Abstract Submitted
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Dynamic measurements of laser produced argon plasmas using high resolution X-ray Thomson scattering[1] LUKE FLETCHER, EMMA MCBRIDE, SLAC National Accelerator Laboratory, BASTIAN WITTE, University of Rostock, SIEGFRIED GLENZER, SLAC National Accelerator Laboratory, HIGH ENERGY DENSITY SCIENCES TEAM — Ultra-bright coherent X-rays from the LCLS coupled with a novel micro-jet platform have enabled high resolution measurements of material properties via X-ray scattering with unprecedented dynamic range. Here we present X-ray scattering measurements from argon plasmas approaching temperatures of 200 eV. Non-resonant inelastic X-ray scattering from core, and free electrons, of ps-laser driven argon have allowed for direct measurements of the ionization, density, and temperature dynamics of the hot plasma created near the laser-material interface. Our results demonstrate the unique capability that X-ray lasers provide in order to gain detailed insights into previously unexplored regions of material phases in extreme environments.

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