

^{58}V β^- decay (191 ms) 2003Ma02

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

Parent: ^{58}V : $E=0$; $J^\pi=(1^+)$; $T_{1/2}=191$ ms 10; $Q(\beta^-)=11.63\times 10^3$ 32; $\% \beta^-$ decay=100.0

^{58}V - $T_{1/2}$: weighted average of 185 ms 10 (2003Ma02), 205 ms 20 (1998So03), 200 ms 20 (1998Am04).

^{58}V - $Q(\beta^-)$: 11630 320 (2009AuZZ,2003Au03).

2003Ma02 (also 2001Pr13,2001Pr05): ^{58}V obtained from fragmentation of the primary beam of $^{86}\text{Kr}^{14+}$ at $E=140$ MeV/nucleon in a thick Be target followed by separation of fragment isotopes based on atomic mass and atomic number. Measured E_γ , I_γ , $\gamma\gamma$, $\beta\gamma$, isotopic half-life using six Ge detectors from the MSU Segmented Ge detector array.

^{58}V Half-life measurements: 1998Am04, 1998So03.

^{58}V Isotopic identification: 1994Se12, 1990Tu01.

The decay scheme is considered as incomplete by the evaluators. The β feedings to 4^+ levels are not possible from (1^+) parent state.

 ^{58}Cr Levels

E(level)	J^π [†]
0.0	0^+
879.7 4	2^+
1936.1 6	4^+
2977.3 9	(4^+)

[†] From 'Adopted Levels'.

 β^- radiations

E(decay)	E(level)	$I\beta^-$ [‡]	Log ft	Comments
(8.7×10^3 # 3)	2977.3	<8 [†]		$I\beta^-$: < 8 3.
(9.7×10^3 # 3)	1936.1	<20 [†]		$I\beta^-$: < 20 5.
(1.08×10^4 3)	879.7	<34	>5.3	av $E\beta=5.07\times 10^3$ 16 $I\beta^-$: < 34 8.
(1.16×10^4 3)	0.0	<38	>5.3	av $E\beta=5.50\times 10^3$ 16 $I\beta^-$: < 38 7.

[†] Apparent β feedings. For (1^+) parent state, the direct feeding of 4^+ states is not possible.

[‡] Absolute intensity per 100 decays.

Existence of this branch is questionable.

 $\gamma(^{58}\text{Cr})$

I_γ normalization: $I_\gamma/100$ decays of ^{58}V are given by 2003Ma02.

E_γ	I_γ ^{†#}	$E_i(\text{level})$	J_i^π	E_f	J_f^π
879.7 4	62 7	879.7	2^+	0.0	0^+
1041.2 [‡] 7	8 3	2977.3	(4^+)	1936.1	4^+
1056.4 [‡] 5	28 4	1936.1	4^+	879.7	2^+
^x 1501.4 6	5 2				

Continued on next page (footnotes at end of table)

⁵⁸V β⁻ decay (191 ms) [2003Ma02](#) (continued)

γ(⁵⁸Cr) (continued)

<u>E_γ</u>	<u>I_γ</u> ^{†#}	<u>E_i(level)</u>
^x 1570.6 6	5 2	
^x 2216.8 7	13 2	

[†] I_γ/100 decays were deduced (by [2003Ma02](#)) from the number of observed γ rays, the γ-ray efficiency curve and the number of ⁵⁸V implants correlated with β decays.

[‡] Placement proposed by evaluators based on results of other reactions. This γ was not placed in level scheme by [2003Ma02](#).

Absolute intensity per 100 decays.

^x γ ray not placed in level scheme.

$^{58}\text{V} \beta^-$ decay (191 ms) 2003Ma02

Decay Scheme

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

Legend

- $I_{\gamma} < 2\% \times I_{\gamma}^{max}$
- $I_{\gamma} < 10\% \times I_{\gamma}^{max}$
- $I_{\gamma} > 10\% \times I_{\gamma}^{max}$

