

^{52}K β^- decay 2006Pe16

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

Parent: ^{52}K : $E=0$; $J^\pi=(2^-)$; $T_{1/2}=110$ ms 6; $Q(\beta^-)=17720$ SY; $\% \beta^-$ decay=100.0

$^{52}\text{K}-Q(\beta^-)$: 17720 410 (syst,2012Wa38).

$^{52}\text{K}-T_{1/2}$: Weighted average of 118 ms 6 (2006Pe16), 110 ms 30 (1985Hu03), and 105 ms 5 (1983La23).

2006Pe16: ^{52}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, and $\beta\gamma\gamma$ coin. The γ rays were 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 were detected using 11 curved BC400 scintillating plastic bars from the TONNERRE array. The β particles were detected using a cylindrical plastic scintillator.

1985Hu03: ^{52}K was produced by the fragmentation of a U target with 600-MeV proton beam, on-line mass separation, measured E_γ and $\gamma\gamma$ -coin with Ge(Li) detectors, $\beta\gamma$ coin with Ge(Li) and β telescope (0.5 mm scintillator sheet), E(n) with NE110 plastic scintillator sheet.

1983La23: ^{52}K was produced by the fragmentation of a Ir target with 10-GeV proton beam, mass separation, measured $T_{1/2}$. NE 213 liquid scintillator.

All data are from 2006Pe16, except as noted.

 ^{52}Ca Levels

E(level)	J^π^\dagger	$T_{1/2}^\dagger$	Comments
0	0^+	4.6 s 3	
2563 1	2^+		
3150 2			
3990 2			
5190 20			
5550 30			
5760 40			
5950 40			
5951 2			
6700 50			
6940 80			
7160 20			
7410 50			
7570 35			
8090 20			
829×10^1 12			
8370 80			
8580 50			E(level): 8530-8630 in Table VIII of 2006Pe16.
8710 80			
895×10^1 16			E(level): 8790-9100 in Table VIII of 2006Pe16.
9130 40			
939×10^1 12			
963×10^1 15			
1014×10^1 22			
1050×10^1 15			
1110×10^1 52			E(level): 10580-11620 in Table VIII of 2006Pe16.

† From Adopted Levels.

$^{52}\text{K} \beta^-$ decay 2006Pe16 (continued) β^- radiations

<u>E(decay)</u>	<u>E(level)</u>	<u>$I\beta^\dagger$</u>	<u>Log ft</u>	<u>Comments</u>
(6620 SY)	11100	0.3 1	5.6 6	av $E\beta=2.37\times 10^3$ 56
(7220 SY)	10500	0.6 1	5.5 4	av $E\beta=2.66\times 10^3$ 50
(7580 SY)	10140	0.8 2	5.5 4	av $E\beta=2.84\times 10^3$ 51
(8090 SY)	9630	1.2 3	5.5 4	av $E\beta=3.09\times 10^3$ 50
(8330 SY)	9390	2.2 1	5.3 3	av $E\beta=3.20\times 10^3$ 50 log $ft=5.8$ 3 in 2006Pe16.
(8590 SY)	9130	0.4 1	6.1 4	av $E\beta=3.33\times 10^3$ 50
(8770 SY)	8950	2.4 4	5.3 4	av $E\beta=3.42\times 10^3$ 50
(9010 SY)	8710	1.1 2	5.7 4	av $E\beta=3.54\times 10^3$ 50
(9140 SY)	8580	1.1 2	5.8 4	av $E\beta=3.60\times 10^3$ 50
(9350 SY)	8370	3.0 8	5.2 4	av $E\beta=3.71\times 10^3$ 50
(9430 SY)	8290	4.6 1	5.2 4	av $E\beta=3.74\times 10^3$ 50
(9630 SY)	8090	2.6 3	5.5 3	av $E\beta=3.84\times 10^3$ 50
(10150 SY)	7570	1.1 2	6.0 3	av $E\beta=4.10\times 10^3$ 50
(10310 SY)	7410	1.2 1	6.0 3	av $E\beta=4.18\times 10^3$ 50 log $ft=6.3$ 3 in 2006Pe16.
(10560 SY)	7160	0.7 1	6.3 3	av $E\beta=4.30\times 10^3$ 50
(10780 SY)	6940	12.5 26	5.1 3	av $E\beta=4.41\times 10^3$ 50
(11020 SY)	6700	0.9 1	6.3 3	av $E\beta=4.53\times 10^3$ 50 log $ft=6.6$ 3 in 2006Pe16.
(11769 SY)	5951	1.9 2	6.2 2	av $E\beta=4.89\times 10^3$ 49
(11770 SY)	5950	3.1 6	5.9 3	av $E\beta=4.89\times 10^3$ 50
(11960 SY)	5760	22 4	5.1 3	av $E\beta=4.99\times 10^3$ 50
(12170 SY)	5550	6.5 11	5.7 3	av $E\beta=5.09\times 10^3$ 50
(12530 SY)	5190	4.3 8	5.9 3	av $E\beta=5.27\times 10^3$ 49
(13730 SY)	3990	2.9 3	6.3 2	av $E\beta=5.86\times 10^3$ 49
(14570 SY)	3150	0.3 1	7.3 3	av $E\beta=6.27\times 10^3$ 49
(15157 SY)	2563	20.4 23	5.7 2	av $E\beta=6.55\times 10^3$ 49

\dagger Absolute intensity per 100 decays.

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

<u>E_γ</u>	<u>I_γ^\dagger</u>	<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>
1427 1	4.4 4	3990		2563	2 ⁺
1961 1	1.5 2	5951		3990	
2563 1	25.2 25	2563	2 ⁺	0	0 ⁺
3150 2	0.30 5	3150		0	0 ⁺
3388 2	0.40 6	5951		2563	2 ⁺

\dagger Absolute intensity per 100 decays.

$^{52}\text{K} \beta^-$ decay 2006Pe16

Decay Scheme

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

Legend

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

