

^{243}Es α decay [1973Es02,1989Ha27,2010An08](#)

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS	122, 293 (2014)	30-Jun-2013

Parent: ^{243}Es : $E=0$; $J^\pi=(7/2^+, 3/2^-)$; $T_{1/2}=23$ s 3; $Q(\alpha)=8072$ 10; $\% \alpha$ decay=61 6

^{243}Es - $T_{1/2}$: Measured in [2010An08](#) from timing of 7893α .

^{243}Es - $Q(\alpha)$: From [2012Wa38](#).

^{243}Es -Configuration= $7/2^+$ [633] or $3/2^-$ [521].

^{243}Es - $\% \alpha$ decay: $\% \alpha=61$ 6, $\% \varepsilon=39$ 6.

^{243}Es - $\% \alpha$ decay: from ^{243}Es α decay ([2010An08](#)).

Decay scheme based on α -particle measurements and using $Q(\alpha)$ (^{243}Es)= 8072 10 ([2012Wa38](#)).

[2010An08](#), [2006An13](#):

^{243}Es source obtained from ^{247}Md α decay.

^{247}Md was produced via $^{209}\text{Bi}(^{40}\text{Ar}, 2n)$. ^{40}Ar beam with $E=187$ and 198 MeV from the UNILAC bombarded a 0.450 $\mu\text{g}/\text{cm}^2$ metallic ^{209}Bi target evaporated on a 40 $\mu\text{g}/\text{cm}^2$ Carbon backing. The target was covered with a 10 $\mu\text{g}/\text{cm}^2$ Carbon foil. The experiments were performed at the velocity filter SHIP at GSI.

Measured: α , γ , (recoil) α , half-lives, α decay branching ratios.

Detection system: at the focal plane of SHIP two time-of-flight detectors, an array of position-sensitive Si detectors and a Ge clover detector consisting of four Ge crystals were placed.

HIVAP code was used to predict the cross sections reported in [1989Ha27](#). Theoretical calculations: Woods-Saxon potential.

 ^{239}Bk Levels

E(level)	J^π	Comments
0	$(3/2^-, 7/2^+)$	E(level): level not in 2010An08 . Suggested from adopted $Q(\alpha)$.
47 10	$(7/2^+, 3/2^-)$	
197 14		

 α radiations

$E\alpha^\dagger$	E(level)	$I\alpha^{\ddagger@}$	HF [#]	Comments
7850 20		14.6 20	18	
7745 & 10	197	3.8 11	15	$I\alpha$: Tentative α from $\alpha(\text{ER})$ correlated events.
7893 10	47	71 5	2.6	$E\alpha, I\alpha$: $E\alpha=7899$ 3, $I\alpha=87$ 12 in 1989Ha27 . 1973Es02 reported one α group at $E\alpha=7890$ 20. Additional information 2.
7939 & 10	0	11 5	24	$E\alpha, I\alpha$: From 1989Ha27 . $E\alpha$: 2010An08 has not reported this α -particle. $I\alpha$: From $I\alpha(7939)/I\alpha(7899) = (13\ 7)/(87\ 12) = 0.149\ 83$ (1989Ha27) and $I\alpha(7893)=79.4\ 25$ (2010An08). Additional information 3.

[†] From [2010An08](#), unless otherwise specified.

[‡] Renormalized by evaluators to intensities per 100 alpha-particle decays.

[#] Using $r_0(^{239}\text{Bk})=1.49$, average of $r_0(^{238}\text{Cm})=1.490\ 20$, and $r_0(^{238}\text{Cf})=1.495\ 12$ ([1998Ak04](#)).

[@] For absolute intensity per 100 decays, multiply by 0.61 6.

[&] Existence of this branch is questionable.