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Fast neutron-induced fission of Pu-240, Am-243 and W-nat A. LAPTEV, R. HAIGHT, LANL, O. SHCHERBAKOV, A. VOROBYEV, PNPI, A. CARLSON, NIST — The fast neutron-induced fission cross sections of Pu-240, Am-243, W-nat and Bi-209 have been obtained relative to the fission cross section of U-235 for incident neutrons from 1 MeV to 200 MeV in “shape” experiments. The measurements were done at the GNEIS facility simultaneously for each investigated isotopic target using two multiplate ionization chambers and the time-of-flight (TOF) technique on a 48-m flight path. The pulsed “white spectrum” neutron source GNEIS had an average intensity of 3×10^{14} n/s, burst duration 10 ns and repetition rate 50 Hz. The statistical uncertainty of the measured cross section ratios for the actinide nuclei Pu-240 and Am-243 is about 2% at neutron energies above fission threshold and is less than 10% for the natW at energies above 150 MeV. The systematic error budget is discussed. In addition, the fission cross section of Bi-209 has been obtained to compare with results of previous experiments. The new fission cross section of U-235(n,f) from the international standards evaluation was used to convert the ratio data to fission cross-sections. Finally the shape fission cross section measurements were normalized using the new evaluations from the ENDF/B-VII.0 library for the actinides, while for the sub-actinides the normalization was done using the target thicknesses of investigated and reference (U-235) nuclei. The fission cross section of Am-243 above ~ 40 MeV was measured for the first time and that of W-nat was measured for the first time with a “white spectrum” neutron source.

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