Abstract Submitted
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Experimental determination of the Plasmon dispersion in warm-dense Beryllium.[1] PAUL NEUMAYER, ANDREA KRITCHER, OTTO LANDEN, LLNL, HAEJA LEE, UCB, KLAUS WIDMANN, SIEGFRIED GLENZER, LLNL — The dispersion of electron plasma waves is of fundamental interest as it determines optical properties of matter. We apply x-ray Thomson scattering to measure the Plasmon dispersion in a solid-density radiatively heated beryllium plasma. A 0.6 mm diameter beryllium cylinder was isochorically heated by x-rays produced by irradiation of a silver foil with laser pulses of up to 10 kJ of energy at a wavelength of 355 nm. The plasma is probed by chlorine Lyman-alpha line radiation at 2.96 keV, produced from chlorine containing plastic foils driven by 12 kJ of laser energy. The scattered probe radiation is spectrally resolved with a high efficiency gated crystal spectrometer in forward direction giving access to the collective scattering regime. By varying the probe source location various scattering angles have been accessed. The data are compared to the current high-density statistical plasma models.

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