Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

Dynamic measurement of plasma density in wire array z-pinches by using continuum interferometry[1] A. HABOUB, V.V. IVANOV, University of Nevada, Reno, G.S. SARKISOV , Ktech Corp., Albuquerque, NM, UNIVERSITY OF NEVADA, RENO TEAM, KTECH CORP., ALBUQUERQUE, NM COLLABORATION — Measurement of the electron plasma density with regular laser interferometery encounters the zero-number fringe issue on the axis of the z-pinch. From the ablation stage on, the density of the inhomogeneous plasma increases quickly and produces a very complicated structure of fringes. We suggested a new continuous interferometry diagnostic that has been developed for the 1-MA Zebra generator. This diagnostic can record a continuous history of the interferograms and the individual evolution of the streaked fringes. It is based on a Nd:YAG laser with a long probing pulse of 300 ns at either the fundamental wavelength or the second harmonic, a Mach Zehnder interferometer, and an optical streak camera. By using this new diagnostic, the precursor z-pinch plasma density can be precisely measured during the ablation and the implosion phases in wire arrays.

[1]Work was supported by the DOE/NNSA under UNR grant DE-FC52-06NA27616.

A. Haboub
University of Nevada, Reno

Date submitted: 17 Jul 2009 Electronic form version 1.4