

Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Enhancements to the Low-Energy Ion Facility at SUNY Geneseo¹

ZACHARIAH BARFIELD, STEVEN KOSTICK, ETHAN NAGASING, KURT FLETCHER, STEPHEN PADALINO, SUNY Geneseo — The Low Energy Ion Facility at SUNY Geneseo is used for detector development and characterization for inertial confinement fusion diagnostics. The system has been upgraded to improve the ion beam quality by reducing contaminant ions. In the new configuration, ions produced by the Peabody Scientific duoplasmatron ion source are accelerated through a potential, focused into a new NEC analyzing magnet and directed to an angle of 30° . A new einzel lens on the output of the magnet chamber focuses the beam into a scattering chamber with a water-cooled target mount and rotatable detector mount plates. The analyzing magnet has been calibrated for deuteron, $^4\text{He}^+$, and $^4\text{He}^{2+}$ ion beams at a range of energies, and no significant hysteresis has been observed. The system can accelerate deuterons to energies up to 25 keV to initiate d-d fusion using a deuterated polymer target. Charged particle spectra with protons, tritons, and ^3He ions from d-d fusion have been measured at scattering angles ranging from 55° to 135° . A time-of-flight beamline has been designed to measure the energies of ions elastically scattered at 135° . CEM detectors initiate start and stop signals from secondary electrons produced when low energy ions pass through very thin carbon foils.

¹Funded in part by the U.S. Department of Energy through the Laboratory for Laser Energetics

Kurt Fletcher
SUNY Geneseo

Date submitted: 13 Jul 2017

Electronic form version 1.4