

^{38}K IT decay (924.4 ms) 2008Le12,2010Ba43

| Type | Author | History Citation | Literature Cutoff Date |
|-----------------|----------|-------------------|------------------------|
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Parent: ^{38}K : E=130.1 2; $J^\pi=0^+$; $T_{1/2}=924.4$ ms 3; %IT decay=0.0330 43

^{38}K - $J^\pi, T_{1/2}$: From Adopted Levels of ^{38}K .

^{38}K -%IT decay: %IT branch=0.0330 43 from 2008Le12 based on $I_\gamma(130.1\gamma)=0.0237$ 31 per 100 parent decays and calculated conversion coefficient=0.392 6 quoted in 2008Le12 as calculated using the BrIcc program. The evaluator has obtained $\alpha=0.395$ using the BrIcc program and %IT=0.0331 43.

2008Le12: ^{38m}K was produced by Ta(p,X) reaction at E=500 MeV beam provided by ISAC facility at TRIUMF. Reaction products were ionized followed by mass separation to finally produce a 30 keV beam of ^{38}K and ^{38m}K ions. The ions were implanted on to a tape for decay measurements. β particles were detected with an array of 20 plastic scintillation detectors and γ rays were detected with an 8 π array of 20 HPGe detectors. Measured E_γ , I_γ , $\beta\gamma$ -coin. Deduced isomer half-life, decay branching ratio.

2010Ba43: ^{38m}K was produced at the ISAC facility at TRIUMF in spallation reaction by bombarding CaZrO₃ target with E=500 MeV proton beam provided by the cyclotron at TRIUMF. Reaction products were ionized with a surface ionization source. β particles were detected with a 4 π continuous gas-flow proportional counter. Sample purity was monitored by an HPGe γ -ray detector. Measured E_γ , decay-time distribution. Deduced isomer half-life. Comparison with earlier measurements.

Others: 1975Sq01, 1976Wi08, 1978Wi04, 1978Th02, 1983Ko22, 2000Bb01, 1972Ha82, 1961Ja22, 1960Ja12, 1960Li05, 1957C123, 1954K136.

 ^{38}K Levels

| E(level) | J^π | $T_{1/2}$ | Comments |
|----------|----------------|------------|--|
| 0 | 3 ⁺ | | |
| 130.1 2 | 0 ⁺ | 924.4 ms 3 | E(level): from E_γ . $J^\pi, T_{1/2}$: From Adopted Levels. 924.46 ms 14 from 2010Ba43. |

 $\gamma(^{38}\text{K})$

| E_γ | I_γ^\dagger | $E_i(\text{level})$ | J_i^π | E_f | J_f^π | Mult. | α^\ddagger | $I_{(\gamma+ce)}^\dagger$ | Comments |
|------------|--------------------|---------------------|----------------|-------|----------------|-------|-------------------|---------------------------|--|
| 130.1 2 | 0.0237 31 | 130.1 | 0 ⁺ | 0 | 3 ⁺ | [M3] | 0.395 | 0.0330 43 | $\alpha(\text{K})=0.357$ 6; $\alpha(\text{L})=0.0344$ 6; $\alpha(\text{M})=0.00370$ 6; $\alpha(\text{N+..})=0.0001258$ 20 $\alpha(\text{N})=0.0001258$ 20 E_γ, I_γ : from 2008Le12. |

[†] Absolute intensity per 100 decays.

[‡] 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.

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Decay Scheme

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

%IT=0.0330 43

