

Abstract Submitted
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Measurement of Gain and Drift Velocity of the Prototype AT-TPC¹ MICHAEL WOLFF, College of Wooster, RIM SOUSSI TANANI, Grenoble INP - Phelma, MARCO CORTESI, WOLFGANG MITTIG, NSCL, MSU, ADAM FRITSCH, Gonzaga University — The Prototype Active-Target Time-Projection Chamber (PAT-TPC) at the National Superconducting Cyclotron Laboratory (NSCL) is used to study reactions induced by radioactive ions in a detector gas that serves both as the target and tracking medium. It employs gaseous amplification of the primary electrons that drift to the amplification gap to track and measure charged particles traversing the active gaseous volume of the chamber. A setup consisting of two THGEMs (Thick Gas Electron Multipliers) stacked on a Micromegas (Micro mesh gas amplifier) device was tested in the PAT-TPC in June and July of 2015. A 337-Si laser, a ²⁵²Cf spontaneous fission source, and an α source were used to ionize target gas molecules in the active volume. Electron drift velocity was measured as a function of the electric field held across the volume and for varying gas compositions ranging from pure H₂ to a 95:5 H₂:C₄H₁₀ mixture. Analysis of the tests provided information on conditions for optimal gain for the setup used in an August 2015 PAT-TPC experiment at the University of Notre Dames Nuclear Science Laboratory and other future experiments. Data and results will be presented.

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