

Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Laser probing diagnostics of z-pinches at the Zebra generator¹ A. HABOUB, A.A. MOROZOV, V.V. IVANOV, T.E. COWAN , University of Nevada, Reno, G.S. SARKISOV, Ktech Corp., Albuquerque — Laser probing diagnostics were developed for the investigation of implosion dynamics and magnetic fields in cylindrical, linear, and nested wire arrays at the Nevada Terawatt Facility. Plasma diagnostics includes a five-frame optical probing of the z-pinch in 3 directions with a long 34-ns or short 9-ns pulse train. Four frames of the shadowgraphy cover two probing directions. The third probing direction includes: shadowgraphy, Faraday rotation diagnostics, interferometry, and schlieren diagnostics all at one temporal location. In every z-pinch shot this high-resolution multi-frame imaging diagnostics produces eight instant images of fast moving plasma objects on CCD cameras. Implosions with speeds 250-500 km/s were recorded in the wire arrays and the dynamics of the implosion plasma bubbles, current reconnection, as well as a shock in the precursor were observed. The issues of z-pinch imaging and Faraday rotation diagnostics with 1-MA wire arrays were analyzed.

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

Abdelmoula Haboub

Date submitted: 18 Jul 2006

Electronic form version 1.4