

Abstract Submitted
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Transmission spectroscopy and atomic kinetics of neon photoionized plasma experiments at Z¹ R. MANCINI, I. HALL, T. DURMAZ, University of Nevada, Reno, J. BAILEY, G. ROCHAU, Sandia National Laboratories, D. COHEN, Swarthmore College, M. FOORD, R. HEETER, Lawrence Livermore National Laboratory — We discuss a series of experiments performed at the Z facility in which photoionized plasmas were produced by driving a neon-filled gas cell with the intense x-ray flux emitted at the collapse of a z-pinch. The broad-band radiation flux from the z-pinch is used to both create the neon photoionised plasma and provide a source of backlighting photons to study the atomic kinetics through K-shell transmission spectroscopy. The plasma is contained in cm-scale gas cell and the filling pressure is carefully monitored in situ all the way to shot time since it is the particle number density diagnostic of the plasma. Time-integrated and gated transmission spectra are recorded with a TREX spectrometer equipped with two KAP elliptically-bent crystals and a set of slits to record up to six spatially-resolved spectra per crystal in the same shot. The transmission data shows line absorption transitions in several ionization stages of neon. Detailed modeling calculations are used to interpret the data.

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