

⁴⁴Sc ε decay (58.61 h) 1976Co06

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen, Balraj Singh and John A. Cameron		NDS 112, 2357 (2011)	31-Jul-2011

Parent: ⁴⁴Sc: E=271.240 10; J^π=6⁺; T_{1/2}=58.61 h 10; Q(ε)=3652.5 18; %ε+%β⁺ decay=1.20 7

⁴⁴Sc-Q(ε): From 2011AuZZ, 2003Au03 give 3652.4 18.

1976Co06: Source of ⁴⁴Sc prepared by the (γ,n) reactions on natural Sc at the Livermore linear accelerator or by the (α,dxn) reaction on natural Ca metal at the Berkeley 88-inch cyclotron. Ge(Li) detector. Measured E_γ, I_γ. Deduced levels, γ-branchings, log ft.

Others:

T_{1/2}(⁴⁴Sc isomer): 1940Wa01, 1945Hi05, 1950Br52, 1952Ru23, 1954An25, 1956Ru45.

Additional information 1.

Isotopic assignment: 1937Wa03, 1937Wa07, 1937Wa04, 1937Wa05, 1937Po04, 1938Bu05, 1938Co01, 1940Wa01, 1942Sm01, 1945Hi05, 1950Br52, 1951Ba84, 1954An25.

γ: 1972Ta36, 1971Ok03, 1970Ei07, 1968Wa21, 1967Ki07, 1963KI06, 1955BI23, 1950Br52, 1942Sm01, 1941He01.

All data from 1976Co06, unless otherwise noted.

⁴⁴Ca Levels

E(level)	J ^π †
0	0 ⁺
1157.002 3	2 ⁺
2283.06 4	4 ⁺
3285.00 5	6 ⁺

† From Adopted Levels.

ε,β⁺ radiations

E(decay)	E(level)	Iε [†]	Log ft	I(ε+β ⁺) [†]	Comments
(638.7 18)	3285.00	1.20 7	5.88 3	1.20 7	εK= 0.895 6; εL= 0.0895 6; εM+= 0.01505 9

† Absolute intensity per 100 decays.

γ(⁴⁴Ca)

E _γ	I _γ ^{†#}	E _i (level)	J _i ^π	E _f	J _f ^π	Mult. [‡]	δ [‡]	α [@]	Comments
1001.83 3	100	3285.00	6 ⁺	2283.06	4 ⁺				I _γ (1002)/I _γ (271γ)=12.3 1/778 14 (1976Co06).
1126.06 4	100	2283.06	4 ⁺	1157.002	2 ⁺	E2+M3	-0.05 4		I _γ (1126)/I _γ (271γ)=12.3 1/778 14 (1976Co06).
1157.002 3	100	1157.002	2 ⁺	0	0 ⁺	E2		6.48×10 ⁻⁵	α: interpolated theoretical values from 1976Ba63.

† From decay scheme.

‡ From Adopted Gammas.

For absolute intensity per 100 decays, multiply by 0.0120 7.

@ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multiplicities, and mixing ratios, unless otherwise specified.

^{44}Sc ϵ decay (58.61 h) 1976Co06

Decay Scheme

Intensities: I_γ per 100 parent decays

Legend

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

