

Abstract Submitted  
for the DPP16 Meeting of  
The American Physical Society

**Measurements of Laser Plasma Instability (LPI) and Electron Density/Temperature Profiles in Plasmas Produced by the Nike KrF Laser**<sup>1</sup> JAECHUL OH, J. L. WEAVER, V. SERLIN, S. P. OBENSCHAIN, Plasma Physics Division, Naval Research Laboratory, Washington DC — We will present results of simultaneous measurements of LPI-driven light scattering and density/temperature profiles in CH plasmas produced by the Nike krypton fluoride laser ( $\lambda = 248$  nm). The primary diagnostics for the LPI measurement are time-resolved spectrometers with absolute intensity calibration in spectral ranges relevant to the optical detection of stimulated Raman scattering or two plasmon decay. The spectrometers are capable of monitoring signal intensity relative to thermal background radiation from plasma providing a useful way to analyze LPI initiation. For further understanding of LPI processes, the recently implemented grid image refractometer (Nike-GIR)<sup>a</sup> is used to measure the coronal plasma profiles. In this experiment, Nike-GIR is equipped with a 5<sup>th</sup> harmonic probe laser ( $\lambda = 213$  nm) in attempt to probe into a high density region over the previous peak density with  $\lambda = 263$  nm probe light ( $\sim 4 \times 10^{21}$  cm<sup>-3</sup>).<sup>a</sup> The LPI behaviors will be discussed with the measured data sets.<sup>a</sup> J. Oh, et al, Rev. Sci. Instrum. 86, 083051 (2015).

<sup>1</sup>Work supported by DoE/NNSA.

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Date submitted: 15 Jul 2016

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