Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Optical Diagnostics of Laser Plasma Wakefield Experiments using 200 Terawatt Pulses[1] F.J. DOLLAR, Y. HOROWITZ, C. MCGUFFEY, FOCUS Center and CUOS, Univ. of Michigan, Ann Arbor, C. HUNTINGTON, AOSS, Univ. of Michigan, Ann Arbor, T. MATSUOKA, S. BULANOV, V. CHVYKOV, G. KALINTCHENKO, P. ROUSSEAU, V. YANOVSKY, FOCUS Center and CUOS, Univ. of Michigan, Ann Arbor, R.P. DRAKE, AOSS, Univ. of Michigan, Ann Arbor, A. MAKSIMCHUK, K. KRUSHELNICK, FOCUS Center and CUOS, Univ. of Michigan, Ann Arbor — Understanding the electron injection mechanism in laser wakefield acceleration (LWFA) is a key to realizing GeV class electron acceleration. To study the interaction of 30 fs laser pulses with power up to 200 TW at the Hercules laser facility with LWFA plasmas various optical diagnostics were employed. The transverse optical probe has been utilized for shadowgraphy and interferometry in order to study laser propagation. The probe was also used as a faraday rotation diagnostic to measure self generated magnetic fields due to electron beam current. The magnetic fields measurements reveal the insight into the electron injection mechanism.

[1]This research was supported by NSF grant PHY-0114336.

Franklin Dollar
FOCUS Center and CUOS, Univ. of Michigan, Ann Arbor

Date submitted: 20 Jul 2008 Electronic form version 1.4