

^{232}Fr β^- decay 2004Pe17,1990Me13

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	E. Browne	NDS 107, 2579 (2006)	1-Nov-2004

Parent: ^{232}Fr : $E=0.0$; $J^\pi=(5)$; $T_{1/2}=5.5$ s 6; $Q(\beta^-)=5.71\times 10^3$ 70; $\% \beta^-$ decay=100.0

^{232}Fr - $J^\pi, T_{1/2}$: from 2004Pe17.

^{232}Fr - $Q(\beta^-)$: 5710 700 (syst,2003Au03).

Activity produced by bombarding a uranium target with 1.4 GeV protons. Mass-separated activity. Isotope identification based on half-life. Measured γ rays, $\gamma\gamma$ coin. Detectors: Ge. (2004Pe17). Other: 1992Bo44.

 ^{232}Ra Levels

E(level) [†]	J^π	$T_{1/2}$	Comments
0.0 [‡]	0 ⁺	4.2 min 8	$T_{1/2}$: From Adopted Levels.
54.5 [‡] 10	(2 ⁺)		
179.2 [‡] 15	(4 ⁺)		
367.6 [‡] 18	(6 ⁺)		
849.2? 25	(3 to 6)		
900.2 25	(3 to 6)		
1050 3	(4 to 6)		

[†] Deduced by evaluator from a least-squares fit to γ -ray energies.

[‡] Band(A): $K^\pi=0^+$ band.

 β^- radiations

E(decay)	E(level)	$I\beta^-$ [†]	Log ft	Comments
(4.7×10^3 7)	1050	3.4 11	7.0 4	av $E\beta=1842$ 298
(4.8×10^3 7)	900.2	18 5	6.3 3	av $E\beta=1906$ 298
(4.9×10^3 [‡] 7)	849.2?	1.7 8	7.4 4	av $E\beta=1927$ 298
(5.3×10^3 7)	367.6	29 10	6.3 3	av $E\beta=2131$ 297
(5.5×10^3 7)	179.2	47 24	6.1 4	av $E\beta=2211$ 297

[†] Absolute intensity per 100 decays.

[‡] Existence of this branch is questionable.

 $\gamma(^{232}\text{Ra})$

1990Me13 observed Ra L x ray ($E_\gamma=15$ keV).

E_γ	I_γ ^{†‡}	E_i (level)	J_i^π	E_f	J_f^π	Mult.	$\alpha^\#$	Comments
54.5 10	0.9 5	54.5	(2 ⁺)	0.0	0 ⁺	[E2]	172	I_γ : From $I(\gamma+ce)=160$ 70 and $\alpha=170$ 20. E_γ : Placement in level scheme is based on level systematics in even-even Ra and Th nuclides.
124.7 10	20 4	179.2	(4 ⁺)	54.5	(2 ⁺)	[E2]	3.7	I_γ : From $I(\gamma+ce)=100$ 20 and $\alpha=3.9$ 4. E_γ : Other value: 125 keV (1990Me13).
188.4 10	18 4	367.6	(6 ⁺)	179.2	(4 ⁺)	[E2]	0.72	I_γ : From $I(\gamma+ce)=32$ 7 and $\alpha=0.73$ 7.
670 [@] 2	1.6 6	849.2?	(3 to 6)	179.2	(4 ⁺)			

Continued on next page (footnotes at end of table)

^{232}Fr β^- decay [2004Pe17](#), [1990Me13](#) (continued) $\gamma(^{232}\text{Ra})$ (continued)

E_γ	I_γ ^{†‡}	$E_i(\text{level})$	J_i^π	E_f	J_f^π
682.2	3.2	1050	(4 to 6)	367.6	(6 ⁺)
721.2	17	900.2	(3 to 6)	179.2	(4 ⁺)

[†] Deduced by evaluator from total transition intensities reported on an absolute scale in [2004Pe17](#).

[‡] Absolute intensity per 100 decays.

[#] 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.

[@] Placement of transition in the level scheme is uncertain.

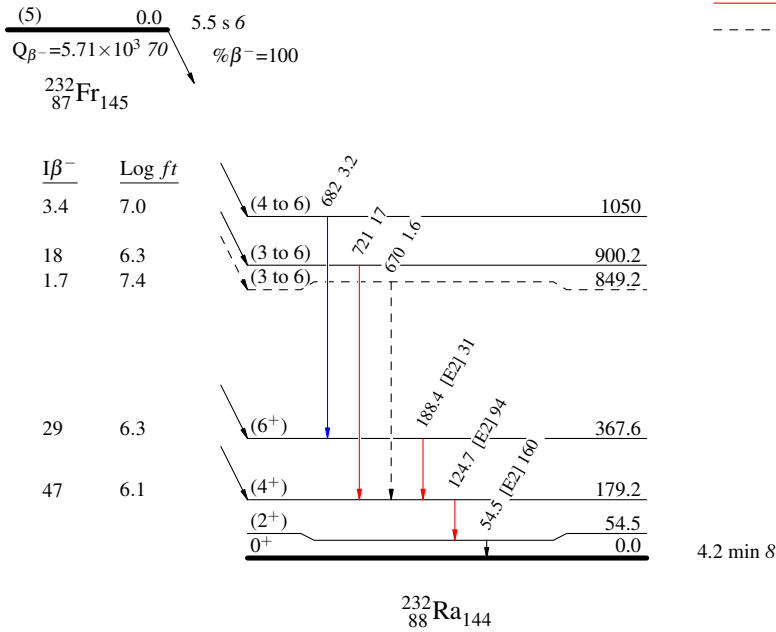
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Decay Scheme

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

Legend

- $I_{\gamma} < 2\% \times I_{\gamma}^{max}$
- $I_{\gamma} < 10\% \times I_{\gamma}^{max}$
- $I_{\gamma} > 10\% \times I_{\gamma}^{max}$
- - - - γ Decay (Uncertain)



$^{232}\text{Fr} \beta^-$ decay 2004Pe17,1990Me13Band(A): $K^\pi=0^+$ band (6^+) 367.6

188

 (4^+) 179.2

125

 (2^+) 54.5

54

 0^+ 0.0 $^{232}_{88}\text{Ra}_{144}$