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Energy Dependence of Fission Product Yields from ^{235}U, ^{238}U and ^{239}Pu for Incident Neutron Energies Between 0.5 and 14.8 MeV

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— Under a joint collaboration between TUNL-LANL-LLNL, a set of absolute fission product yield measurements has been performed. The energy dependence of a number of cumulative fission product yields (FPY) have been measured using quasi-monoenergetic neutron beams for three actinide targets, ^{235}U, ^{238}U and ^{239}Pu, between 0.5 and 14.8 MeV. The FPYs were measured by a combination of fission counting using specially designed dual-fission chambers and γ-ray counting. Each dual-fission chamber is a back-to-back ionization chamber encasing an activation target in the center with thin deposits of the same target isotope in each chamber. This method allows for the direct measurement of the total number of fissions in the activation target with no reference to the fission cross-section, thus reducing uncertainties. Reported are absolute cumulative fission product yields for incident neutron energies of 0.5, 1.37, 2.4, 3.6, 4.6 and 14.8 MeV. New data in the second chance fission region of 5.5 – 11 MeV are included to complete the measurements in the energy range of interest. These results are compared to previous measurements and theoretical estimates.

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