

Abstract Submitted  
for the DPP11 Meeting of  
The American Physical Society

**Circular polarization effects in ion acceleration from high intensity, short pulse laser interactions**<sup>1</sup> F. DOLLAR, C. ZULICK, S.S. BULANOV<sup>2</sup>, V. CHVYKOV, G. KALINTCHENKO, T. MATSUOKA<sup>3</sup>, C. MCGUFFEY<sup>4</sup>, A.G.R. THOMAS, L. WILLINGALE, V. YANOVSKY, A. MAKSIMCHUK, K. KRUSHELNICK, CUOS, Univ. of Michigan, G. PETROV, J. DAVIS, Division of Plasma Physics, Naval Research Laboratory — Experiments were performed to investigate ion acceleration effects from circular polarization from thin targets, using a high contrast, ultra-short laser pulse from the HERCULES laser facility at the Univ. of Michigan. Experiments were performed with 50 TW, 35 fs pulses at an intensity of  $> 10^{21}$  Wcm<sup>-2</sup> on  $Si_3N_4$  and Mylar targets of 30 nm to 1  $\mu$ m thickness with contrast  $< 10^{-13}$ . Protons with maximum energy 18 MeV and Carbon ions with energies of up to 10 MeV per nucleon were measured. Particle-in-cell simulations demonstrating the acceleration mechanism will be presented as well.

<sup>1</sup>Supported by NSF Physics Frontier Center FOCUS (Grant PHY-0114336), Defense Threat Reduction Agency, and Naval Research Laboratory. We acknowledge the OSIRIS consortium for the use of OSIRIS.

<sup>2</sup>Currently at LBNL

<sup>3</sup>Currently at Japan Aerospace Exploration Agency

<sup>4</sup>Currently at UCSD

Franklin Dollar  
Center for Ultrafast Optical Science, University of Michigan

Date submitted: 18 Jul 2011

Electronic form version 1.4