

Abstract Submitted  
for the DPP20 Meeting of  
The American Physical Society

**X-ray Thomson scattering from collective electron oscillations in dense beryllium plasmas at the National Ignition Facility<sup>1</sup>**  
LUKE FLETCHER, SLAC National Accelerator Laboratory, TILO DOEPPNER, Lawrence Livermore National Laboratory, DOMINIK KRAUS, Helmholtz-Zentrum Dresden-Rossendorf, DIRK GERICKE, University of Warwick, PAUL NEUMAYER, GSI, MANDY BETHKENHAGEN, University of Rostock, BENJAMIN BACHMANN, ALISON SAUNDERS, Lawrence Livermore National Laboratory, MAXIMILLIAN SCHORNER, University of Rostock, MICHAEL MACDONALD, LAURENT DIVOL, OTTO LANDEN, Lawrence Livermore National Laboratory, RONALD REDMER, University of Rostock, SIEGFRIED GLENZER, SLAC National Accelerator Laboratory — X-ray Thomson scattering is a widely recognized technique for measuring physical properties and parameters of dense plasmas. In this presentation we show the development of inelastic plasmon scattering in the forward collective scattering geometry to demonstrate first-principles temperature measurements from detailed balance and evaluate the extent of contributions from collisional damping to evaluate electrical conductivity in near-degenerate plasma conditions. Here we resolve the x-ray scattering spectrum from a spectrally narrow, intense laser-produced 9 keV Zn He-alpha x-ray probe on hohlraum-driven compressed beryllium targets with a total laser energy approaching 1 MJ. Importantly, we use a copper backlight filter to reduce the x-ray source bandwidth and deliver a narrow x-ray source to resolve the much smaller plasmon shift compared to Compton scattering.

<sup>1</sup>US DOE LLNL Contract DE-AC52-07NA27344

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Date submitted: 29 Jun 2020

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