## Abstract Submitted for the DPP11 Meeting of The American Physical Society

First Measurements of Rayleigh-Taylor-Induced Magnetic Fields M. MANUEL, C.K. LI, F. SEGUIN, J. FRENJE, D.T. CASEY, N. SINENIAN, R.D. PETRASSO, MIT, S. HU, J. HAGER, LLE, V.A. SMALYUK, LLNL — The Rayleigh-Taylor (RT) hydrodynamic instability has been a concern for shell integrity during the acceleration phase of Inertial Confinement Fusion (ICF) implosions. However, RT can also induce magnetic fields and reduce electron thermal conduction to the ablation front. RT-induced magnetic fields on the order of a mega-Gauss have been theoretically predicted and simulated, but never measured. If present, these self-generated fields will reduce heat flux and affect implosion dynamics. An experimental method for measuring these elusive fields using a combination of monoenergetic proton radiography and Monte-Carlo simulations is described, and experimental measurements of RT-induced magnetic fields are presented. This work was performed at LLE and was supported in part by US DoE, the NLUF and FSC at U. of R., LLE, and LLNL.

F. Seguin MIT

Date submitted: 18 Jul 2011 Electronic form version 1.4