

^{53}K β^- n decay: 30 ms 2006Pe16

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Yang Dong, Huo Junde		NDS 128, 185 (2015)	10-Jul-2015

Parent: ^{53}K : $E=0$; $J^\pi=(3/2^+)$; $T_{1/2}=30$ ms 5; $Q(\beta^-n)=14510$ SY; $\% \beta^-n$ decay=75 11

^{53}K - $Q(\beta^-n)$: 14510 510 (syst, 2012Wa38).

^{53}K - $T_{1/2}$: From Adopted Levels of ^{53}K .

^{53}K - $\% \beta^-n$ decay: $\% \beta^-n=64-85$ (2006Pe16).

^{53}K isotope produced in spallation reaction by bombarding a UC_x target by a 1.4 GeV proton beam produced by the CERN proton-synchrotron booster (PSB). Spallation products analyzed using the high resolution separator (HRS). Measured E_γ , $\gamma\gamma$, β , $\beta\nu$ coin, $\beta\nu\gamma$ coin, $\beta\gamma$ coin, $\beta\gamma\gamma$. γ rays detected using two large Ge clusters from the MINIBALL array. Low energy neutrons detected using using six detectors each composed of a thick BC400 plastic scintillator. High energy neutrons detected using 11 curved BC400 scintillating plastic bars from the TONNERRE array. β particles detected using a cylindrical plastic scintillator.

 ^{52}Ca Levels

E(level) [‡]	J^π [†]
0	0^+
2563 1	2^+
3150 2	

[†] From Adopted Levels.

[‡] From E_γ .

 $\gamma(^{52}\text{Ca})$

E_γ	I_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π
2563 1	52 9	2563	2^+	0	0^+
3150 2	12 3	3150		0	0^+

[†] For absolute intensity per 100 decays, multiply by 0.75 11.

Delayed Neutrons (^{52}Ca)

E(n) [†]	E(^{52}Ca)	I(n) ^{‡#}	E(n) [†]	E(^{52}Ca)	I(n) ^{‡#}
490 10		19 7			
640 15		34 11			
740 15		100			
940 20		99 34			
1110 30		19 14			
1260 35		32 10			
1500 45		26 9			
1900 60		23 9			
2310 80		87 26			
350×10^1 15		64 20			
422×10^1 20		39 16			
	2563	52 9			
	3150	12 3			

[†] Neutron energy in the lab system.

[‡] Relative intensity of the neutron group unless otherwise stated.

[#] For absolute intensity per 100 decays, multiply by 0.75 11.

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Decay Scheme

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

Legend

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

$\% \beta^- n = 75$ $\xrightarrow{(3/2^+) \quad 0 \quad 30 \text{ ms } 5}$
 $Q = 14510 \text{ SY}$
 $^{53}_{19}\text{K}_{34}$

