^{248}Bk ε decay   1978Gr10

		History	
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. J. Martin	NDS 122, 377 (2014)	1-Sep-2014

Parent: ^{248}Bk: E=0.0+x; $J^{\pi}=1^{(-)}$; $T_{1/2}$=23.7 h 2; $Q(\varepsilon)$=706 21; %ε decay=30 5

^{248}Bk-$Q(\varepsilon)$: From $Q(\beta^{-})$=860 20 for the 23.7-H ^{248}Bk (1978Gr10) and E(^{248}Cm)-E(^{248}Cf)=154 7 (2012Wa38), one gets $Q(\varepsilon)$=706 21. $Q(\varepsilon)$=687 71, a systematics value, is given by 2012Wa38 for the g.s. decay.

No γ's were observed in ^{248}Bk ε decay. Since $Q(\varepsilon)$=687 for ^{248}Bk decay, no known low-spin states other than the g.s. and 43.40-keV level are expected to be populated in the ε decay of low-spin ^{248}Bk; nonobservation of any photons is consistent with 23.7-h ^{248}Bk being a low spin parent.

^{248}Cm Levels

E(level)	J^{π}
0.0	0^{+}
43.399 25	2^{+}

ε radiations

E(decay)	E(level)	$I\varepsilon^{\dagger\ddagger}$	Log ft	Comments
(663 21)	43.399	22 5	7.64 13	εK=0.710 3; εL=0.2113 20; εM+=0.0783 9
(706 21)	0.0	78 5	7.15 9	εK=0.7156 25; εL=0.2077 17; εM+=0.0767 8

† 1978Gr10 deduced intensity of the ε branch to the 43.4-keV level to be (18±2) and (35±10) per 100 ε decays from their measured (L x ray)(L x ray) and (Kα_1 x ray)(L x ray) coincidence intensities, respectively. The weighted average of 22±5 per 100 ε decays was suggested by 1978Gr10 for the ε decay intensity to the 2^{+} state.

‡ For absolute intensity per 100 decays, multiply by 0.30 5.

$\gamma(^{248}$Cm$)$

E_{γ}	E_i(level)	J_i^{π}	E_f	J_f^{π}	Mult.	$\alpha^{\ddagger}$	$I_{(\gamma+ce)}^{\dagger}$	Comments
(43.399 25)	43.399	2^{+}	0.0	0^{+}	E2	1000 15	22 5	ce(L)/(γ+ce)=0.723 8; ce(M)/(γ+ce)=0.204 4; ce(N+)/(γ+ce)=0.0725 14 ce(N)/(γ+ce)=0.0566 11; ce(O)/(γ+ce)=0.0137 3; ce(P)/(γ+ce)=0.00223 5; ce(Q)/(γ+ce)=5.52×10^{-6} 12 E_{γ},Mult.: from Adopted Gammas. This transition has not been seen In 23.7-H ^{248}Bk ε decay. I_{γ},$I_{(\gamma+ce)}$: an intensity balance At the g.s. yields I(γ+ce)=22 5 and Iγ=0.022 5 per 100 ε decays.

† For absolute intensity per 100 decays, multiply by 0.30 5.

‡ 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   Decay Scheme

- - - - - ▸ γ Decay (Uncertain)

1$^{(-)}$ 0.0+x   23.7 h 2

Q_ε=706 21

%ε=30

$^{248}_{97}$Bk$_{151}$

<u>Iε</u>   <u>Log ft</u>

2$^+$ 43.399   6.6   7.64

43.399 E2 22

0$^+$ 0.0   23   7.15

$^{248}_{96}$Cm$_{152}$