Abstract Submitted
for the DNP16 Meeting of
The American Physical Society

Developing an in-situ Detector of Neutron-Induced Fission for Actinide Sputtering Characterization DEION FELLERS, Los Alamos National Laboratory — The physical mechanism describing the transfer of large amounts of energy due to fission in a material is not well understood and represents one of the modern challenges facing nuclear scientists, with applications including nuclear energy and national defense. Fission fragments cause damage to the material from sputtering of matter as they pass through or near the material's surface. We have developed a new technique at the Los Alamos Neutron Science Center for characterizing the ejecta by using ultracold neutrons (neutrons with kinetic energy less than 300 neV) to induce fission at finely controlled depths in an actinide. This program will ultimately provide a detailed description of the properties of the sputtered particles as a function of the depth of the fission in the material. A key component of this project is accurately quantifying the number of neutron induced fissions in the sample. This poster depicts the development of an in-situ detector of neutron-induced fission for the AShES (Actinide Sputtering from ultracold neutron Exposure at the Surface) experiment.

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Date submitted: 19 Jul 2016 Electronic form version 1.4