Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Alan L. Nichols, Balraj Singh, Jagdish K. Tuli	NDS 113,973 (2012)	15-Apr-2012

Q(β^-)=1.040×10^4 *syst*; S(n)=4.81×10^3 *syst*; S(p)=1.332×10^4 *syst*; Q(α)=−1.059×10^4 *syst* 2012Wa38
Note: Current evaluation has used the following Q record 10697.1 38 *4510*.2 *3513*.29E3 25-10.40E3 25 2011AuZZ.
Q(β^-n)=2668.2 *37*, S(2n)=11355.7 *35*, S(2p)=30182 *475* (2011AuZZ).
Values in 2003Au03: Q(β^-)=10860 *220*, S(n)=4550 *320*, S(p)=13150 *340*, Q(β^-n)=2810 *220*, S(2n)=11000 *240*, S(2p)=30040 *520*.
1983Ru06: ^{62}Mn identified in W(^{76}Ge,X) at 9 MeV/nucleon; mass separation. Assignment based on the agreement between the energy of the most intense 877-keV γ transition and the energy of the first excited level of ^{62}Fe measured in the ^{64}Ni(^{14}C,^{16}O) and (^{18}O,^{20}Ne) reactions, and the decay of the 877-keV γ and β^- rays.
Structure calculations: 2010Sr03, 2005Ga01.

^{62}Mn Levels

Cross Reference (XREF) Flags

- A ^{62}Cr β^- decay (206 ms)
- B Ni(^{86}Kr,X)
- C ^{238}U(^{64}Ni,Xγ)
- D ^{238}U(^{70}Zn,Xγ)

E(level)	J$^\pi$[†]	T$_{1/2}$	XREF	Comments
0+x	(1$^+$)	92 ms *13*	A	%β^-=100; %β^-n=? Additional information 1. E(level): systematics of even-A Mn nuclei (2010Ch51) support (1$^+$) as the ground state and (4$^+$) as the isomer, however, there is no experimental evidence as yet for the placement of the 92-ms and 671-ms states. Calculated (1997Mo25) %β^-n=0.03. T$_{1/2}$: from 1999So20. Others: 84 ms *10* (M. Hannawald, thesis, Mainz, 1998), 2005Ga01 deduced half-life of g.s. of ^{62}Cr, their decay curve could be fitted only by attributing a shorter half-life of 92 ms *13* for ^{62}Mn, not a longer one of 671 ms. J$^\pi$,E(level): from syst of neighboring even Mn nuclides (2010Ch51). Possible β feeding of (0$^+$) state in ^{62}Fe. Possible configuration= K=1/2$^-$ proton state coupled to K=1/2$^-$ neutron state (2011Li50). Large-scale shell-model calculations by 2010Sr03 predict 2$^+$ ground state for GXPF1A and KB3G interactions. 2005Ga01, in their shell-model calculations, predict 2$^+$ using KB3G interaction with 4$^+$ at 453 keV, but 1$^+$ using KB3 interaction with 4$^+$ at 360 keV.
0+y	(4$^+$)	671 ms *5*	BCD	%β^-=100; %β^-n=? Additional information 2. J$^\pi$,E(level): from systematics of neighboring even Mn nuclides (2010Ch51). (3$^+$) is less likely but not completely ruled out. 2005Ga01, in their shell-model calculations, predict 4$^+$ at 360 keV using KB3 interaction, which also predicts a 1$^+$ ground state. Possible configuration=$\pi f_{7/2}\otimes\nu p_{1/2}$ (2011Li50). T$_{1/2}$: from 1999Ha05. Other: 0.88 s *15* (1983Ru06, $\beta\gamma$(t), ≈5 half-lives). Weighted average of the two values is 671 ms *7*.
113.8+y[‡] *3*	(4)	95 ns *2*	BC	T$_{1/2}$: from 2010Da06 (also 1999DaZQ thesis).
222.4+y[‡] *5*	(5)		CD	
285.0+x *17*	(0$^+$,2$^+$)		A	
418.2+y[‡] *5*	(6)		CD	
640.0+x *17*	(1$^+$)		A	J$^\pi$: possible allowed β feeding from 0$^+$.
642.8+y[‡] *6*	(7)		CD	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{62}Mn Levels (continued)

E(level)	J^{π} †	XREF	Comments
1183.7+y‡ *12*	(8)	CD	
1500+x? *3*		A	E(level): 2005Ga01 propose the existence of this level and its de-exciting 1215 γ ray based upon the difference in intensities of the 355 and 285 transitions, which indicates an additional β-decay branch to the 285 level. The observed 1215γ transition accounts for the missing intensity.

† From systematics of even-A Mn nuclei and decay pattern.
‡ Band(A): Band based on (4).

$\gamma(^{62}Mn)$

E_i(level)	J_i^{π}	E_{γ} †	I_{γ}	E_f	J_f^{π}
113.8+y	(4)	113.8 *3*	100	0+y	(4^+)
222.4+y	(5)	108.6 *3*	100	113.8+y	(4)
285.0+x	$(0^+,2^+)$	285 *2*	100	0+x	(1^+)
418.2+y	(6)	195.8 *2*	100	222.4+y	(5)
640.0+x	(1^+)	355 *2*	100	285.0+x	$(0^+,2^+)$
		640 *2*	68	0+x	(1^+)
642.8+y	(7)	224.6 *3*	100	418.2+y	(6)
1183.7+y	(8)	540.9 *10*	100	642.8+y	(7)
1500+x?		1215‡ *2*	100	285.0+x	$(0^+,2^+)$

† Averages of values taken when data are available from different reactions.
‡ Placement of transition in the level scheme is uncertain.

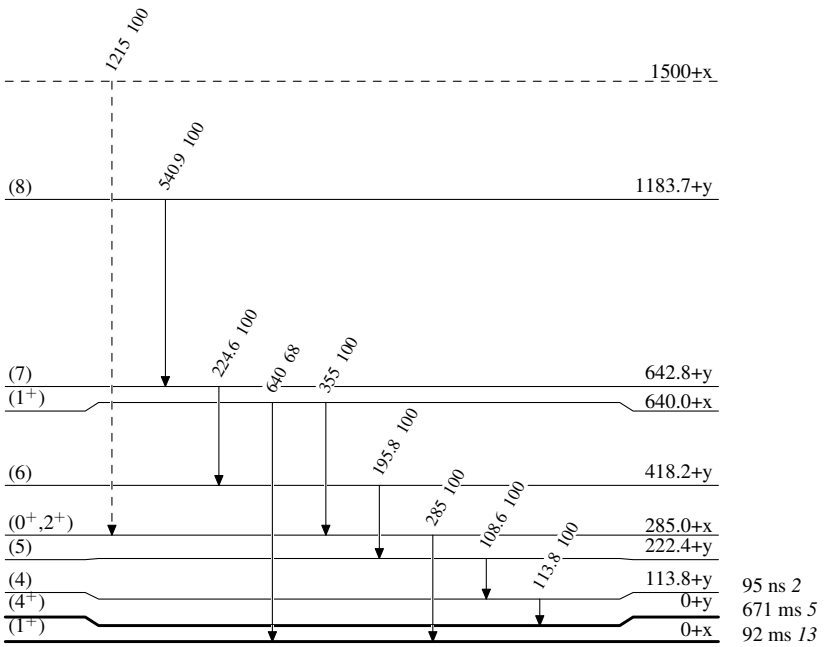
Adopted Levels, Gammas

Legend

Level Scheme

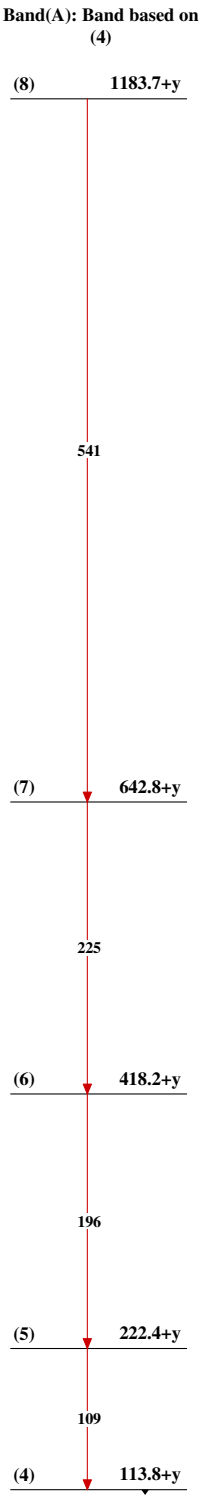
Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{62}_{25}Mn_{37}$

Adopted Levels, Gammas



$^{62}_{25}Mn_{37}$