^{58}Mn β^- decay (3.0 s) 1993ScZS,1988Bo06,1969Wa10

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Caroline D. Nesaraja, Scott D. Geraedts and Balraj Singh	NDS 111, 897 (2010)	12-Jan-2010

Parent: ^{58}Mn: E=0.0; $J^\pi=(1^+)$; $T_{1/2}$=3.0 s *1*; Q(β^-)=6250 *30*; %β^- decay=100.0

1993ScZS: E=11.6 MeV/nucleon, W(^{86}Kr,X), and mass separation. Measured Eγ, Iγ, ce spectra, t, $\gamma\gamma$ and $\beta\gamma$ coincidences.

1988Bo06: E=11.5 MeV/nucleon, W(^{76}Ge,X), and mass separation. Measured Eγ, Iγ, $\beta\gamma$, $\gamma\gamma$, $T_{1/2}$.

1969Wa10: E(n)=14.8 MeV, ^{58}Fe(n,p). Measured Eγ, Iγ, β spectra, $\beta\gamma$, $\gamma\gamma$, $T_{1/2}$.

The decay scheme follows 1988Bo06 as modified by 1993ScZS who propose a 3.0 s *1* g.s. for ^{58}Mn and a 69 s *2* metastable level at 71.78 *5*.

Additional information 1.

^{58}Fe Levels

E(level)†	J^π†
0.0	0^+
810.76	2^+
2876.4	2^+
3083.73	2^+
3243.87	0^+
4530.17	1,2

† From 'Adopted Levels'. Energies are rounded values.

β^- radiations

E(decay)	E(level)	Iβ^-†‡	Log *ft*	Comments
(1.72×10^3 *3*)	4530.17	1.2	4.4	av Eβ=686 *14*
(3.01×10^3 *3*)	3243.87	1.2	5.4	av Eβ=1292 *15*
(3.37×10^3 *3*)	2876.4	0.5	6.0	av Eβ=1468 *15*
(6.25×10^3 *3*)	0.0	97	4.9	av Eβ=2867 *15* E(decay): other: 6.1×10^3 *3* (1969Wa10).

† From $\beta\gamma$/B(total) (1988Bo06).

‡ Absolute intensity per 100 decays.

γ(^{58}Fe)

Eγ†	Iγ#@	E$_i$(level)	J^π_i	E$_f$	J^π_f	Mult.‡	δ‡	α&	Comments
(810.7)		810.76	2^+	0.0	0^+	E2		3.32×10^{-4}	
1446.5	1.2	4530.17	1,2	3083.73	2^+				Observation of the 1446γ would lead one to expect 2855γ and 4531γ populating 1675 and g.s., respectively.
2065.6	0.5	2876.4	2^+	810.76	2^+	M1+E2	−0.33 *+8−11*		
(2273)		3083.73	2^+	810.76	2^+	M1+E2	−0.05 *1*		
2433.1	1.2	3243.87	0^+	810.76	2^+				

† From level-energy differences.

‡ From 'adopted gammas'.

γ/100β decays (1988Bo06).

Continued on next page (footnotes at end of table)

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$\gamma(^{58}Fe)$ (continued)

[@] Absolute intensity per 100 decays.
[&] 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

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays