⁵⁸Ti β⁻ decay (59 ms) 2005Ga01,1999So20

History

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Full Evaluation Caroline D. Nesaraja, Scott D. Geraedts and Balraj Singh NDS 111, 897 (2010) 12-Jan-2010

Parent: ⁵⁸Ti: E=0.0; $J^{\pi}=0^+$; $T_{1/2}=59$ ms 9; $Q(\beta^-)=9440$ SY; $\%\beta^-$ decay=100.0

2005Ga01 (also 2003So21): ⁵⁸Ti produced in fragmentation of ⁷⁶Ge³⁰⁺ beam on a ⁵⁸Ni target at 61.8 MeV/nucleon. LISE3 achromatic spectrometer used to separate fragments; magnetic rigidity was tuned to optimize transmission of ⁶²V and ⁶⁴Cr fragments. Transmitted nuclei were identified by three consecutive Si detectors where two were used for energy loss and time-of-flight measurements while the third was used to determine their residual energies. Measured E γ , I γ , I β , $\gamma\gamma$, $\beta\gamma$ coin, γ (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 1 s collecting time.

2002MaZN: Fragmentation of ⁸⁶Kr beam, LISE spectrometer, measured isotopic half-life.

1999So20 (also 1999Le67): ⁵⁸Ti from ⁵⁸Ni(⁸⁶Kr,X) reaction at 60.4 MeV/nucleon. Measured Εβ, Ιβ(t), isotopic half-life.

⁵⁸V Levels

 $\frac{\text{E(level)}}{0} \quad \frac{\text{J}^{\pi}}{(1^{+})} \quad \frac{\text{Comments}}{\text{J}^{\pi}: \text{ from 'Adopted Levels'}}.$ 114? 2

γ (58V)

E_γ I_γ[†] E_i(level) E_f J_f^π Comments

114[‡] 2 80 10 114? 0 (1⁺) E_γ: this γ is either a member of γ-cascade from high-lying excited state in ⁵⁸V or corresponds to direct decay of a 114 level to the g.s. Since no other transition was observed, the latter possibility seems more likely. Other: 116 2 (2002MaZN).

I_γ: 80% 10 of ⁵⁸Ti β- decay occurs through the 114 transition. This value is an upper limit for direct feeding of a possible 114 level in ⁵⁸V and gives Iβ⁻(g.s.)≤20% 10 giving log ft>4.5, consistent with J^π(⁵⁸V g.s.)≠0.

⁵⁸Ti-Q(β ⁻): 9440 *740* (syst,2009AuZZ,2003Au03).

⁵⁸Ti-T_{1/2}: From 2005Ga01 (also 2003So21). Others: 57 ms 10 (2002MaZN), 47 ms 10 (1999So20).

 $^{^{58}}$ Ti-%β⁻ decay: assumed %B-=100.

[†] Absolute intensity per 100 decays.

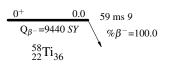
[‡] Placement of transition in the level scheme is uncertain.

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Decay Scheme

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

Legend



----- γ Decay (Uncertain)

