

Abstract Submitted
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Bound-Compton profiles for inelastic x-ray scattering in warm, dense matter¹ PAUL DAVIS, University of California, Berkeley, GIANLUCA GREGORI, University of Oxford, JOE BRADLEY, JERRY SEIDLER, University of Washington, Seattle, PAUL NEUMAYER, Gesellschaft für Schwerionenforschung GSI, ROGER FALCONE, University of California, Berkeley, TILO DOEPPNER, JOE RALPH, SIEGFRIED GLENZER, Lawrence Livermore National Laboratory — Inelastic x-ray scattering has recently been developed as a powerful diagnostic method for determining the densities and temperatures of warm dense matter. Accurate measurements require determination of the spectral bound-free Compton profile. Thus, improved models of bound-free transitions are of great interest to correctly infer the inelastic scattering component from bound and free electrons, particularly in mid-Z systems. We present inelastic scattering spectra taken from un-shocked samples of Boron at the Advanced Photon Source (APS) synchrotron and laser-driven samples at LLNL's Titan laser. These spectra are compared with profiles calculated within the impulse approximation. These measured profiles provide an important tool for analyzing scattering in warm, dense systems. Additionally, they will be used as a benchmark for an improved self-consistent-field model of bound-free transitions currently in development.

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