

Abstract Submitted
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Absorption spectroscopy of wire-array plasma at the non-radiative stage¹ V.V. IVANOV, P. HAKEL, R.C. MANCINI, P. WIEWIOR, T. DURMAZ, A. ANDERSON, A. ASTANOVITSKIY, O. CHALYY, S.D. AL-TEMARA, D. PAPP, E. MCKEE , University of Nevada, Reno, J.P. CHITTENDEN, N. NIASSE , Imperial College, London, UK, A.P. SHEVELKO , Brigham Young University, Provo, UT — Absorption spectroscopy was applied to 1 MA wire-array Z-pinches. The 50 TW Leopard laser was coupled with the Zebra generator for x-ray backlighting of wire arrays. Wire-array plasmas were investigated at the ablation and implosion stages. Broadband x-ray radiation from a laser produced Sm plasma was used to backlight Al star wire arrays in the range of 7-9 Å. Two time-integrated x-ray conical spectrometers recorded reference and main spectra. The backlighting radiation was separated from the powerful Z-pinch x-ray burst by collimators. A comparison of the backlighting radiation spectra that passed through the plasma with reference spectra indicates absorption lines in the range of 8.2-8.4 Å. A plasma density profile was simulated with a 3D resistive MHD code. Simulations with atomic kinetics models derived an electron temperature of Al wire-array plasma.

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