

Abstract Submitted
for the HAW09 Meeting of
The American Physical Society

Simulation of NIFFTE TPC REMINGTON THORNTON, Abilene Christian University, NIFFTE COLLABORATION — The Neutron Induced Fission Fragment Tracking Experiment (NIFFTE) collaboration's Time Projection Chamber (TPC) is designed to make high precision fission cross-section measurements. These measurements have long-term applications for future generations of nuclear power plant designs. An important component of this project is accurate simulation of the active volume including the physical features of the tracks and the electronics. Tracks are generated using the Geometry And Tracking (Geant4) simulation code, while the detector response simulation is custom written. After reading in tracks, from the Geant4 simulations, the detector response simulation transforms the data using a series of modules with behavior characterized by the TPC design. Asynchronous trigger, 3-D charge diffusion, capacitive charge sharing, digitization, random trigger cells, and noise from the electronics have been modeled. The detector response simulation was designed and written so that it can be reused in future TPC projects. This poster will focus on how these detector response modules are produced and used.

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Date submitted: 10 Aug 2009

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