^{151}Ce β^- decay (1.76 s)   2006Ko25

	Type	Author	History Citation	Literature Cutoff Date
	Full Evaluation	Balraj Singh	NDS 110, 1 (2009)	20-Nov-2008

Parent: ^{151}Ce: E=0.0; J^π=(5/2$^+$); $T_{1/2}$=1.76 s 6; Q(β^-)=5561 22; %β^- decay=100.0

^{151}Ce-$T_{1/2}$: from 2006Ko25, weighted average of half-lives obtained for time decay of several γ rays from the decay of ^{151}Ce.

^{151}Ce-Q(β^-): From Penning trap mass measurements by 2006Sa56: mass of neutral ^{151}Ce=150.934272 u 19; mass of neutral
    ^{151}Pr=150.928303 u 14. Other: 5270 100 (2003Au03).

^{151}Ce produced by neutron-induced fusion of enriched ^{235}U, followed by online mass separation using KURISOL facility at
    Kyoto. Measured Eγ, Iγ, $\gamma\gamma$, $\beta\gamma$ coin,, β(ce) coin using a variety of detectors: γ-x n-type HPGe and a short coaxial detector for
    γ rays; Si(Li) detector for conversion electrons and a plastic scintillator for β rays.

Conversion electrons were detected with a Si(Li) detector with a FWHM of 1.7 keV, but no peaks were associated with the decay
    of ^{151}Ce which may suggest low multipolarity for most γ rays.

Sufficient information does not exist to obtain normalization factor (Iγ/100 decays of the parent), β feedings and log ft values.

^{151}Pr Levels

E(level)	$J^{\pi\dagger}$	$T_{1/2}$	Comments
0.0	(3/2$^-$)		
35.10 10	(7/2$^+$)	>10 μs	E(level): level not supported by $\gamma\gamma$ coin data.
38.93 8			
362.06 8			
402.62 17			
467.73 22			
636.81 17			

$\dagger$ From 'Adopted Levels'.

β^- radiations

E(decay)	E(level)	I$\beta^{-\dagger}$	Log ft
(5561 22)	0.0	$\leq$7	$\geq$5.9

$\dagger$ Absolute intensity per 100 decays.

γ(^{151}Pr)

Almost all γ rays were observed in coin with Pr K-x rays and β rays.

E$_\gamma$	I$_\gamma$	E$_i$(level)	J^π_i	E$_f$	J^π_f	Mult.	$\alpha^{\#}$
35.1‡ 1	450† 73	35.10	(7/2$^+$)	0.0	(3/2$^-$)	[M2]	264
38.9 1	146† 35	38.93		0.0	(3/2$^-$)		
40.6 3	22.4 20	402.62		362.06			
^{x}142.1 1	9.9 10						
323.1 1	45 4	362.06		38.93			
362.1 1	71 6	362.06		0.0	(3/2$^-$)		
363.7‡ 2	11.9 18	402.62		38.93			
402.5 4	37 4	402.62		0.0	(3/2$^-$)		
428.8 2	6.8 19	467.73		38.93			

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^{151}Ce β^- **decay (1.76 s)**   **2006Ko25 (continued)**

$\gamma(^{151}$Pr) (continued)

E_γ	I_γ	E_i(level)	E_f	J^π_f
597.9‡ 3	16† 3	636.81	38.93	
636.8‡ 2	100 7	636.81	0.0	(3/2$^-$)

† Estimated value by 2006Ko25 after subtraction of contribution from 35.2γ in ^{151}Pr decay.

‡ γ not seen in coin with Pr K-x rays.

$^{\#}$ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

^{x} γ ray not placed in level scheme.

${}^{151}\text{Ce } \beta^-$ **decay (1.76 s)** **2006Ko25**

Decay Scheme

Intensities: Relative I_γ

Legend

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

$(5/2^+)$ 0.0   1.76 s *6*

$Q_{\beta^-}=5561$ *22* $\%\beta^-=100.0$

${}^{151}_{58}\text{Ce}_{93}$

$I\beta^-$ Log *ft*

636.8 100
597.9 16

636.81

428.8 6.8

402.5 37
363.7 11.9
40.6 22.4

467.73

402.62

362.1 71
323.1 45

362.06

38.9 146
35.1 [M2] 450

38.93
35.10 $>10\,\mu s$
0.0

$(7/2^+)$
$(3/2^-)$

≤7   ≥5.9

${}^{151}_{59}\text{Pr}_{92}$