^{244}Np β^- decay 1987Mo29

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	NDS 146, 387 (2017)	31-Aug-2017

Parent: ^{244}Np: E=0.0; $J^\pi=(7^-)$; $T_{1/2}$=2.29 min *16*; Q(β^-)=3430 *SY*; %β^- decay=100.0
^{244}Np-ΔQ(β)=300.
^{244}Np-Q(β^-): 3430 *100* (2021Wa16).
1987Mo29: ^{244}Np produced from ^{244}Pu(^{136}Xe,X) with E(^{136}Xe)=835 MeV followed by chemical separation at the UNILAC accelerator at GSI, Darmstadt. Deduced $T_{1/2}$ of ^{244}Np from gamma intensities as a function of time delay between detectors. Authors cannot exclude the existence of a shorter-lived isomer for ^{244}Np. Gammas measured with germanium detectors.

Level scheme is incomplete. The remaining intensity balances at the 6^+ and 8^+ level is probably due to unobserved gammas.

^{244}Pu Levels

E(level)[†]	J^π[†]
0.0	0^+
44.2[‡] *4*	2^+
149.9[‡] *8*	4^+
312.8[‡] *9*	6^+
529.9[‡] *9*	8^+
1210.9 *9*	8^-

[†] From Adopted Levels.
[‡] Band(A): K=0 g.s. band.

β^- radiations

E(decay)	E(level)	Iβ^-[†]
(2219 *SY*)	1210.9	<100

[†] Absolute intensity per 100 decays.

γ(^{244}Pu)

Iγ normalization: Obtained by assuming neither beta nor any other gamma except the 162.9 γ populates the 4^+ state with Iγ(1+ce)= 291 *24*.

E$_\gamma$[†]	E$_i$(level)	J^π_i	E$_f$	J^π_f	Mult.	α[#]	Comments
(44.2 *4*)	44.2	2^+	0.0	0^+	[E2]	7.8×10^2 *4*	α(L)=564 *27*; α(M)=157 *7* α(N)=43.2 *20*; α(O)=10.2 *5*; α(P)=1.59 *7*; α(Q)=0.00340 *15* E$_\gamma$: Gamma was not observed in ^{244}Np β- decay. Its energy is from the level energy difference.
(105.7 *7*)	149.9	4^+	44.2	2^+	[E2]	12.2 *4*	α(L)=8.85 *30*; α(M)=2.48 *8* α(N)=0.681 *23*; α(O)=0.161 *6*; α(P)=0.0256 *9*; α(Q)=9.54×10^{-5} *27* E$_\gamma$: From level energy difference. 110.8γ was measured by 1987Mo29 but was considered questionable by the evalutor due to its indistinct peak and its close proximity to the Pu K-Xray line as shown in Fig.1 in 1987Mo29.

Continued on next page (footnotes at end of table)

^{244}Np β^- decay 1987Mo29 (continued)

$\gamma(^{244}Pu)$ (continued)

E_γ [†]	I_γ [‡@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α [#]	Comments
162.9 *1*	100 *8*	312.8	6^+	149.9	4^+	[E2]	1.906 *27*	α(K)=0.1891 *26*; α(L)=1.247 *18*; α(M)=0.348 *5* α(N)=0.0956 *14*; α(O)=0.02260 *32*; α(P)=0.00366 *5*; α(Q)=2.262×10^{-5} *32*
217.1 *1*	114 *7*	529.9	8^+	312.8	6^+	[E2]	0.631 *9*	α(K)=0.1332 *19*; α(L)=0.362 *5*; α(M)=0.1003 *14* α(N)=0.0276 *4*; α(O)=0.00653 *9*; α(P)=0.001073 *15*; α(Q)=1.001×10^{-5} *14*
681.0 *1*	109 *8*	1210.9	8^-	529.9	8^+	[E1]	0.00802 *11*	α(K)=0.00649 *9*; α(L)=0.001158 *16*; α(M)=0.000277 *4* α(N)=7.50×10^{-5} *11*; α(O)=1.852×10^{-5} *26*; α(P)=3.44×10^{-6} *5*; α(Q)=2.074×10^{-7} *29*

† From 1987Mo29 except as noted.
‡ Relative photon intensity, normalized to 100 at 162.9 γ.
# Additional information 1.
@ For absolute intensity per 100 decays, multiply by 0.34 *3*.

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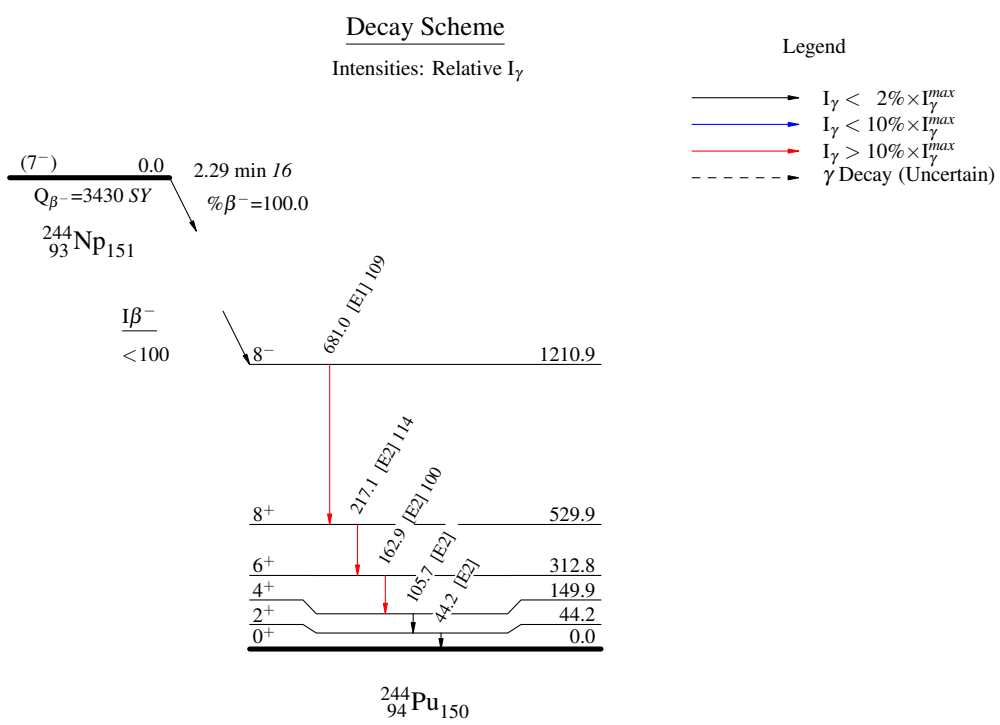
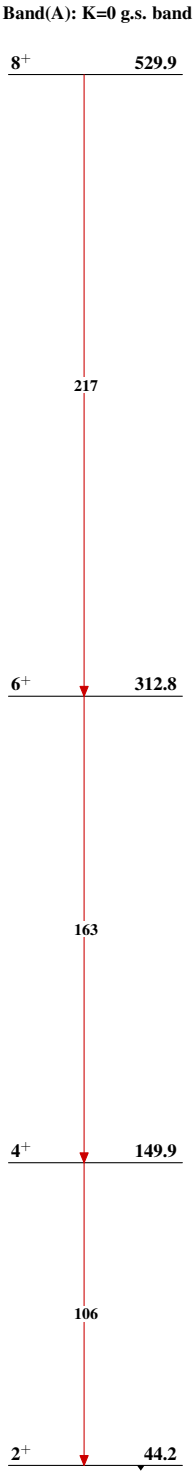
Decay Scheme

Intensities: Relative I_γ



$^{244}_{94}Pu_{150}$

^{244}Np β^- decay 1987Mo29



$^{244}_{94}Pu_{150}$