

Measurement of ^{252}Cf Fission Fragment's Mass

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Abstract

This study presents a novel E-v measurement device called E-STONE, designed for the accurate determination of fission product mass spectra. The E-STONE device consists of two self-developed flight time detectors (SED-MCP) with an intrinsic time resolution of 56.5 ps, and an energy detector in the form of a grid ionization chamber, achieving an energy resolution of 0.7%. Utilizing the E-STONE device, the flight time spectra, kinetic energy spectra, and mass yields of fission products from a spontaneous ^{252}Cf fission source were measured. The obtained mass yield data were found to be in good agreement with ENDF/B8.0. Additionally, the study assessed the mass resolution of the E-STONE device to be 0.94 amu (102 amu) and 1.6 amu (142 amu).