Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

Preliminary characterization of ultra-short pulse laser-produced miniature hohlraum XUV sources[1] A. MCKELVEY, M. VARGAS, Center for Ultrafast Optical Science, University of Michigan, L. MONTIER, Ecole Polytechnique, J. NEES, B. HOU, A. MAKSIMCHUK, A.G.R. THOMAS, K. KRUSHELNICK, Center for Ultrafast Optical Science, University of Michigan — Experiments at the National Ignition Facility (NIF) allow the radiative properties of dense, high-temperature matter to be studied at previously unreachable regimes, but are limited by cost and system availability. A scaled down system using ultra-short laser pulses and delivering energy to a much smaller hohlraum could be capable of reaching comparable energy densities and depositing the energy before the wall material ablation closes the cavity. The Lambda Cubed laser system at University of Michigan–a high-power (0.3 TW), short pulse (30fs), 500 Hz repetition rate tabletop laser system-is used to machine 20-100 micron diameter cavities in copper targets. These cavities are machined with low laser powers, and then shot in situ with a single full power pulse. The emitted radiation is analyzed with an XUV spectrometer. This method may allow studies such as opacity measurements using plasma and radiation with the temperatures comparable to NIF type hohlraums, but with a significantly higher repetition rate and in a university scale system.

[1]This work was supported by the DTRA under grant HDTRA 1-11-1-0066.

Michael Vargas
Center for Ultrafast Optical Science, University of Michigan

Date submitted: 23 Jul 2012 Electronic form version 1.4