^{146}Pm ε decay 1966Bu03,1968Ta09,1970Av03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov, A. Rodionov and G. Shulyak	NDS 136, 163 (2016)	14-Jul-2016

Parent: ^{146}Pm: E=0.0; $J^\pi=3^-$; $T_{1/2}$=5.53 y *5*; Q(ε)=1472 *4*; %ε+%$β^+$ decay=65.7 *15*
1970Av03: ^{146}Pm ε decay [from Ta,Gd(p,X), E=660 MeV]; measured Eγ, Iγ, ce. ^{146}Nd; deduced levels, J^π, log *ft*.
1968Ta09: ^{146}Pm ε decay [from ^{146}Nd(p,n), E=10 MeV]; measured Eγ, Iγ, γγ coin. ^{146}Nd; deduced levels, log *ft*.
1966Bu03: ^{146}Pm ε decay [from ^{148}Nd(p,3n)]; measured Eγ, Iγ, γγ coin, γγ(θ), $T_{1/2}$. ^{146}Nd; deduced levels, J^π, log *ft*.
1974Sc06: ^{146}Pm ε decay [from ^{146}Nd(d,2n), E=12 MeV]; measured Eγ. ^{146}Nd; deduced transitions.
Others: 1963Pa21, 1967Bu12, 1960Fu05, 1981Or03.
Decay scheme is that from 1970Av03.

^{146}Nd Levels

E(level)	J^π[†]
0.0	0^+
453.83 *15*	2^+
1043.5 *5*	4^+
1189.73 *24*	3^-

[†] From 'Adopted Levels'.

ε,$β^+$ radiations

No $β^+$ (<0.012%) (1967Va01).

E(decay)	E(level)	Iε[†]	Log *ft*	I(ε+$β^+$)[†]	Comments
(282 *4*)	1189.73	23.2 *15*	8.46 *4*	23.2 *15*	εK=0.8078 *8*; εL=0.1483 *6*; εM+=0.04393 *20*
(429 *4*)	1043.5	0.36 *9*	10.68 *11*	0.36 *9*	εK=0.8238 *3*; εL=0.13634 *22*; εM+=0.03984 *8*
(1018 *4*)	453.83	42.2 *22*	9.39 *4*	42.2 *22*	εK=0.8394; εL=0.12472 *4*; εM+=0.03589 *1*

[†] For absolute intensity per 100 decays, multiply by 0.999 *23*.

γ(^{146}Nd)

Iγ normalization: from Iγ=34.6% *15* for 747.2 keV, E2 transition in the ^{146}Pm $β^-$ decay to ^{146}Sm; weighted average of 34.7 *18* (1966Bu03), 37.0 *55* (1968Ta09), 33.3 *35* (1970Av03) assuming I(γ+ce) 747.2, ^{146}Sm+I(γ+ce) 453.8, ^{146}Nd=100% and no $β^-$ and (ε+$β^+$) feedings to ^{146}Sm(g.s.) and ^{146}Nd(g.s.), correspondingly. Other: 66.0% *13* (1997Pe22, 2012Au07).
α(exp): from absolute measurements of Iγ and ce (1981Or03).

E_γ[†]	I_γ[‡@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α[#]	Comments
146.2 *13*	0.22 *3*	1189.73	3^-	1043.5	4^+	[E1]	0.092 *3*	α(K)=0.0780 *22*; α(L)=0.0108 *4*; α(M)=0.00228 *7* α(N)=0.000504 *15*; α(O)=7.37×10^{-5} *21*; α(P)=4.09×10^{-6} *12* E_γ: from 1968Ta09.
453.83 *15*	64.7 *15*	453.83	2^+	0.0	0^+	E2	0.01535	α(K)exp=0.0125 *6*; α(L)exp=0.0022 *1*; α(M)exp=0.00050 *4* α(K)=0.01263 *18*; α(L)=0.00214 *3*; α(M)=0.000462 *7* α(N)=0.0001024 *15*; α(O)=1.484×10^{-5} *21*; α(P)=7.33×10^{-7} *11*

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γ(^{146}Nd) (continued)

E_γ[†]	I_γ[‡@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α[#]	Comments
589.7 *5*	0.60 *8*	1043.5	4^+	453.83	2^+	[E2]	0.00764	α(K)=0.00639 *9*; α(L)=0.000990 *14*; α(M)=0.000212 *3* α(N)=4.71×10^{-5} *7*; α(O)=6.94×10^{-6} *10*; α(P)=3.79×10^{-7} *6* I_γ: weighted average values of 0.60 *8* (1966Bu03) and 0.7 *3*; other: 0.35 *5* (1968Ta09).
735.90 *19*	22.9 *15*	1189.73	3^-	453.83	2^+	E1	1.71×10^{-3}	α(K)exp=0.00138 *9*; α(L)exp=0.00020 *2*; α(M)exp=0.000044 *19* α(K)=0.001469 *21*; α(L)=0.000188 *3*; α(M)=3.95×10^{-5} *6* α(N)=8.83×10^{-6} *13*; α(O)=1.337×10^{-6} *19*; α(P)=8.64×10^{-8} *13*

[†] Weighted average of 1966Bu03, 1968Ta09, 1970Av03, 1974Sc06, except as noted.
[‡] Weighted average of Iγ′s from 1966Bu03, 1968Ta09, 1970Av03; Iγ per 100 decays of the parent except as noted.
[#] Additional information 1.
[@] Absolute intensity per 100 decays.

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Decay Scheme

Intensities: I_γ per 100 parent decays