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Understanding Low Energy Gamma Emission from Fission and Capture with DANCE[1] GREY WILBURN, University of Chicago, AARON COUTURE, SHEA MOSBY, Los Alamos National Laboratory — Los Alamos National Laboratory's Detector for Advanced Neutron Capture Experiments (DANCE) consists of 160 barium fluoride (BaF_2) detectors in a 4π array used to study cross-section measurements from neutron capture reactions. Further, recent studies have taken advantage of DANCE to study the gamma emission from fission, which is not well characterized. Neutron capture is studied because of its relevance to nuclear astrophysics (almost all elements heavier than iron are formed via neutron capture) and nuclear energy, where neutron capture is a poison in the reactor. Gamma ray cascades following neutron capture and fission include photons with energies between 100 keV and 10 MeV. DANCE uses a ^{6}LiH sphere to attenuate scattered neutrons, the primary background in DANCE. Unfortunately, it also attenuates low energy gamma rays. In order to quantify this effect and validate simulations, direct measurements of low energy gammas were made with a high purity germanium (HPGe) crystal. HPGe's allow for high resolution measurements of low energy gamma rays that are not possible using the BaF_2 crystals. The results and their agreement with simulations will be discussed.

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