^{87}Mo β^+ decay 1991Mi15,1977Ko05,1982De43

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	T. D. Johnson and W. D. Kulp(a)	NDS 129, 1 (2015)	27-Jul-2015

Parent: ^{87}Mo: E=0.0; $J^\pi=7/2^+$; $T_{1/2}$=14.02 s *26*; Q(β^+)=6988 *7*; %β^+ decay=100.0

1997Hu07: ^{58}Ni(^{32}S,2pn), E(^{32}S)=170 MeV; measured half-life and proton-γ coincidences.

1991Mi15: ^{58}Ni(^{32}S,2pn), E(^{32}S)=105 MeV; measured γ singles, $\gamma\gamma$ and $\beta\gamma$ coincidences, half-lives of the γ's, and conversion electrons.

1983Ha06: ^{58}Ni(^{32}S,2pn), E(^{32}S)=122 MeV; measured delayed protons and proton-γ coincidences and ^{87}Mo half-life.

1982De43: ^{58}Ni(^{32}S,2pn), $\beta\gamma$ coincidences with 263 γ with $T_{1/2}$=15 s 2, measured E_β.

1977Ko05: ^{58}Ni(^{32}S,2pn), E(^{32}S)=111 MeV, observed 263-keV γ with $T_{1/2}$=14.1 s 2 and 397 γ with $T_{1/2}$=12.4 s 5.

Decay scheme is from 1991Mi15.

Since this decay has a Q value of over 6 MeV and the only observed levels are below 0.5 MeV, the scheme is clearly incomplete. Therefore, the ε intensities are upper limits and log*ft* values are lower limits.

Some of the levels in the ^{87}Nb daughter decay by the emission of protons to levels in ^{86}Zr. From proton-752 γ (the 2^+ to ground state γ) coincidences, 1983Ha06 deduce 15% *8* of the decays produce this γ ray. From proton-752 γ coincidences, 1997Hu07 deduce the feeding of the 2^+, 4^+, and 6^+ levels in ^{86}Zr to be 11% *6*, 2% *1*, and 2% *1*, respectively.

Decay scheme is from 1991Mi15, using level energies from the Adopted Levels.

^{87}Nb Levels

E(level)	J^π[†]
0.	$(1/2)^-$
4.0 *5*	$(9/2)^+$
267.0 *5*	$(7/2)^+$
334.0 *4*	$(5/2^-)$
400.8 *5*	$(9/2,7/2,5/2)^+$

[†] From ^{87}Nb Adopted Levels.

ε,β^+ radiations

Since this decay has a Q value of over 6 MeV and the only observed levels are below 0.5 MeV, the scheme is clearly incomplete. Therefore, the ε intensities are upper limits and log*ft* values are lower limits.

E(decay)	E(level)	Iβ^+[†]	Iε[†]	Log *ft*	I($\varepsilon+\beta^+$)[†]	Comments
(6587 *7*)	400.8	24	0.34	5.4	24	av Eβ=2586.1 *34*; εK=0.01247 *5*; εL=0.001489 *6*; εM+=0.0003382 *1*
(6654 *7*)	334.0	3	0.04	6.3	3	av Eβ=2618.6 *34*; εK=0.01205 *5*; εL=0.001438 *6*; εM+=0.0003267 *1*
(6721 *7*)	267.0	51	0.69	5.1	52	av Eβ=2651.1 *34*; εK=0.01164 *5*; εL=0.001390 *5*; εM+=0.0003156 *1* E(decay): The end-point of the positron spectrum in coincidence with the 263-keV γ ray was measured to be 5.3 *3* MeV (1991Mi15).
(6984 *7*)	4.0	20	0.23	5.6	20	av Eβ=2779.0 *34*; εK=0.01021 *4*; εL=0.001219 *5*; εM+=0.0002767 *1*

[†] Absolute intensity per 100 decays.

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$\gamma(^{87}Nb)$

Iγ normalization: the absolute intensities, and thereby the ε branch intensities, were determined from the intensity of the 511-keV annihilation radiation (1991Mi15).

E_γ †	I_γ †#	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α‡	Comments
67.0 *3*	0.7 *6*	334.0	(5/2$^-$)	267.0	(7/2)$^+$			
133.9 *1*	6 *3*	400.8	(9/2,7/2,5/2)$^+$	267.0	(7/2)$^+$			
263.0 *1*	100 *1*	267.0	(7/2)$^+$	4.0	(9/2)$^+$	M1	0.01705	α(K)exp=0.016 *3* α(K)=0.01498 *21*; α(L)=0.001715 *24*; α(M)=0.000302 *5* α(N)=4.42×10^{-5} *7*; α(O)=2.55×10^{-6} *4*
334.0 *4*	4 *3*	334.0	(5/2$^-$)	0.	(1/2)$^-$			
396.8 *1*	37 *5*	400.8	(9/2,7/2,5/2)$^+$	4.0	(9/2)$^+$			

† From 1991Mi15. Other: 1982De43.
‡ Additional information 1.
# For absolute intensity per 100 decays, multiply by 0.55.

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Decay Scheme

Intensities: Relative I_γ