Abstract Submitted
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X-ray Thomson Scattering Development for Z[1] E.C. HARDING, T. AO, J.E. BAILEY, S.B. HANSEN, R.W. LEMKE, D.B. SINARS, G.A. ROCHAU, M.P. DESJARLAIS, L.P. MIX, I.C. SMITH, J. RENEKER, Sandia National Lab, G. GREGORI, University of Oxford — X-ray Thomson Scattering experiments were recently conducted on Sandia's Z machine using a newly developed experimental platform. This platform exploits Z's unique capability to generate large volumes of uniformly shocked warm dense matter. The scattering target is CH_2 foam (0.1 g/cc), and is designed to reach a temperature (pressure) of 2.4 eV (0.3 Mbar). X-rays generated from a laser heated Mn foil probe the foam in the non-collective regime. An imaging spectrometer collects the scattered x-rays with a spherically-bent Germanium crystal that provides spatial resolution across the shocked and unshocked foam. We present the results and analysis from several fully integrated Z experiments. The resulting spectra are compared to various bound-free scattering models.

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