

^{62}Cr β^- decay (200 ms) [2005Ga01](#),[2003So02](#),[1999So20](#)

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, Huang Xiaolong, and Wang Xianghan		NDS 204,1 (2025)	30-Jun-2023

Parent: ^{62}Cr : $E=0.0$; $J^\pi=0^+$; $T_{1/2}=200$ ms 12; $Q(\beta^-)=7671$ 7; $\% \beta^-$ decay=100

^{62}Cr - $T_{1/2}$: From ^{62}Cr Adopted Levels.

All the papers are from the same group at GANIL.

^{62}Cr produced in fragmentation of $^{76}\text{Ge}^{30+}$ beam on a ^{58}Ni target. LISE3 doubly achromatic spectrometer used to separate fragments, with magnetic rigidity tuned to optimize transmission of ^{62}V and ^{64}Cr fragments. Transmitted nuclei were identified by three consecutive Si detectors (300, 300 and 1500 microns); first two served for energy loss and time-of-flight measurements, while the last determined their residual energies.

Measured E_γ , I_γ , I_β , $\gamma\gamma$, $\beta\gamma$ coin., $\gamma(t)$, lifetimes with four Ge detectors placed around a thick Si telescope. Half-lives determined by fitting procedure involving five parameters: half-lives of mother, daughter and grand-daughter nuclei, the β -efficiency and the background rate over the counting time.

All data are from [2005Ga01](#), unless otherwise stated.

 ^{62}Mn Levels

<u>E(level)[†]</u>	<u>J^π[‡]</u>	<u>$T_{1/2}$[‡]</u>	Comments
0.0	1 ⁺	92 ms 13	
285.0 17	(0 ⁺)		
640.0 17	(1 ⁺)		
1500? 3			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 1215 γ transition accounts for the missing intensity.

[†] From E_γ data. [2005Ga01](#) could not distinguish which of the two low-spin β -decaying isomers observed is the ground state; the shorter-lived state was presumed to be the isomer. However, systematics as discussed in the Adopted Levels suggest that 92-ms activity is likely to be the g.s.

[‡] From Adopted Levels.

 β^- radiations

<u>E(decay)</u>	<u>E(level)</u>	<u>$I\beta^-$[†]</u>	<u>Log ft</u>	Comments
(6171 8)	1500?	<3	>5.2	av $E\beta=2821.5$ 39 $I\beta^-$: from text of 2005Ga01 .
(7031 7)	640.0	<25	>4.5	av $E\beta=3240.6$ 34 $I\beta^-$: from text of 2005Ga01 ; $I_\beta<25\%$ given in authors' decay scheme Fig. 5.
(7671 7)	0.0	<72	>4.3	av $E\beta=3552.7$ 34 $I\beta^-$: from balance of I_β in 2005Ga01 ; 73% 5 given in text, and $I_\beta<75\%$ given in authors' decay scheme Fig. 5. Value deduced from lack of observation of any other γ ray in ^{62}Cr decay.

[†] Absolute intensity per 100 decays.

 $\gamma(^{62}\text{Mn})$

The decay scheme is incomplete. No γ -normalization is possible.

Continued on next page (footnotes at end of table)

⁶²Cr β⁻ decay (200 ms) 2005Ga01,2003So02,1999So20 (continued)

γ(⁶²Mn) (continued)

<u>E_γ[†]</u>	<u>I_γ</u>	<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>
^x 156 2					
285 2	100	285.0	(0 ⁺)	0.0	1 ⁺
355 2	85	640.0	(1 ⁺)	285.0	(0 ⁺)
640 2	58	640.0	(1 ⁺)	0.0	1 ⁺
1215 [‡] 2	15	1500?		285.0	(0 ⁺)

[†] Uncertainty assigned by evaluators on the basis of the standard uncertainty of 2 keV for all other gammas observed by 2005Ga01.

[‡] Placement of transition in the level scheme is uncertain.

^x γ ray not placed in level scheme.

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