Abstract Submitted
for the DPP13 Meeting of
The American Physical Society

LPI studies with grazing incidence irradiation at the Nike laser[1]

J. WEAVER, D. KEHNE, A. SCHMITT, S. OBENSCHAIN, V. SERLIN, NRL, J. OH, R. LEHMBERG, RSI, J. SEELY, Berk. Res. Assoc. — Studies of laser plasma instabilities (LPI) at the Nike laser facility at NRL have previously concentrated on planar targets irradiated with their surface normal aligned to the central axis of the laser. Shots with planar targets rotated up 60° to the laser have shown changes in thresholds for the two-plasmon decay instability and stimulated Raman scattering near the quarter critical region. In the case of rotated low-Z targets, spectra were observed to shift to lower wavelength and were substantially stronger in the visible and ultraviolet spectral ranges. The low-Z target data show growth at an incident intensity slightly below (∼30%) the threshold values observed at normal incidence. A rapid rise in signal level over the same laser intensities was also observed in the hard x-ray data which serve as an overall indicator of LPI activity. Shots with rotated planar high-Z targets showed that the visible and ultraviolet emissions dropped significantly when compared to low-Z targets in the same geometry. This presentation will include results from upcoming experiments to determine the LPI signal for low-Z, high-Z, and high-Z coated targets at lower laser intensities for several angles of target rotation. Shots with widely separated laser beams are also planned to explore cross beam energy transport at Nike.

[1]Work supported by DoE/NNSA.

James Weaver
Naval Research Laboratory

Date submitted: 11 Jul 2013 Electronic form version 1.4