

^{53}Ti β^- decay 1977Pa01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Huo Junde	NDS 110,2689 (2009)	31-Mar-2007

Parent: ^{53}Ti : $E=0.0$; $J^\pi=(3/2)^-$; $T_{1/2}=32.7$ s 9; $Q(\beta^-)=5.02\times 10^3$ 10; $\% \beta^-$ decay=100.0
 ^{53}Ti produced in $^{48}\text{Ca}(^7\text{Li},\text{pn})$ at $E=14\text{-}20$ MeV, measured $T_{1/2}$, E_γ , I_γ , $E\beta$, $\gamma\gamma$ coin, $\beta\gamma$ coin.

 ^{53}V Levels

E(level)	$J^\pi^\dagger$	E(level)	$J^\pi^\dagger$	E(level)	$J^\pi^\dagger$	E(level)	$J^\pi^\dagger$
0.0	$7/2^-$	1549.6 8	$(3/2)^-$	2084.0 5	$(3/2)^-$	2829.5 4	$(5/2)^-$
127.60 8	$(5/2)^-$	1904.01 21	$(5/2)^-$	2550.6 14	$(1/2)^-$	2930.5 20	$(3/2)^-$
228.41 8	$(3/2)^-$	1957.6 6	$(1/2)^-$	2584.0 4	$(3/2)^-$		

† Adopted values.

 β^- radiations

E(decay)	E(level)	$I\beta^-^\dagger$	Log ft	Comments
$(2.09\times 10^3$ 10)	2930.5	1.0 3	5.78 16	av $E\beta=862$ 47
2217 99	2829.5	11.1 11	4.83 10	av $E\beta=909$ 47
2423 65	2584.0	15.0 14	4.89 9	av $E\beta=1025$ 48
$(2.47\times 10^3$ 10)	2550.6	4.5 13	5.44 15	av $E\beta=1041$ 48
$(2.94\times 10^3$ 10)	2084.0	6.7 7	5.59 8	av $E\beta=1263$ 48
$(3.06\times 10^3$ 10)	1957.6	4.8 7	5.81 9	av $E\beta=1324$ 48
3127 71	1904.01	37 3	4.96 8	av $E\beta=1349$ 48
$(3.47\times 10^3$ 10)	1549.6	10 3	5.73 15	av $E\beta=1520$ 49
$(4.79\times 10^3$ 10)	228.41	11 4	6.32 17	av $E\beta=2162$ 49
$(4.89\times 10^3$ ‡ 10)	127.60	<6	>6.6	av $E\beta=2211$ 49

† Absolute intensity per 100 decays.

‡ Existence of this branch is questionable.

 $\gamma(^{53}\text{V})$

I_γ normalization: $\Sigma I(\gamma+\text{ce})(\text{g.s.})=100$ and no β to g.s.

E_γ	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.
100.8 1	51 3	228.41	$(3/2)^-$	127.60	$(5/2)^-$	(M1)
127.6 1	115 12	127.60	$(5/2)^-$	0.0	$7/2^-$	(M1)
228.4 1	100	228.41	$(3/2)^-$	0.0	$7/2^-$	[E2]
679.6 13	10.1 20	2584.0	$(3/2)^-$	1904.01	$(5/2)^-$	
1001.0 11	11.3 32	2550.6	$(1/2)^-$	1549.6	$(3/2)^-$	
1033.1 18	6.4 23	2584.0	$(3/2)^-$	1549.6	$(3/2)^-$	
1321.1 15	15 3	1549.6	$(3/2)^-$	228.41	$(3/2)^-$	
1421.7 9	27 4	1549.6	$(3/2)^-$	127.60	$(5/2)^-$	
1675.5 3	63 7	1904.01	$(5/2)^-$	228.41	$(3/2)^-$	
1729.2 6	12.1 18	1957.6	$(1/2)^-$	228.41	$(3/2)^-$	D,E2
1776.5 7	10.2 14	1904.01	$(5/2)^-$	127.60	$(5/2)^-$	
1855.5 7	8.1 13	2084.0	$(3/2)^-$	228.41	$(3/2)^-$	
1904.0 3	31.0 21	1904.01	$(5/2)^-$	0.0	$7/2^-$	

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$^{53}\text{Ti } \beta^- \text{ decay } \text{1977Pa01 (continued)}$ $\gamma(^{53}\text{V}) \text{ (continued)}$

E_γ	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	E_γ	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π
1956.4 5	8.7 11	2084.0	(3/2) ⁻	127.60	(5/2) ⁻	2702 2	7.2 14	2829.5	(5/2) ⁻	127.60	(5/2) ⁻
2355.5 6	7.7 13	2584.0	(3/2) ⁻	228.41	(3/2) ⁻	2702 2	2.4 7	2930.5	(3/2) ⁻	228.41	(3/2) ⁻
2456.6 5	13.4 13	2584.0	(3/2) ⁻	127.60	(5/2) ⁻	2829.1 22	5.1 11	2829.5	(5/2) ⁻	0.0	7/2 ⁻
2601.0 4	15.5 20	2829.5	(5/2) ⁻	228.41	(3/2) ⁻						

[†] For absolute intensity per 100 decays, multiply by 0.398 19.

$^{53}\text{Ti} \beta^-$ decay 1977Pa01

Decay Scheme

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

Legend

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

