Abstract Submitted
for the DPP13 Meeting of
The American Physical Society

Comparison of Measured and Simulated Properties of Laser-Driven Ion Beams[1] JUAN C. FERNANDEZ, S. PALANIYAPPAN, R. SHAH, B.J. ALBRIGHT, J. COBBLE, D.C. GAUTIER, C. HAMILTON, C. HUANG, L. YIN, J. WILLIAMS, Los Alamos National Laboratory, B.M. HEGELICH, Univ. Texas, Austin, D. JUNG, Queen's Univ., Belfast — This presentation expands on the results in the talk by Palaniyappan et al. Multiple laser-driven ion acceleration mechanisms have been studied in a series of experiments at the Trident laser facility, enabled by a variety of laser targets, ranging from nanofoil targets of different materials to foams that provide near-critical-density plasmas. These experiments have been extensively diagnosed with many instruments and techniques, including ion spectrometers, electron spectrometers, frequency-resolved optical gating of the reflected and transmitted laser beams, and a transmitted-laser-beam profiler. Ion acceleration has been observed in both the regimes where the laser plasma remains opaque and where it becomes transparent. In some cases a measure of ion-spectral control has been demonstrated, beyond the typical Maxwellian ion distribution. In this presentation, initial simulations of these experiments are compared with spectrally and angularly resolved ion-beam characterization measurements.

[1]This work is sponsored by the LANL LDRD Program.

Juan Fernandez
Los Alamos National Laboratory

Date submitted: 12 Jul 2013 Electronic form version 1.4