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Measurements of short-lived fission product yields using a rapid transit system

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A joint TUNL-LLNL-LANL collaboration was formed to measure the absolute fission product yields from ^{235}U, ^{238}U, and ^{239}Pu. Our goal is to study the energy evolution of fission products by using mono-energetic neutron and photon beams. In order to extend our successful fission product yield measurements to include products with shorter half-lifes, a RApid Belt-driven Irradiated Target Transfer System, named RABITTS, was constructed. This system allows us to perform cyclic activation and quantify fission products with γ-ray spectroscopy using HPGe detectors. Both a 1 meter and 10 meter transfer system have been developed, with transit times of 0.4 and 1.0 seconds, respectively. Using these systems, we have measured sub-second half-lifes. A detailed characterization of the system's performance will be shown, including preliminary fission product measurements, and the expected sensitivity.