

Abstract Submitted
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Observation of LPI Thresholds for the Nike Laser¹ J.L. WEAVER, NRL, J. OH, RSI, B. AFEYAN, M. CHARBONNEAU-LEFORT, Polymath Research, L. PHILLIPS, J. SEELY, D. KEHNE, C. BROWN, S. OBENSCHAIN, A.J. SCHMITT, NRL, U. FELDMAN, ARTEP, G. HOLLAND, SFA, R.H. LEHMBERG, E. MCLEAN, C. MANKA, RSI — The Nike laser is being used to study thresholds for laser plasma instabilities (LPI) at intensities (10^{15} - 10^{16} W/cm²) relevant to advanced implosion designs for direct drive inertial confinement fusion. The combination of short wavelength (248 nm), large bandwidth (1-2 THz), and beam smoothing by induced spatial incoherence available with this krypton-fluoride laser make these experiments unique among current facilities. This talk will present an overview of results with an emphasis on the two-plasmon decay instability ($2\omega_p$). Measurements of x-rays and emission near $1/2 \omega_o$ and $3/2 \omega_o$ harmonics of the laser wavelength have been collected over a wide range of intensities for both solid and foam targets. Data indicate collective multiple-angle driven excitation compatible with previous observations using solid planar targets.

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