Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Proton Deflectometry of Electric and Magnetic Fields R.P.J. TOWN, M.J. EDWARDS, O.L. LANDEN, A.J. MACKINNON, P.K. PATEL, M. TABAK, Lawrence Livermore National Laboratory, Livermore, CA, C.K. LI, R.D. PETRASSO, F.H. SEGUIN, Massachusetts Institute of Technology, Cambridge, MA
— Highly penetrating proton beams, generated by irradiating a thin foil target with picosecond laser pulses at intensities up to 10^{20} Wcm^{-2} have been used to detect electric and magnetic fields in laser-produced plasmas [1]. More recently experiments to characterize the transient electric and magnetic fields using mono-energetic protons from imploding D^{3}He-filled capsules have been performed [2]. In the deflectometry technique a beam of protons is passed through a mesh to generate a grid of proton beamlets. This proton beam is passed through the laser-generated plasma and the grid deflection can be measured. We report on LASNEX calculations of such laser-produced plasmas, which predict electric fields of the order of 10^9V/m and 1MG magnetic fields. We will show LSP calculations of proton transport through such electric and magnetic fields and compare them to the experimental data. [1] A. J. Mackinnon, *et al.*, Rev. Sci. Instrum. **75**, 3531 (2004). [2] C. K. Li, *et al.*, Bull. Am. Phys. Soc **50**, 266 (2005). This work was performed under the auspices of the U.S. Department of Energy by the University of California, Lawrence Livermore National Laboratory under contract No. W-7405-Eng-48. The experimental work was performed at the LLE National User's Facility under grant number DE-SC52-04NA25436.

Richard Town
Lawrence Livermore National Laboratory

Date submitted: 19 Jul 2006 Electronic form version 1.4