

<sup>233</sup>Cm  $\alpha$  decay 2010Kh06

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev, J. K. Tuli and E. Browne		NDS 208,397 (2026)	23-Oct-2025

Parent: <sup>233</sup>Cm: E=0.0; J <sup>$\pi$</sup> =(3/2<sup>+</sup>); T<sub>1/2</sub>=23 s +13-6; Q( $\alpha$ )=7470 50; % $\alpha$  decay=20 10

<sup>233</sup>Cm-Q( $\alpha$ ): From 2021Wa16.

<sup>233</sup>Cm-T<sub>1/2</sub>: From ER- $\alpha\alpha$ (t) in 2010Kh06.

<sup>233</sup>Cm-J <sup>$\pi$</sup> : From 2021Ko07 based on systematics (J <sup>$\pi$</sup> =3/2<sup>+</sup> for the N=137 isotones <sup>231</sup>Pu and <sup>229</sup>U, but J <sup>$\pi$</sup> =1/2<sup>+</sup> for the N=137 isotones <sup>227</sup>Th and <sup>225</sup>Ra).

<sup>233</sup>Cm-Probable configuration= $\nu$ 3/2[631].

<sup>233</sup>Cm-% $\alpha$  decay: % $\alpha$ =20 10, % $\epsilon$ +% $\beta^+$ =80 10 (2010Kh06).

2010Kh06: <sup>233</sup>Cm was produced in  $\alpha$  decay of <sup>237</sup>Cf that was produced in <sup>204</sup>Pb(<sup>36</sup>S,3n) reaction. The <sup>36</sup>S beam with energies of 163.6, 170.0, 172.6, 173.0 and 174.3 MeV was provided by the UNILAC accelerator at GSI. An isotopically enriched (>99% in <sup>204</sup>Pb) target was used. Evaporation residues (ERs) were separated from the primary beam and target-like ions by the velocity filter SHIP and were implanted into a position-sensitive 16-strip Si detector (PSSD). A box of six Si detectors surrounded the PSSD to detect escape  $\alpha$  and SF events. A Ge clover detector was mounted behind the Si detector for detecting X and  $\gamma$  rays. Measured ER- $\alpha\alpha$ (t) correlations.

Other: 2002CaZZ,2002CaZU. <sup>233</sup>Cm was produced in <sup>198</sup>Pt(<sup>40</sup>Ar,5n) reaction with E(<sup>40</sup>Ar)=208 MeV provided by the UNILAC accelerator at GSI. An isotopically enriched (95.7% in <sup>198</sup>Pt) target was used. ER were separated from the primary beam and target-like ions by the velocity filter SHIP and were implanted into a position-sensitive Si detector (PSSD). Measured ER- $\alpha\alpha$ (t) correlations.

<sup>229</sup>Pu Levels

E(level)	J <sup><math>\pi</math></sup>	T <sub>1/2</sub>	Comments
0.0	(3/2 <sup>+</sup> )	88 s +12-6	% $\alpha$ =50 20 (2010Kh06); % $\epsilon$ +% $\beta^+$ =50 20 (2010Kh06); %SF<7 (2010Kh06) J <sup><math>\pi</math></sup> ,T <sub>1/2</sub> : From Adopted Levels. Probable configuration= $\nu$ 3/2[631].
93 28			E(level): From E( $\alpha$ )=7345 keV 20 and 7254 keV 20 difference in 2010Kh06.

$\alpha$  radiations

E $\alpha$	E(level)	I $\alpha$ <sup>‡</sup>	HF <sup>†</sup>	Comments
7254 20	93	30 25	$\approx$ 1.2	E $\alpha$ ,I $\alpha$ : From 2010Kh06. I( $\alpha$ )=30 +30-20 in 2010Kh06.
7345 20	0.0	70 30	$\approx$ 1.1	E $\alpha$ ,I $\alpha$ : From 2010Kh06. Other: E $\alpha$ =7340 keV 10 (2002CaZZ,2002CaZU).

<sup>†</sup> r<sub>0</sub>(<sup>229</sup>Pu)=1.50 by evaluators from the trend of r<sub>0</sub> in 2020Si16.

<sup>‡</sup> For absolute intensity per 100 decays, multiply by 0.20 10.