

Abstract Submitted
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Reducing Uncertainties in Neutron-Induced Fission Cross Sections Using a Time Projection Chamber¹ BRETT MANNING, Los Alamos National Laboratory, NIFFTE COLLABORATION — Neutron-induced fission cross sections for actinides have long been of great interest for nuclear energy and stockpile stewardship. Traditionally, measurements were performed using fission chambers which provided limited information about the detected fission events. For the case of $^{239}\text{Pu}(n,f)$, sensitivity studies have shown a need for more precise measurements. Recently the Neutron Induced Fission Fragment Tracking Experiment (NIFFTE) has developed the fission Time Projection Chamber (fissionTPC) to measure fission cross sections to better than 1% uncertainty by providing 3D tracking of fission fragments. The fissionTPC collected data to calculate the $^{239}\text{Pu}(n,f)$ cross section at the Weapons Neutron Research facility at the Los Alamos Neutron Science Center during the 2014 run cycle. Preliminary analysis has been focused on studying particle identification and target and beam non-uniformities to reduce the uncertainty on the cross section. Additionally, the collaboration is investigating other systematic errors that could not be well studied with a traditional fission chamber.

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