^{53}K β^- decay (30 ms) 2006Pe16

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	28-May-2021

Parent: ^{53}K: E=0; J^π=(3/2$^+$); $T_{1/2}$=30 ms *5*; Q(β^-)=1709×10^1 *12*; %β^- decay=100.0

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

^{53}K-Q(β^-): From 2021Wa16.

^{53}K-%β^- decay: %β^-=100, %β^-n=64 *11*, %β^-2n≈10 *5* (2006Pe16).

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 Eγ, Iγ, $\gamma\gamma$, β, βn coin, βnγ coin, $\beta\gamma$ coin, $\beta\gamma\gamma$. γ rays detected using two large Ge clusters from the MINIBALL array. Low energy neutrons detected 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.

1983La23: ^{53}K produced in Ir(p,X) reaction; measured half-life β-delayed neutron activity.

^{53}Ca Levels

E(level)	J^π[†]	$T_{1/2}$[†]	Comments
0	(1/2$^-$)	461 ms *90*	
2220 *1*	(3/2$^-$)		
3190+x			E(level): S(n)(^{53}Ca)+x, where x<13090 *127* from Q(β^-)(^{53}K)=17090 *120* and S(n)(^{53}Ca)=3190 *40* (2021Wa16)
9200+y			E(level): S(2n)(^{53}Ca)+y, where x<7890 *127* from Q(β^-)(^{53}K)=17090 *120* and S(2n)(^{53}Ca)=9200 *40* (2021Wa16)

[†] From Adopted Levels.

β^- radiations

E(decay)	E(level)	Iβ^-[†]	Log *ft*	Comments
(4×10^3[‡] *4*)	9200+y	10 *5*		Iβ^-: from %β^-2n≈10 *5* (2006Pe16).
(7×10^3[‡] *7*)	3190+x	64 *11*		Iβ^-: from %β^-n=64 *11* (2006Pe16).
(1.487×10^4 *12*)	2220	15 *3*	5.5	av Eβ=7.42×10^3 *25*

[†] Absolute intensity per 100 decays.

[‡] Estimated for a range of levels.

γ(^{53}Ca)

Iγ normalization: Absolute γ intensity is reported in 2006Pe16.

E$_\gamma$	I$_\gamma$[†]	E$_i$(level)	J_i^π	E$_f$	J_f^π
2220 *1*	15.3 *33*	2220	(3/2$^-$)	0	(1/2$^-$)

[†] Absolute intensity per 100 decays.

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Decay Scheme

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