Abstract Submitted
for the DNP15 Meeting of
The American Physical Society

Precise Nuclear Data Measurements Possible with the NIFFTE fissionTPC for Advanced Reactor Designs RUSTY TOWELL, Abilene Christian University, NIFFTE COLLABORATION — The Neutron Induced Fission Fragment Tracking Experiment (NIFFTE) Collaboration has applied the proven technology of Time Projection Chambers (TPC) to the task of precisely measuring fission cross sections. With the NIFFTE fission TPC, precise measurements have been made during the last year at the Los Alamos Neutron Science Center from both U-235 and Pu-239 targets. The exquisite tracking capabilities of this device allow the full reconstruction of charged particles produced by neutron beam induced fissions from a thin central target. The wealth of information gained from this approach will allow systematics to be controlled at the level of 1%. The fissionTPC performance will be presented. These results are critical to the development of advanced uranium-fueled reactors. However, there are clear advantages to developing thorium-fueled reactors such as Liquid Fluoride Thorium Reactors over uranium-fueled reactors. These advantages include improved reactor safety, minimizing radioactive waste, improved reactor efficiency, and enhanced proliferation resistance. The potential for using the fissionTPC to measure needed cross sections important to the development of thorium-fueled reactors will also be discussed.

Rusty Towell
Abilene Christian University

Date submitted: 06 Jul 2015 Electronic form version 1.4