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## Neutron capture reactions at DANCE

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The Detector for Advanced Neutron Capture Experiments (DANCE) is a  $4\pi$  BaF<sub>2</sub> array consisting of 160 active detector elements. The primary purpose of the array is to perform neutron capture cross section measurements on small ( $\sim 1$  mg) and/or radioactive ( $t_{1/2} \gtrsim 100$  days) species. The measurements made possible with this array will be useful in answering outstanding questions in the areas of national security, threat reduction, nuclear astrophysics, advanced reactor design and accelerator transmutation of waste. Since the commissioning of DANCE we have performed neutron capture cross section measurements on a wide array of medium to heavy mass nuclides. Measurements to date include neutron capture cross sections on <sup>241,243</sup>Am, neutron capture and neutron-induced fission cross sections and capture-to-fission ratio ( $\alpha = \sigma_\gamma/\sigma_f$ ) for <sup>235</sup>U using a new fission-tagging detector as well as neutron capture cross sections for several astrophysics branch-point nuclei. Results from several of these measurements will be presented along with a discussion of additional physics information that can be extracted from the DANCE data.

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