Abstract Submitted
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X-ray Thomson scattering for characterization of ICF capsule implosions[1] SIEGFRIED GLENZER, Lawrence Livermore National Laboratory, BRIAN SPEARS, PAUL NEUMAYER, ANDREA KRITCHER, TILO DOEPPNER, OTTO LANDEN, LAWRENCE LIVERMORE NATIONAL LABORATORY TEAM — We have developed accurate x-ray Thomson scattering techniques to measure the physical properties of dense plasmas produced in high-energy density physics experiments. Powerful penetrating x-ray sources are employed to probe these short-lived hot dense states of matter with electron densities in the range of solid density and higher. The back-scattering spectrum accesses the non-collective Compton scattering regime, which provides accurate diagnostic information on the temperature, density and ionization states. The forward scattering spectrum has been shown to measure the collective plasmon oscillations. Applying these techniques for the characterization of the short-lived imploding capsule conditions in inertial confinement fusion experiments suggest that future experiments can yield the in-flight capsule adiabat and entropy.

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