^{144}Pr β^- decay (17.28 min) 1985Da16

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	A. A. Sonzogni	NDS 93, 599 (2001)	1-Dec-2000

Parent: ^{144}Pr: E=0.0; $J^\pi=0^-$; $T_{1/2}$=17.28 min *5*; Q(β^-)=2997.5 *24*; %β^- decay=100.0
Activity: chemically separated ^{144}Ce in equilibrium with ^{144}Pr (17.28 min + 7.2 min).
Measured: γ, HPGe; $\gamma\gamma$, HPGe-Ge(Li). FWHM=1.75 keV at 1.33 MeV, 0.18 keV for iron x ray.
Decay scheme, Eγ, Iγ values are from 1985Da16. E(level), Iβ have been determined by the evaluator using least squares fit.
For β^- measurements, β^-longitudinal polarization, $\beta\gamma$(circular) polarization, $\gamma\gamma$(polarization-direction correlation) see 1967Ra40.
For β^-shape see 1967Ra40, 1971Na12, 1973Bo43. For discussion of second-class currents see 1973Bo43, 1975Em02.
$\beta\gamma(\theta)$: 1967Ra40, 1973Bo43, 1973WiYS.
$\gamma\gamma$-coin: 1967Ra40, 1970Fa03, 1976Ra22, 1985Da16.
Other measurements: 1979Pr11, 1974Be09, 1970Fa03; see also references given by 1967Ra40.

^{144}Nd Levels

$\gamma\gamma(\theta)$: scin-semi, semi-semi (1974Be09); scin-semi (1983Kr09)

Cascade	A_2	A_4	J_2-J_1-J_0	Ref.
(1489γ)(696γ)	-0.248 4	+0.001 9	1-2-0	1983Kr0
(1389γ)(696γ)	+0.282 41	+1.064 67(a)	0-2-0	1983Kr0
(1389γ)(696γ)	+0.432 50	+1.122 84(b)	0-2-0	1983Kr0
(1389γ)(696γ)	+0.310 35	+0.303 67	2-2-0	1974Be0
(865γ)(696γ)	+0.490 85	+0.14 14(b)		1983Kr0
(814γ)(675γ+ 696γ)	-0.122 4	-0.038 42(b)		1983Kr0
(814γ)(696γ)	-0.086 60			1974Be0

(a) using single-channel analyzer
(b) using multi-channel analyzer

E(level)	J^π†	E(level)	J^π†	E(level)	J^π†	E(level)	J^π†
0.0	0^+	1560.96 *7*	2^+	2185.67 *4*	1^-	2675.34 *11*	0^+
696.51 *4*	2^+	2072.81 *10*	2^+	2368.3 *3*	2^+	2742.87 *17*	0^+
1510.67 *8*	3^-	2084.54 *11*	0^+	2654.93 *20*	1^+		

† From Adopted Levels.

β^- radiations

E(decay)	E(level)	Iβ^-†	Log *ft*	Comments
(254.6 *24*)	2742.87	0.0003 *1*	8.16 *15*	av Eβ=71.11 *76*
(322.2 *24*)	2675.34	0.00087 *9*	8.03 *5*	av Eβ=92.33 *77*
(342.6 *24*)	2654.93	0.00015 *3*	8.88 *9*	av Eβ=98.90 *78*
(629.2 *24*)	2368.3	>0.000054	$<10.4^{1u}$	av Eβ=213.26 *87*
810.3	2185.67	1.05 *4*	6.311^{1u} *18*	av Eβ=267.19 *93*
(913.0 *24*)	2084.54	0.0067 *1*	8.689 *8*	av Eβ=306.77 *96*
(924.7 *24*)	2072.81	0.00062 *5*	10.22^{1u} *4*	av Eβ=322.85 *92*
(1436.5 *24*)	1560.96	0.0014 *3*	10.91^{1u} *10*	av Eβ=526.27 *99*

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^{144}Pr β^- decay (17.28 min) 1985Da16 (continued)

β^- radiations (continued)

E(decay)	E(level)	Iβ^-[†]	Log *ft*	Comments
2299.5	696.51	1.04 *2*	9.203[1u] *9*	av Eβ=895.0 *11*
2996.0 *29*	0.0	97.9 *4*	6.530 *3*	av Eβ=1222.0 *11*

[†] Absolute intensity per 100 decays.

$\gamma(^{144}Nd)$

Iγ normalization: from absolute Iγ(696γ)=1.342% 14 (1975De17) 4$\pi\beta\gamma$.

E$_\gamma$	I$_\gamma$[@]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.	α[&]	Comments
624.7 *1*	0.84 *2*	2185.67	1$^-$	1560.96	2$^+$			
674.95 *10*	2.2 *2*	2185.67	1$^-$	1510.67	3$^-$			
696.510[‡] *3*	1000[†]	696.51	2$^+$	0.0	0$^+$	E2	0.00511	α(K)=0.00427; α(L)=0.00063 Mult.: from adopted γ's. I$_\gamma$: includes small,≈0.3, contribution due to ^{144}Pr (7.2 min) decay.
814.10 *10*	2.4[†] *2*	1510.67	3$^-$	696.51	2$^+$	E1	0.00140	α(K)=0.00120; α(L)=0.00015 δ: −0.01 *8* (1983Kr09) $\gamma\gamma(\theta)$.
864.45 *10*	1.8 *2*	1560.96	2$^+$	696.51	2$^+$	M1+E2		δ: −0.75 *30* (1983Kr09) $\gamma\gamma(\theta)$.
1182.0 *3*	0.04	2742.87	0$^+$	1560.96	2$^+$			
1376.27 *10*	0.29 *3*	2072.81	2$^+$	696.51	2$^+$			
1388.02 *10*	5.01 *4*	2084.54	0$^+$	696.51	2$^+$	(E2)	0.00116	α(K)=0.00099; α(L)=0.00013 Mult.: Q from $\gamma\gamma(\theta)$ (1983Kr09).
1489.160[‡] *5*	207[#] *3*	2185.67	1$^-$	696.51	2$^+$	E1		δ: <0.01 (1974Be09) $\gamma\gamma(\theta)$.
1560.97 *10*	0.15 *2*	1560.96	2$^+$	0.0	0$^+$			
(1671.8)		2368.3	2$^+$	696.51	2$^+$			E$_\gamma$: this transition is expected but was not resolved from single escape-peak of 2185.6γ (1985Da16).
1978.82 *10*	0.65 *6*	2675.34	0$^+$	696.51	2$^+$			
2046.3 *2*	0.20 *4*	2742.87	0$^+$	696.51	2$^+$			
2072.9 *2*	0.17 *2*	2072.81	2$^+$	0.0	0$^+$			
2185.662[‡] *7*	517[#] *10*	2185.67	1$^-$	0.0	0$^+$			
2368.3 *3*	0.04 *1*	2368.3	2$^+$	0.0	0$^+$			
2654.9 *2*	0.11 *2*	2654.93	1$^+$	0.0	0$^+$			

[†] Includes small (≈0.4) contribution due to 7.2-min ^{144}Pr β^- decay.
[‡] From 1979Gr01.
[#] From 1975De17.
[@] For absolute intensity per 100 decays, multiply by 0.001342 *14*.
[&] 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.

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Decay Scheme

Intensities: I_γ per 100 parent decays