

Abstract Submitted
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Imaging X-ray Thomson Scattering at the Omega Laser Facility¹

E.J. GAMBOA, University of Michigan, D.S. MONTGOMERY, Los Alamos National Labs, R.P. DRAKE, University of Michigan — Probing dense plasmas using the technique of x-ray Thomson scattering (XRTS) can yield the temperature, density, and ionization state. Measurements of these parameters are essential to refine models for the equation of state (EOS). We report on the development of a 1D imaging spectrometer which combines high spatial ($<25 \mu\text{m}$) and spectral (3-4 eV at 9 keV) resolutions with a long (several mm) field of view. Plasma parameters can be extracted along spatial profiles for the study of the EOS for radiative shocks in dense plasmas, the warm dense matter regime, and many more potential applications in high-energy density experiments. We report on initial results from fielding a similar design on an XRTS experiment at the Trident laser at Los Alamos National Laboratory. These results motivate the integration of the diagnostic on the OMEGA laser at the Laboratory for Laser Energetics.

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