^{236}Np ε decay (22.5 h) 1969Le05

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Shaofei Zhu	NDS 182, 2 (2022).	1-Apr-2022

Parent: ^{236}Np: E=57 *51*; $J^{\pi}=1^{(-)}$; $T_{1/2}$=22.5 h *4*; Q(ε)=9.3×10^2 *5*; %ε decay=51 *1*
^{236}Np-Q(ε): From 2021Wa16. E(level)=57 keV *51* from the Adopted Levels of ^{236}Np.
^{236}Np-%ε decay: From ^{236}Np Adopted Levels.
1969Le05: Chemically purified ^{236}Np from ^{235}U(d,p) reactions; Measured Eγ, Iγ, conversion electrons. Detectors: Ge(Li), Si(Li).
Additional information 1.
α: Additional information 2.

^{236}U Levels

E(level)‡	J$^{\pi}$†	$T_{1/2}$	Comments
0	0$^+$	2.342×10^7 y *4*	$T_{1/2}$: from the Adopted Levels.
45.2431 *20*	2$^+$		
149.480 *5*	4$^+$		
687.55 *4*	1$^-$	3.78 ns *9*	$T_{1/2}$: from 1977Po05; other: 4.4 ns *6* (1969Le05).

† From Adopted Levels.
‡ From a least-squares fit to γ-ray energies.

ε radiations

E(decay)	E(level)	Iε†	Log *ft*	Comments
(3.0×10^2 *7*)	687.55	1.5 *3*	7.3 *4*	εK=0.62 *10*; εL=0.28 *7*; εM+=0.11 *3* Iε: from 1969Le05.
(9.4×10^2 *7*)	45.2431	8 *3*	7.75 *18*	εK=0.751 *4*; εL=0.184 *3*; εM+=0.0653 *12* Iε: from 1969Le05; other: 10 (1956Gr11).
(9.9×10^2 *7*)	0	40 *7*	7.10 *11*	εK=0.753 *4*; εL=0.1823 *24*; εM+=0.0646 *10* Iε: from 1969Le05; other: 40 (1956Gr11).

† Absolute intensity per 100 decays.

γ(^{236}U)

Iγ normalization: From branching ratios Iγ(538γ):Iγ(642γ):Iγ(688γ)=1.14:100:27.4 in Adopted Gammas and their respective α(exp), in combination with Iε=1.5% *3* of ^{236}Np decay (1969Le05) to the 687-keV level.

Eγ†	Iγ‡	E_i(level)	J_i^{π}	E_f	J_f^{π}	Mult.†	α	Comments
45.243 *2*	1.6 *4*	45.2431	2$^+$	0	0$^+$	E2	589 *8*	α(L)=429 *6*; α(M)=118.6 *17*; α(N)=32.1 *5*; α(O)=7.36 *10*; α(P)=1.191 *17*; α(Q)=0.00285 *4* Iγ: deduced from γ-ray transition intensity balance with 8% *3* ^{236}Np decay feeding to this level (1969Le05). Eγ: measured: 45.28 *6* (1956Ho54) and 44.2 *1* (1956Gr11). Mult.: from α(L2)/α(L3)≈1 (1956Gr11).
104.237 *4*	0.114 *12*	149.480	4$^+$	45.2431	2$^+$	E2	10.99 *15*	α(L)=8.00 *11*; α(M)=2.220 *31*; α(N)=0.603 *8*;

Continued on next page (footnotes at end of table)

^{236}Np ε decay (22.5 h) 1969Le05 (continued)

γ(^{236}U) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [†]	α	Comments
								α(O)=0.1385 *19*; α(P)=0.02268 *32* α(Q)=9.41×10^{-5} *13* I_γ: deduced from γ-ray transition intensity balance with no 22.5-h ^{236}Np ε decay feeding to this level (1969Le05).
538.09 *7*	1.14 *8*	687.55	1$^-$	149.480	4$^+$	E3	0.20 *8*	α(K)exp=0.11 *5* α,I_γ: from Adopted Gammas.
642.23 *7*	100	687.55	1$^-$	45.2431	2$^+$	E1(+M2+E3)	0.15 *2*	α(K)exp=0.111 *10*; α(L)exp=0.031 *9* α,I_γ: from Adopted Gammas.
687.59 *6*	27.4 *5*	687.55	1$^-$	0	0$^+$	E1	0.31 *2*	α(K)exp=0.219 *14*; α(L)exp=0.069 *9* α,I_γ: from Adopted Gammas.

[†] From Adopted Gammas, unless otherwise noted.
[‡] For absolute intensity per 100 decays, multiply by 0.0099 *20*.

^{236}Np ε decay (22.5 h) 1969Le05

Decay Scheme

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

Legend

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