^{244}Pu α decay (8.11×10^7 y) 1969Be06

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, E. Browne	NDS 109, 2439 (2008)	31-Jul-2008

Parent: ^{244}Pu: E=0.0; $J^\pi=0^+$; $T_{1/2}=8.11\times10^7$ y *3*; Q(α)=4665.5 *10*; %α decay=99.879 *4*

^{244}Pu-$T_{1/2}$: weighted average of 8.12×10^7 y *3* (2006Ag15,thermal ionization mass spectrometry and relative activity method using ^{240}Pu and ^{242}Pu as references), 7.99×10^7 y *10* (1969Be06), 8.12×10^7 y *26* (1966Fi07). The original values in 1969Be06 and 1966Fi07 were revised in 2000Ho27 and 1989Ho24 evaluations. Others: 7.3×10^7 y *2* (1956Di09), 6.65×10^7 y *10* (1956Bu64, also 7.5×10^7 y *20* by 1956Bu92). 2003Ak04 evaluation adopted 8.00×10^7 y *9* from 2000Ho27 evaluation.

^{244}Pu-%α decay: %α=99.879 *4* based on %SF=0.121 *4* (2000Ho27); β stable.

Half-life of ^{244}Pu isotope is adopted here as 8.11×10^7 y *3*. In 2003Ak04 (NDS for α=244), adopted value is 8.00×10^7 y *9* taken from 2000Ho27 and 1989Ho24 evaluations.

The data set is adapted from evaluation by 1998Ak04.

1969Be06: Measured Eα, Iα.

Other: 1998Se17: Measured long-range α particles.

The α branching of ^{244}Pu reported here as 99.879% *4* has been deduced from the total and the partial SF half-lives recommended by 2000Ho27: $T_{1/2}$(SF)=6.6×10^{10} y *2*. ^{244}Pu is β stable.

^{240}U Levels

E(level)	J^π	Comments
0.0[†]	0^+	
44[†] *2*	(2^+)	J^π: from 'Adopted Levels'.

[†] Band(A): $K=0^+$ g.s. band.

α radiations

Eα[†]	E(level)	Iα[†#]	HF[‡]
4546 *1*	44	19.4 *8*	1.94 *9*
4589 *1*	0.0	80.6 *8*	1.0

[†] As recommended by 1991Ry01 from measurements by 1969Be06.

[‡] $r_0(^{240}U)$=1.5062 *10* is calculated from HF(4589α)=1.0.

[#] For absolute intensity per 100 decays, multiply by 0.99879 *4*.

$\gamma(^{240}U)$

E$_\gamma$[†]	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.[†]	α[#]	I$_{(\gamma+ce)}$[†‡]	Comments
(44 *2*)	44	(2^+)	0.0	0^+	[E2]	6.7×10^2 *18*	19.4 *8*	α(N)=37 *10*; α(O)=8.4 *22*; α(P)=1.4 *4*; α(Q)=0.0032 *8* ce(L)/(γ+ce)=0.587; ce(M)/(γ+ce)=0.162

[†] From the decay scheme.

[‡] For absolute intensity per 100 decays, multiply by 0.99879 *4*.

[#] 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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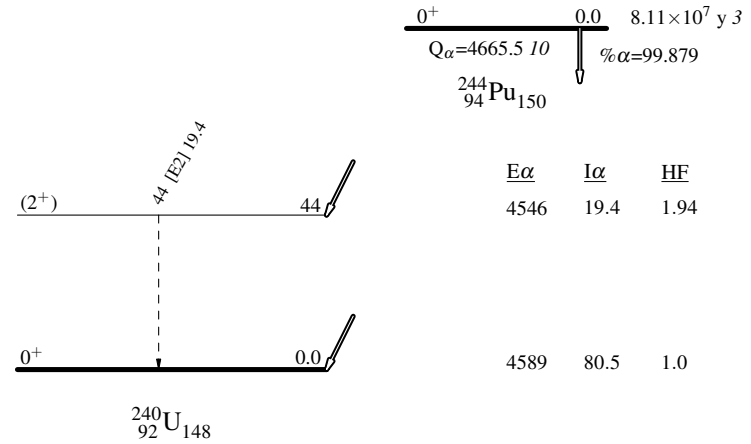
Legend

γ Decay (Uncertain)

Decay Scheme



Eα	Iα	HF
4546	19.4	1.94
4589	80.5	1.0

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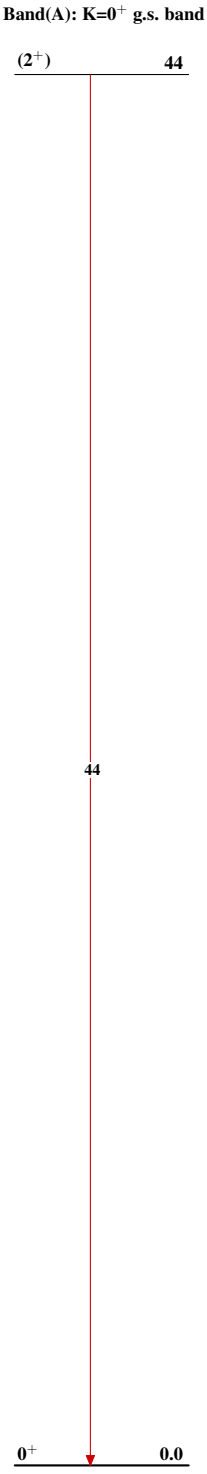

$^{240}_{92}U_{148}$