

Abstract Submitted
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Development of absorption spectroscopy for wire-array Z-pinches¹ A. ANDERSON, V.V. IVANOV, P. HAKEL, R.C. MANCINI, P. WIEWIOR, T. DURMAZ, A.L. ASTANOVITSKIY, O. CHALYY, S.D. AL-TEMARA, D. PAPP, E. MCKEE, University of Nevada, Reno, NV, J.P. CHITTENDEN, N. NIASSE, Imperial College, London, UK, A.P. SHEVELKO, Brigham Young University, Provo, UT — The 50 TW Leopard laser was coupled with the 1 MA Zebra generator for the x-ray backlighting of wire arrays. The Leopard laser is based on the chirped pulse amplification and can operate in subpicosecond or subnanosecond regimes. Several materials were tested in both regimes and samarium was selected for subnanosecond backlighting in the range of 7-9 Å. One ray of Al wire-arrays was investigated at the ablation and implosion stages. Two focusing conical spectrometers with mica crystals recorded reference and main spectra on x-ray film. Collimators protected spectrometers against the x-ray burst from the main Z-pinch. Comparison of spectra of backlighting radiation with reference spectra indicates absorption lines in the range of 8.2-8.4 Å. The electron temperature of wire-array plasma was estimated from simulations with atomic kinetics models.

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