

^{142}Pr β^- decay 1968Ra04

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	T. D. Johnson, D. Symochko(a), M. Fadil(b), and J. K. Tuli		NDS 112, 1949 (2011)	1-Jun-2010

Parent: ^{142}Pr : $E=0.0$; $J^\pi=2^-$; $T_{1/2}=19.12$ h 4; $Q(\beta^-)=2162.2$ 15; $\% \beta^-$ decay=100.0

Measured: γ , $\gamma\gamma$ (1968Ra04,1968Hi07), $\beta\gamma$ -coin (1959Fr52,1955St51,1954Po26), β^- (1975Ra09).

 ^{142}Nd Levels

<u>E(level)[‡]</u>	<u>J^π[†]</u>
0.0	0 ⁺
1575.6 5	2 ⁺
2084.4 7	3 ⁻

[†] Adopted values.

[‡] From least-squares fit to $E\gamma$, assuming $\Delta E\gamma=1$ where uncertainty not known.

 β^- radiations

From β^- shape analysis, 2158 β is first-forbidden unique (1975Ra09,1966Be12,1954Po26,1952Mo29).

β^- shape analysis of 583 β (1977GeZO,1976Ra41).

β^- longitudinal polarization (1965Ka06).

$\beta\gamma$ circular polarization (1964He15).

$\beta\gamma(\theta)$ (1972Kh02,1964He15).

$\epsilon/\beta^- = 1.64 \times 10^{-4}$ 8 from measured $^{142}\text{Ce}/^{142}\text{Nd}$ (1966Cr02) ms.

Average $E\beta = 701$ 16 (1964Bi16).

β decay matrix elements: 1993Ni17.

<u>E(decay)</u>	<u>E(level)</u>	<u>$I\beta^-$[†]</u>	<u>Log ft</u>	<u>Comments</u>
(77.8 17)	2084.4	0.023 4	6.50 8	av $E\beta = 20.14$ 45
586 15	1575.6	3.7 5	7.09 6	av $E\beta = 182.78$ 58
				E(decay): from 1954Po26; other: 566 8 (1964He15).
2158 3	0.0	96.3 5	8.901 ^{1u} 3	av $E\beta = 834.20$ 66
				E(decay): from 1975Ra09; others: 2164 2 (1966Be12), 2166 6 (1954Po26).

[†] For absolute intensity per 100 decays, multiply by 0.9998.

 $\gamma(^{142}\text{Nd})$

$I\gamma$ normalization: $I(1576\gamma)/100$ b=3.68 42 (1963Me15).

1576 $\gamma(\theta,H,T)$ (1958Da12,1958Gr92).

<u>E_γ</u>	<u>I_γ[†]</u>	<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Comments</u>
508.8 5	0.62 5	2084.4	3 ⁻	1575.6	2 ⁺	
1575.6 5	100	1575.6	2 ⁺	0.0	0 ⁺	$\alpha(\text{pair production}) = 0.108 \times 10^{-3}$ 18 (1961La15).

[†] For absolute intensity per 100 decays, multiply by 0.037 4.

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Decay Scheme

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

Legend

