Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Enhanced Electron Acceleration in Aligned Nanowire Arrays Irradiated at Relativistic Intensities ADAM MOREAU, REED HOLLINGER, CHASE CALVI, SHOUJUN WANG, YONG WANG, Colorado State University, MARIA CAPELUTO, Ciudad Universitaria, Bueno Aires, KHUBILAI BAYARSAIKHAN, Colorado State University, VURAL KAYMAK, ALEXANDER PUKHOV, Heinrich-Heine-Universitat Dusseldorf, VYACHESLAV SHLYAPTSEV, JORGE ROCCA, Colorado State University — Electron acceleration by the irradiation of solid density targets with short-pulse ultra-high intensity lasers follows Beg's scaling [1]. When irradiated at relativistic intensities, nanowire arrays have been shown to greatly enhance energy deposition compared to traditional slab targets [2]. Such targets are of interest for enhanced electron acceleration for applications such as ion acceleration and hard x-ray production. Here we compare measured spectra of electrons from nanowire and slab targets irradiated at intensities $>10^{21}$ Wcm^{-2}. We observe a significant increase in both cut off electron energy and total flux from nanowire targets due to the acceleration of electrons beyond Beg's scaling values. Detailed 3D particle in cell simulations will be discussed along with measurements of electron spectra. Supported by AFOSR grant FA9550-17-1-0278 and DOE grant DE-SC0014610 at Facilities supported by LaserNetUS grant DE-SC0019076. 1. F. N. Beg et al, PoP, 4, 447 (1997) 2. M.A. Purvis et al, Nat. Photonics 7, 796 (2013)

Adam Moreau
Colorado State University

Date submitted: 10 Jul 2019 Electronic form version 1.4