Abstract Submitted
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X-ray imaging spectroscopic diagnostics on Nike[1] Y. AGLITSKIY, M. KARASIK, V. SERLIN, J.L. WEAVER, J. OH, S.P. OBENSCHAIN, Plasma Physics Division, NRL, YU. RALCHENKO, NIST — Electron temperature and density diagnostics of the laser plasma produced within the focal spot of the NRL's Nike laser are being explored with the help of X-ray imaging spectroscopy. Spectra of He-like and H-like ions were taken by Nike focusing spectrometers in a range of lower (1.8 kev, Si XIV) and higher (6.7 kev, Fe XXV) x-ray energies. Data that were obtained with spatial resolution were translated into the temperature and density as functions of distance from the target. As an example electron density was determined from He-like satellites to Ly-alpha in Si XIV. The dielectronic satellites with intensity ratios that are sensitive to collisional transfer of population between different triplet groups of double-excited states 2l2l' in Si XIII were observed with high spatial and spectral resolution Lineouts taken at different axial distances from the planar Si target show changing spectral shapes due to the different electron densities as determined by supporting non-LTE simulations. These shapes are relatively insensitive to the plasma temperature which was measured using different spectral lines.

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