
 ^{244}Bk α decay **1966Ah02**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. Morse	NDS 206,359 (2025)	27-Sep-2024

Parent: ^{244}Bk : $E=0$; $J^\pi=(4^-)$; $T_{1/2}=5.02$ h 3; $Q(\alpha)=6779$ 4; $\% \alpha$ decay=0.012 6

^{244}Bk - $T_{1/2}$: From 2014So17. Others: 4.35 h 15 (1956Ch77), 4.4 h (1966Ah02).

^{244}Bk - $Q(\alpha)$: From 2021Wa16.

^{244}Bk - $\% \alpha$ decay: 1991Ry01 recommends $b_\alpha=6 \times 10^{-5}$. This appears to be based on 1956Ch77, which reports $T_{1/2}(^{244}\text{Bk})=4.35$ h 15 and $T_{1/2,\alpha}(^{244}\text{Bk})=8$ y 3, from which $b_\alpha=6 \times 10^{-5}$ 2 can be derived. However, 1956Ch77 states that this assumes there is only one α -decay ($E_\alpha=6.67$ MeV), while 1966Ah02 observed two with roughly equal intensity ($E_{\alpha_1}=6.624$ MeV, $E_{\alpha_2}=6.666$ MeV). These two observations seem to be in tension, but if we accept that there are two α -decay channels, then the α -decay branching ratio becomes 1.2×10^{-4} . The evaluator has increased the uncertainty by 50% since the α -particle intensities were only approximately determined in 1966Ah02.

1966Ah02: Measured E_α , I_α .

 ^{240}Am Levels

$E(\text{level})^\dagger$	J^π^\dagger	Comments
0	(3 ⁻)	
40 5	(4 ⁻)	$E(\text{level})$: From difference of Q_α values for decay to ground and excited states.

[†] From Adopted Levels.

 α radiations

E_α^\dagger	$E(\text{level})$	$I_\alpha^{\ddagger\#}$	HF [‡]	Comments
6626 4	40	≈ 50	≈ 1439	E_α : 6624 keV 4 in 1966Ah02.
6665 3	0	≈ 50	≈ 2212	E_α : 6666 keV 4 in 1966Ah02, 6670.0 keV 15 in 1956Ch77.

[†] As recommended in evaluation by 1991Ry01 from original measurements of 1966Ah02. 1991Ry01 suggest 40% uncertainty on intensities.

[‡] The nuclear radius parameter $r_0(^{240}\text{Am})=1.498$ 16 is deduced from interpolation (or unweighted average) of radius parameters of the adjacent even-even nuclides (2020Si16).

[#] For absolute intensity per 100 decays, multiply by 0.00012 6.