

Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Investigation of implosion dynamics and magnetic fields in 1-MA wire arrays by optical probing diagnostics¹ P.J. LACA, V.V. IVANOV, V.I. SOTNIKOV, A.L. ASTANOVITSKIY, B. LE GALLOUDEC, T.E. COWAN, University of Nevada, Reno, 5625 Fox Ave. Reno NV 89506, G.S. SARKISOV, Ktech Corp., Albuquerque, NM 87123 — Multiframe optical probing diagnostics were applied for the investigation of implosion dynamics and magnetic fields in z-pinch plasma of wire arrays and x-pinches at the Nevada Terawatt Facility (NTF). Five shadow frames per shot, with a long 34-ns or short 9-ns pulse train, presents fine details of plasma evolution in the wire array. A Faraday rotation diagnostic consists of identical shadow and Faraday channels, shearing air-wedge interferometer, and schlieren channel. Evolution of the wire array z-pinch in different regimes of implosion was investigated. Fast dynamics of bubbles in plasma streams were studied in detail. A current in the plasma column of Al wire arrays and magnetic bubbles were found by the Faraday rotation diagnostic.

¹Work was supported by the DOE/NNSA under UNR grant DE-FC52-01NV14050.

Paul Laca
University of Nevada, Reno, 5625 Fox Ave. Reno NV 89506

Date submitted: 25 Jul 2005

Electronic form version 1.4