NEUTRON CAPTURE CROSS SECTIONS OF ^{236}U AND ^{234}U

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Abstract. Accurate neutron capture cross sections of the actinide elements at neutron energies up to 1 MeV are needed to better interpret archived nuclear test data and for post-detonation nuclear attribution. The Detector for Advance Neutron Capture Experiments, DANCE, has unique capabilities that allow the differentiation of capture gamma rays from fission gamma rays and background gamma rays from scattered neutrons captured by barium isotopes in the barium fluoride scintillators. The DANCE array has a high granularity, 160 scintillators, high efficiency, and nearly 4-π solid angle. Through the use of cuts in cluster multiplicity and calorimetric energy the capture gamma-rays are differentiated from other sources of gamma rays. The preliminary results for the capture cross sections of ^{236}U are in agreement with the ENDF/B-VI evaluation. The preliminary results for ^{234}U lower are than ENDF/B-VI evaluation and are closer to older evaluations.

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