^{247}Bk α decay 1969Fr01,1956Ch77

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja, E. A. Mccutchan	NDS 121, 695 (2014)	30-Sep-2013

Parent: ^{247}Bk: E=0.0; $J^{\pi}=3/2^{-}$; $T_{1/2}$=1380 y *250*; Q(α)=5890 *5*; %α decay=100.0

1969Fr01: ^{247}Bk was irradiated at the Argonne cyclotron followed by chemical separation. α spectra measured with a Au-Si surface-barrier detector. Energies measured with respect to ^{238}Pu α_0 group at 5.498 MeV.

1956Ch77: ^{247}Bk produced from the decay of ^{247}Cf followed by chemical separation. Three alpha groups were determined at 5.30 MeV, 5.51, and 5.67 MeV. α, γ and K X-ray coincidence measured with proportional counter, NaI detector and alpha pulser analyser.

^{243}Am Levels

E(level)[†]	J^{π}[‡]	$T_{1/2}$[‡]
0.0	$5/2^{-}$	7364 y *22*
42 *3*	$7/2^{-}$	
84 *3*	$5/2^{+}$	
108 *7*	$7/2^{+}$	
143 *7*	$(9/2^{+})$	
188 *7*	$(11/2^{+})$	
265 *10*	$3/2^{-}$	
298 *7*	$(5/2^{-})$	
344 *7*	$(7/2^{-})$	

[†] From Eα and Qα(^{247}Bk) and least-square fit to Eγ.
[‡] From Adopted Levels.

α radiations

Eα[†]	E(level)	Iα[‡@]	HF[#]
5456 *5*	344	1.5 *2*	12 *3*
5501 *5*	298	7 *1*	4.7 *12*
5531 *5*	265	45 *2*	1.14 *23*
5610 *5*	188	≈0.4	≈359
5654 *5*	143	5.5 *6*	47 *11*
5688 *5*	108	13 *1*	31 *7*
5710 *5*	84	17 *1*	32 *7*
5754 *5*	42	4.3 *4*	213 *45*
5794 *5*	0.0	5.5 *5*	282 *58*

[†] From 1969Fr01. Evaluators have increased energies by 1 keV, as recommended by 1991Ry01, because of a change in calibration energy.
[‡] From 1969Fr01. Other measurement: 1956Ch77.
[#] $r_0(^{243}Am)$=1.490 *4*, average of $r_0(^{242}Pu)$=1.4954 *10* and $r_0(^{244}Cm)$=1.4851 *24*, is used in calculations.
[@] Absolute intensity per 100 decays.

^{247}Bk α decay 1969Fr01,1956Ch77 (continued)

γ(^{243}Am)

I(K x-rays)≈20 (1956Ch77).

E_γ [†]	I_γ [‡@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α [#]	Comments
(41.8 *2*)	≈1.3	84	5/2$^+$	42	7/2$^-$	[E1]	1.33 *3*	α(L)=0.991 *19*; α(M)=0.252 *5* α(N)=0.0675 *13*; α(O)=0.0157 *3*; α(P)=0.00231 *5*; α(Q)=6.32×10^{-5} *11* E_γ: transition was not observed in ^{247}Bk α decay; Eγ is from ^{243}Pu β$^-$ decay. I_γ: from Iγ(41.8γ)/Iγ(84γ)=3.3 *3*/100, measured in ^{243}Pu β$^-$ decay.
84 *3*	≈40	84	5/2$^+$	0.0	5/2$^-$	E1	0.214 *22*	α(L)=0.160 *17*; α(M)=0.040 *4* α(N)=0.0107 *11*; α(O)=0.0026 *3*; α(P)=0.00042 *4*; α(Q)=1.49×10^{-5} *13* Mult.: from ^{243}Pu β$^-$ decay.
265 *10*	≈30	265	3/2$^-$	0.0	5/2$^-$	(M1+E2)	1.1 *8*	α(K)=0.8 *7*; α(L)=0.23 *7*; α(M)=0.060 *15* α(N)=0.016 *4*; α(O)=0.0041 *11*; α(P)=0.00074 *23*; α(Q)=3.E−5 *3* Mult.: α(K)exp≈0.7 from K x ray/Iγ.

† From 1956Ch77, except where noted.
‡ From 1956Ch77, except where noted. Photon intensity per 100 α decays.
# Additional information 1.
@ Absolute intensity per 100 decays.

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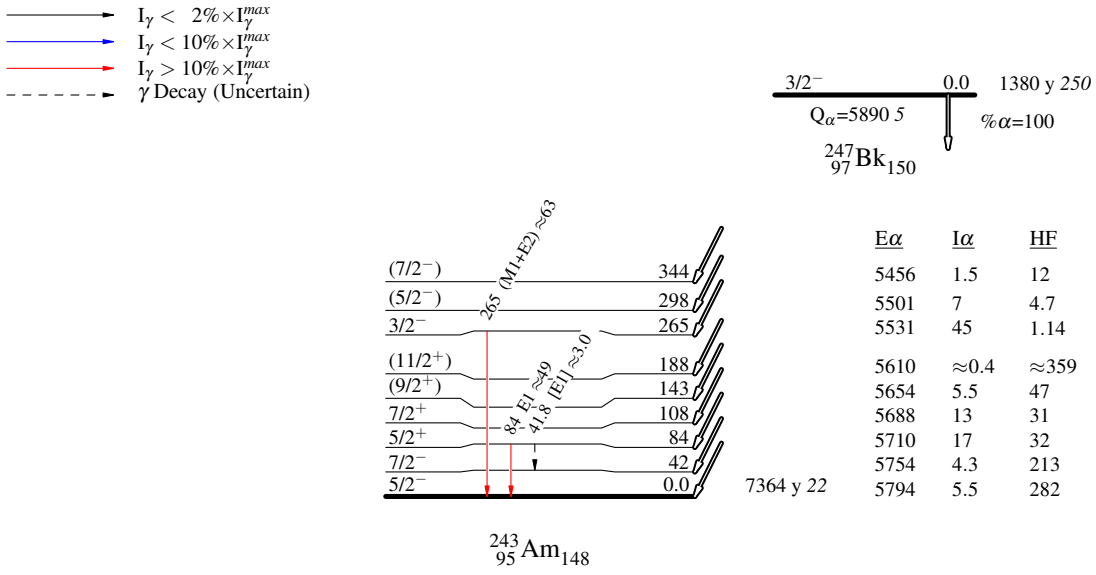
Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 decays through this branch



Eα	Iα	HF
5456	1.5	12
5501	7	4.7
5531	45	1.14
5610	≈0.4	≈359
5654	5.5	47
5688	13	31
5710	17	32
5754	4.3	213
5794	5.5	282