Abstract Submitted
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**Characterization of Electron Temperature and Density Profiles of Plasmas Produced by Nike KrF Laser for Laser Plasma Instability (LPI) Research**[1] JAECHUL OH, Research Support Instruments, J.L. WEAVER, L. PHILLIPS, S.P. OBENSCHAIN, A.J. SCHMITT, D.M. KEHNE, L-Y. CHAN, V. SERLIN, Plasma Physics Division, U.S. Naval Research Laboratory — Previous experiments[2] with Nike KrF laser ($\lambda = 248nm$, $\Delta\nu \sim 1$THz) observed LPI signatures near quarter critical density ($n_c/4$) in CH plasmas, however, detailed measurement of the temperature ($T_e$) and density ($n_e$) profiles was missing. The current Nike LPI campaign will perform experimental determination of the plasma profiles. A side-on grid imaging refractometer (GIR)[3] is the main diagnostic to resolve $T_e$ and $n_e$ in space taking 2D snapshots of probe laser ($\lambda = 266nm$, $\Delta t = 8psec$) beamlets ($50\mu m$ spacing) refracted by the plasma at laser peak time. Ray tracing of the beamlets through hydrodynamically simulated (FASTRAD3D) plasma profiles estimates the refractometer may access densities up to $\sim 0.2n_c$. With the measured $T_e$ and $n_e$ profiles in the plasma corona, we will discuss analysis of light data radiated from the plasmas in spectral ranges relevant to two plasmon decay and convective Raman instabilities. Validity of the $(T_e, n_e)$ data will also be discussed for the thermal transport study.

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[2]J. Oh, et al, GO5.4, APS DPP (2010)
[3]R. S. Craxton, et al, Phys. Fluids B 5, 4419 (1993)

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