^π	E(level)	J^π
0.0	(2^+)	86.38 *7*	1^+	326.91 *12*	1^+	458.76 *7*	1^+
27.99 *10*	$(2^+,3^+)$	106.18 *9*	$(^+)$	334.03 *11*	1^+	563.78 *9*	(1^+)
67.78 *8*	$(2^+,3^+)$	268.26 *7*	$(^+)$	340.38 *7*	$(^+)$	904.10 *16*	(1^+)

β^- radiations

E(decay)	E(level)	Iβ^- [†]	Log *ft*	Comments
(3745 *SY*)	904.10	4.4 *13*	5.27 *13*	av Eβ=1837 *20*
(4086 *SY*)	563.78	11 *3*	5.02 *12*	av Eβ=1999 *20*
(4191 *SY*)	458.76	31 *8*	4.61 *12*	av Eβ=2049 *20*
(4309 *SY*)	340.38	1.5 *13*	6.0 *4*	av Eβ=2106 *20*
(4315 *SY*)	334.03	11 *3*	5.11 *12*	av Eβ=2109 *20*
(4323 *SY*)	326.91	13 *3*	5.04 *11*	av Eβ=2113 *20*
(4543 *SY*)	106.18	2.3 *11*	5.88 *21*	av Eβ=2218 *20*
(4563 *SY*)	86.38	26 *13*	4.84 *20*	av Eβ=2228 *20*
(4582 *SY*)	67.78	<6	>5.3	av Eβ=2237 *20*

[†] Absolute intensity per 100 decays.

γ(^{108}Tc)

Iγ normalization: from Σ Ti(γ's to g.s.)=100.

E$_\gamma$	I$_\gamma$ [†‡]	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.	δ	α[#]	Comments
28.0 *2*	8.2 *25*	27.99	$(2^+,3^+)$	0.0	(2^+)	M1		11.2	α(K)=9.8; α(L)=1.19; α(M)=0.215 α(K)exp=7 *2*
58.4 *1*	9 *3*	86.38	1^+	27.99	$(2^+,3^+)$	E2		8.7	α(K)=6.10; α(L)=2.14; α(M)=0.397; α(N+..)=0.0658 α(K)exp=5 *2*; α(L)exp=2.3 *8*; K/L=2.6
65.7 *1*	13 *3*	334.03	1^+	268.26	$(^+)$	M1		0.93	α(K)=0.807; α(L)=0.097; α(M)=0.0176; α(N+..)=0.00341 α(K)exp=1.0 *3*
67.8 *1*	9.7 *16*	67.78	$(2^+,3^+)$	0.0	(2^+)	M1		0.85	α(K)=0.738; α(L)=0.089; α(M)=0.0161; α(N+..)=0.00311 α(K)exp=1.3 *5*
86.4 *1*	18 *3*	86.38	1^+	0.0	(2^+)	M1+E2	0.81 *16*	0.423	α(K)exp=0.75 *14*; α(L)exp=0.094 *4*; K/L=8.3

Continued on next page (footnotes at end of table)

^{108}Mo β^- decay 1995Jo02 (continued)

$\gamma(^{108}Tc)$ (continued)

E_γ	I_γ [†‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α [#]	Comments
								δ: weighted average of 0.63 *17* from α(K)exp and 0.40 *+19−27* from α(L)exp.
106.2 *1*	8.3 *15*	106.18	(+)	0.0	(2+)	M1	0.238	α(K)=0.207; α(L)=0.0248; α(M)=0.00449; α(N+..)=0.00087 α(K)exp=0.26 *6*; K/L=8.3
118.4 *1*	6.3 *11*	458.76	1+	340.38	(+)	M1	0.175	α(K)=0.153; α(L)=0.0182; α(M)=0.00331; α(N+..)=0.00064 α(K)exp=0.18 *9*
161.8 *3*	2.0 *6*	268.26	(+)	106.18	(+)	[M1]	0.075	
190.5 *1*	15 *3*	458.76	1+	268.26	(+)	[M1]	0.0483	α(K)=0.0423; α(L)=0.00497; α(M)=0.00090; α(N+..)=0.00018
223.3 *1*	6.5 *12*	563.78	(1+)	340.38	(+)			
228.2 *3*	3.0 *8*	334.03	1+	106.18	(+)			
234.3 *3*	WEAK	340.38	(+)	106.18	(+)			
240.5 *1*	26 *4*	326.91	1+	86.38	1+			
254.2 *3*	1.9 *6*	340.38	(+)	86.38	1+			
[x]268.21 *6*								
268.3 *1*	52 *8*	268.26	(+)	0.0	(2+)			
295.6 *1*	8.3 *16*	563.78	(1+)	268.26	(+)			
299.6 *5*	1.7 *7*	326.91	1+	27.99	(2+,3+)			
312.2 *2*	4.3 *10*	340.38	(+)	27.99	(2+,3+)			
327		326.91	1+	0.0	(2+)			E_γ: given only in authors′ decay scheme.
334.6 *4*	2.0 *7*	334.03	1+	0.0	(2+)			
340.3 *1*	11.0 *19*	340.38	(+)	0.0	(2+)			
372.4 *1*	24 *4*	458.76	1+	86.38	1+			
391.0 *1*	16 *3*	458.76	1+	67.78	(2+,3+)			
430.8 *4*	2.0 *7*	458.76	1+	27.99	(2+,3+)			
458.5 *2*	4.6 *10*	458.76	1+	0.0	(2+)			
477.5 *2*	8.1 *15*	563.78	(1+)	86.38	1+			
535.8 *4*	2.5 *8*	563.78	(1+)	27.99	(2+,3+)			
564		563.78	(1+)	0.0	(2+)			E_γ: given only in authors′ decay scheme.
570.1 *2*	4.4 *10*	904.10	(1+)	334.03	1+			
635.8 *2*	5.5 *11*	904.10	(1+)	268.26	(+)			

† Iγ are from the authors′ table of I(γ+ce) values using the mults as given by the authors (and adopted here) with the α′s as noted. These α′s are slightly different from those used by the authors.

‡ For absolute intensity per 100 decays, multiply by 0.43 *6*.

Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

x γ ray not placed in level scheme.

^{108}Mo β^- decay 1995Jo02

Decay Scheme

Intensities: I_γ per 100 parent decays