Abstract Submitted
for the DNP16 Meeting of
The American Physical Society

Precise Measurement of Drift Velocities in Active-Target Detectors LOUIS JENSEN, Univ. of Notre Dame — Nuclear experiments with radioactive beams are needed to improve our understanding of nuclei structure far from stability. Radioactive beams typically have low beam rates, but active-target detectors can compensate for these low beam rates. In active-target detectors that are also Time-Projection Chambers (TPC), ionized electrons drift through an electric fieldto a detection device to imagethe trajectory of charged-particle ionization tracks within the chamber's gas volume. The measurement of the ionized electrons' drift velocity is crucial for the accurate imaging of these tracks. In order to measure this drift velocity, we will use a UV laser and photo-sensitive foil in a the ND-Cubedetector we are developing, periodically releasingelectrons from the foil at a known timesand a known distance from the electron detector, thereby precisely measuring the drift velocity *in situ*. We have surveyed several materials to find a material that will work well with typical solid-state UV lasers on the market. We plan to determine the best material and thickness of the foil to maximize the number of photoelectrons. The precision that will be afforded by this measurement of the drift velocity will allow us to eliminate a source of systematic uncertainty.

Louis Jensen
Univ. of Notre Dame

Date submitted: 25 Jul 2016 Electronic form version 1.4