

Abstract Submitted  
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**Use of a Nitrogen Laser for Calibration and Testing of Gas-Type Particle Detectors** GRANT ELLIOTT, Massachusetts Institute of Technology, MIT LABORATORY FOR NUCLEAR SCIENCE TEAM — We present a technique for calibrating gas-type particle detectors with an ultraviolet laser. A nitrogen laser is focused and shone through quartz windows installed on a time projection chamber (TPC) containing argon with methane quencher. Argon ionization is achieved over the length of the chamber and the trajectory is reconstructed using techniques identical to those used with alpha particles and cosmic muons. As such, the calibration is immediately applicable to the full range of uses of the chamber. Additionally, we outline a methodology for developing such a system, including optics and a test bed containing a tube-style detector outfitted with UV transparent glass. This test bed is used to determine the ionization profile of the focused laser prior to installation on the TPC. The tracks produced with laser calibration occur at known positions and times, are long, and remain straight in the presence of magnetic field. These advantages, combined with the wide applicability and relative ease of use of this system, make it ideal for small particle physics laboratories.

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