^{51}Mn ε decay 1973Fe12,1966Gl02,1974FeZS

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Wang Jimin and Huang Xiaolong	NDS 144, 1 (2017)	1-Mar-2016

Parent: ^{51}Mn: E=0.0; J^{π}=5/2$^-$; $T_{1/2}$=46.2 min *1*; Q(ε)=3207.5 *3*; %ε+%β^+ decay=100.0
Sources generally produced by ^{50}Cr(d,n).
1973Fe12,1974FeZS: measured Eγ, Iγ and $T_{1/2}$ with Ge(Li). Deduced decay scheme.
1966Gl02: measured Eγ, Iγ, $\beta\gamma$(t), $\gamma\gamma$-delayed coincidence.
Decay scheme constructed by identifying which of the known levels are fed in ^{51}Mn decay.

^{51}Cr Levels

All data from 1973Fe12, except as noted.

E(level)†	J^{π}‡	$T_{1/2}$‡	Comments
0.0	7/2$^-$	27.704 d *4*	
749.10 *9*	3/2$^-$	7.6 ns *3*	$T_{1/2}$: from $\gamma\gamma$(t) (1973Fe12). Other: 7.5 ns *6* (1966Gl02).
1164.47 *23*	9/2$^-$	≤0.7 ns	$T_{1/2}$: from $\gamma\gamma$(t) (1966Gl02).
1353.2 *5*	5/2$^-$		
1557.40 *18*	7/2$^-$		
1899.45 *25*	3/2$^-$		
2001.39 *12*	5/2$^-$		
2312.54 *20*	7/2$^-$		
2828.77 *19*	3/2$^-$		

† From Eγ′s and decay scheme, using least-squares fit to data.
‡ From Adopted Levels, except as noted.

ε,β^+ radiations

E(decay)	E(level)	Iβ^+ †‡	Iε†‡	Log *ft*	I($\varepsilon+\beta^+$)†‡	Comments
(378.7 *4*)	2828.77		0.0069 *6*	6.03 *4*	0.0069 *6*	εK=0.8886; εL=0.09488; εM+=0.01649
(895.0 *4*)	2312.54		0.091 *5*	5.662 *24*	0.091 *5*	εK=0.8903; εL=0.09351; εM+=0.01622
(1206.1 *3*)	2001.39	0.000263 *15*	0.0368 *21*	6.315 *25*	0.0371 *21*	av Eβ=79.87 *18*; εK=0.8843; εL=0.09260; εM+=0.01606
(1308.1 *4*)	1899.45	0.00024 *3*	0.0062 *9*	7.16 *7*	0.0064 *9*	av Eβ=121.56 *20*; εK=0.8573 *2*; εL=0.08971 *3*; εM+=0.015556 *4*
(1650.1 *4*)	1557.40	0.0075 *12*	0.012 *2*	7.09 *7*	0.019 *3*	av Eβ=263.94 *19*; εK=0.5401 *5*; εL=0.05642 *6*; εM+=0.00978 *1*
(1854.3 *6*)	1353.2	0.014 *3*	0.0086 *19*	7.32 *10*	0.023 *5*	av Eβ=351.39 *28*; εK=0.3333 *6*; εL=0.03480 *6*; εM+=0.006032 *10*
(2458.4 *3*)	749.10	0.207 *7*	0.0213 *8*	7.173 *16*	0.228 *8*	av Eβ=619.05 *19*; εK=0.08337 *7*; εL=0.008691 *7*; εM+=0.001506 *2*
(3207.5 *3*)	0.0	96.86 *3*	2.73 *3*	5.2967 *10*	99.591 *12*	av Eβ=963.72 *19*; εK=0.02447 *2*; εL=0.002548 *2*; εM+=0.0004415 *3*

† Values deduced from γ-intensity balance at each level.
‡ Absolute intensity per 100 decays.

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$\gamma(^{51}Cr)$

Iγ normalization: Based on Iγ/Iγ±.
All data from 1973Fe12, except as noted.

E_γ	I_γ[†#]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[‡]	δ[‡]	α[@]	Comments
603.8 *5*	5.8 *18*	1353.2	5/2⁻	749.10	3/2⁻	M1+E2	+0.40 *+8−4*	3.79×10^{-4} *15*	α(K)=0.000343 *13*; α(L)=3.18×10^{-5} *13*; α(M)=4.19×10^{-6} *16*; α(N+..)=1.57×10^{-7} *6*
749.07 *9*	100	749.10	3/2⁻	0.0	7/2⁻	E2		3.28×10^{-4}	α(K)=0.000297 *5*; α(L)=2.76×10^{-5} *4*; α(M)=3.63×10^{-6} *5*; α(N+..)=1.352×10^{-7} *19*
808.19 *21*	5.6 *9*	1557.40	7/2⁻	749.10	3/2⁻	E2		2.67×10^{-4}	α(K)=0.000242 *4*; α(L)=2.25×10^{-5} *4*; α(M)=2.95×10^{-6} *5*; α(N+..)=1.101×10^{-7} *16*
1148.0 *3*	29.5 *12*	2312.54	7/2⁻	1164.47	9/2⁻	[M1]			
1164.4 *3*	28.5 *11*	1164.47	9/2⁻	0.0	7/2⁻	M1+E2	−0.19 *+4−2*		
1353.9 *8*	3.0 *5*	1353.2	5/2⁻	0.0	7/2⁻	M1(+E2)	+0.06 *+4−9*		
1557.5 *3*	1.5 *2*	1557.40	7/2⁻	0.0	7/2⁻	M1+E2	−0.38 *11*	1.40×10^{-4} *3*	α(K)=4.82×10^{-5} *8*; α(L)=4.44×10^{-6} *7*; α(M)=5.84×10^{-7} *10*; α(N+..)=8.67×10^{-5} *22*
1899.41 *25*	2.4 *3*	1899.45	3/2⁻	0.0	7/2⁻	E2		3.04×10^{-4}	α(K)=3.61×10^{-5} *5*; α(L)=3.32×10^{-6} *5*; α(M)=4.37×10^{-7} *7*; α(N+..)=0.000264 *4*
2001.35 *12*	14.0 *7*	2001.39	5/2⁻	0.0	7/2⁻	M1+E2	−0.09 *6*	2.87×10^{-4} *5*	α(K)=3.06×10^{-5} *5*; α(L)=2.81×10^{-6} *4*; α(M)=3.70×10^{-7} *6*; α(N+..)=0.000253 *4*
2079.62 *16*	2.6 *2*	2828.77	3/2⁻	749.10	3/2⁻	M1(+E2)	+0.09 *+30−25*	3.18×10^{-4} *10*	α(K)=2.87×10^{-5} *5*; α(L)=2.64×10^{-6} *5*; α(M)=3.47×10^{-7} *6*; α(N+..)=0.000287 *10*
2312.52 *23*	4.9 *4*	2312.54	7/2⁻	0.0	7/2⁻	[M1]		4.12×10^{-4}	α(K)=2.40×10^{-5} *4*; α(L)=2.20×10^{-6} *3*; α(M)=2.90×10^{-7} *4*; α(N+..)=0.000385 *6*

[†] Relative photon intensities normalized to Iγ(749γ)=100; Iγ(511.0($\gamma^\pm$))=73330 *1760* (1973Fe12).
[‡] From Adopted Gammas.
[#] For absolute intensity per 100 decays, multiply by 0.00265 *7*.
[@] 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.

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Decay Scheme