Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

Fast electron beam divergence in foil targets with embedded high-Z gold layers irradiated with ultraintense 527nm laser pulses SHAUN KERR, University of Alberta, ANTHONY LINK, Lawrence Livermore National Laboratory, CHRISTOPHER MCGUFFEY, University of California San Diego, GREGORY KEMP, DOUGLAS WERTEPNY, The Ohio State University, MIANZHEN MO, ZHIJIANG CHEN, HENRY TIEDJE, YING TSUI, ROBERT FEDOSEJEVS, University of Alberta, JONATHAN PEEBLES, FARHAT BEG, University of California San Diego, RICHARD FREEMAN, The Ohio State University, HARRY MCLEAN, PRAV PATEL, YUAN PING, Lawrence Livermore National Laboratory, HIROTAKA NAKAMURA, Imperial College, MINGSHENG WEI, RICHARD STEPHENS, General Atomics, RAFAEL RAMIS, JAVIER HONRUBIA, Universidad Politécnica de Madrid — We report on experimental measurements of fast electron beam divergence in planar Al targets with buried and surface Au layers, irradiated with second harmonic (2ω, 527-nm) laser light (50 J, 0.7 ps). In particular we study the propagation through the buried high-Z layers, which could deflect the fast electron beams through magnetic fields generated at the layer interfaces. Low prepulse energies, on the order of 10 μJ, enabled electron creation at well-defined surfaces and with cooler energy spectra compared to 1ω; in addition, shots were taken with a controlled 3mJ prepulse to generate a preplasma density profile. K_α emission from buried Cu tracer layers was imaged to give electron beam divergence, while electron temperature measurements were made with Bremsstrahlung detectors and electron spectrometers. The results will be presented and compared to PIC and hybrid-PIC simulations.

Shaun Kerr
University of Alberta

Date submitted: 23 Jul 2012 Electronic form version 1.4