

Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Tabletop laser driven shock-ion acceleration in near-critical plasmas PAUL CAMPBELL, Univ of Michigan - Ann Arbor, P.R. KORDELL, M. LEDUC, A. MAKSIMCHUK, K. KRUSHELNICK, L. WILLINGALE, University of Michigan — An intense laser pulse interacting with near-critical density plasma can drive an electrostatic shock capable of accelerating quasi-monoenergetic, high-energy ion beams in the laboratory. Experimental plans using the T-cubed laser (1.053 μm , 15 TW, 6 J in 400 fs) will be discussed. The target parameters requirements for this experiment are investigated using quasi-1D particle-in-cell simulations. To determine and optimize the formation of a shock and the subsequent proton beam acceleration, the simulation plasma scale lengths and density profiles were varied. The resulting electron heating, shock formation and proton acceleration will be presented and discussed.

Paul Campbell
Univ of Michigan - Ann Arbor

Date submitted: 23 Jul 2015

Electronic form version 1.4