# Photon and Neutron Based Active Interrogation of Highly Enriched Uranium

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The physics of photon and neutron based active interrogation of highly enriched uranium (HEU) using the delayed neutron re-interrogation method will be described. Two sets of active interrogation experiments were performed using a set of sub-critical configurations of concentric HEU metal hemi-shells. One set of measurements used a linear accelerator based bremsstrahlung photon source as an active interrogation source. The second set of measurements used a pulsed 14-MeV neutron generator as the active source. The neutron responses were measured for both sets of experiments. The operational details and results for both measurement sets will be described. Simulations can be tested by comparison with these measurement sets and then used to design detection systems for HEU.

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