

⁵⁵Sc β⁻ decay (96 ms) 2010Cr02

| Type | Author | Citation | Literature Cutoff Date |
|-----------------|--------------|----------|------------------------|
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Parent: ⁵⁵Sc: E=0; J^π=(7/2⁻); T_{1/2}=96 ms 2; Q(β⁻)=1099×10¹ 70; %β⁻ decay=100.0

⁵⁵Sc-J^π,T_{1/2}: From ⁵⁵Sc Adopted Levels, where half-life is adopted from 2010Cr02.

⁵⁵Sc-Q(β⁻): From 2021Wa16.

⁵⁵Sc-%β⁻ decay: Delayed neutron decay branch is estimated as 17% 7 (2010Cr02) from missing β-feeding intensity.

2010Cr02: measured E_γ, I_γ, γγ, and T_{1/2} of ⁵⁵Sc decay using SeGA array with 16 HPGe detectors and BCS detectors at NSCL-MSU facility. ⁵⁵Sc produced in fragmentation of 130 MeV/nucleon ⁷⁶Ge³⁰⁺ beam from K500 and K1200 cyclotrons with ⁹Be target, followed by separation of fragments using A1900 fragment separator and Time-of-flight technique. Fully stripped secondary fragments were sent to NSCL Beta Counting System (BCS). System of three Si PIN detectors, a double-sided silicon strip detector and six single sided silicon strip detectors, and SeGA array for γ rays.

2004Li75 (also 2004Li72): ⁵⁵Sc isotope produced in ⁹Be(⁸⁶Kr³⁴⁺,X) fragmentation reaction at E=140 MeV/nucleon using A1900 fragment separator at NSCL-MSU facility. Measured E_γ, T_{1/2} using a double-sided Si microstrip detector (DSSD) and SeGA array with six HPGe detectors. Only one γ ray of 593 keV 1 with an absolute of 40% 20 was reported without placement in level scheme.

⁵⁵Ti Levels

| E(level) [†] | J ^π [‡] | T _{1/2} [‡] |
|-----------------------|---|-------------------------------|
| 0.0 | (1/2) ⁻ | 1.3 s 1 |
| 591.7 3 | (5/2) ⁻ | |
| 1795.5 4 | (7/2) ⁻ | |
| 2145.7 4 | (9/2) ⁻ | |
| 2507.8 5 | (5/2 ⁻ ,7/2 ⁻ ,9/2 ⁻) | |

[†] From least-squares fit to E_γ data.

[‡] From the Adopted Levels.

β⁻ radiations

| E(decay) | E(level) | Iβ ⁻ [†] | Log ft | Comments |
|--------------------------|----------|------------------------------|--------|-------------------------------|
| (8.5×10 ³ 7) | 2507.8 | 11 1 | 5.2 2 | av Eβ=4.51×10 ³ 40 |
| (8.8×10 ³ 7) | 2145.7 | 11 1 | 5.3 2 | av Eβ=4.69×10 ³ 40 |
| (9.2×10 ³ 7) | 1795.5 | 22 3 | 5.0 2 | av Eβ=4.86×10 ³ 40 |
| (1.04×10 ⁴ 7) | 591.7 | 39 6 | 5.0 2 | av Eβ=5.45×10 ³ 40 |

[†] Absolute intensity per 100 decays.

γ(⁵⁵Ti)

I_γ normalization: Absolute γ intensities were measured by 2010Cr02.

| E _γ [†] | I _γ ^{†‡} | E _i (level) | J _i ^π | E _f | J _f ^π | Comments |
|-----------------------------|------------------------------|------------------------|---|----------------|-----------------------------|---|
| 349.6 7 | 2 1 | 2145.7 | (9/2) ⁻ | 1795.5 | (7/2) ⁻ | E _γ ,I _γ : 591 1 with I _γ (absolute)=40% 20 (2004Li75). This γ was also reported in 2002Sh43 and 2008Ma01. |
| 591.7 3 | 83 4 | 591.7 | (5/2) ⁻ | 0.0 | (1/2) ⁻ | |
| 712.3 3 | 11 1 | 2507.8 | (5/2 ⁻ ,7/2 ⁻ ,9/2 ⁻) | 1795.5 | (7/2) ⁻ | |

Continued on next page (footnotes at end of table)

 ${}^{55}\text{Sc} \beta^-$ decay (96 ms) **2010Cr02** (continued) $\gamma({}^{55}\text{Ti})$ (continued)

| <u>E_γ</u> [†] | <u>I_γ</u> ^{†‡} | <u>$E_i(\text{level})$</u> | <u>J_i^π</u> | <u>E_f</u> | <u>J_f^π</u> |
|---|--|---------------------------------------|-----------------------------|-------------------------|-----------------------------|
| 1203.8 3 | 35 3 | 1795.5 | (7/2 ⁻) | 591.7 | (5/2 ⁻) |
| 1554.1 3 | 9 1 | 2145.7 | (9/2 ⁻) | 591.7 | (5/2 ⁻) |

[†] From **2010Cr02**.

[‡] Absolute intensity per 100 decays.

$^{55}\text{Sc} \beta^-$ decay (96 ms) 2010Cr02

Decay Scheme

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

Legend

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

