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Event Reconstruction in a Time Projection Chamber Designed to Make High Precision Fission Cross Section Measurements SARVAGYA SHARMA, Abilene Christian University, NIFFTE COLLABORATION — The Time Projection Chamber (TPC), being constructed by the NIFFTE (Neutron Induced Fission Fragment Tracking Experiment) collaboration will be used for high-precision fission cross-section measurements. These measurements will aid in the design of future generations of nuclear power plants. The track reconstruction effort in the NIFFTE experiment consists of a variety of statistical estimators to perform track finding and fitting. The Hough Transform is a brute force attempt at finding tracks that isolates features in the TPC volume through data binning. To determine track fit parameters, an iterative Kalman Filter has been implemented that accounts for multiple scattering. Comparing simulated and reconstructed tracks have shown the validity of these track reconstruction methods. In my poster, I will describe these methods in detail and I will also display the results we have achieved using these routines, including the first reconstructed tracks from our prototype TPC.

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