Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Simulation of monoenergetic proton radiography images of ICF hohlraums and capsules M. MANUEL, F.H. SÉGUIN, S. MCDUFFEE, C.K. LI, D.T. CASEY, J.A. FRENJE, J.R. RYGG, R.D. PETRASSO, MIT, V.A. SMALYUK, UR-LLE — A Monte-Carlo program is being developed for simulating radiographic images that could be obtained of objects of importance to the ICF program by using 14.7-MeV fusion protons from imploded ICF capsules with thin glass shells and D^3He fuel. Experiments we've performed at the OMEGA laser facility have already proven that such imaging is very good for studying the spatial distribution of B fields generated by laser-plasma interactions when the protons pass through small amounts of low-Z material (e.g. ~ 1 mg/cm^2 of Al or CH). Other objects we would like to image, including high-Z hohlraums with laser-generated B fields, imploded ICF capsules, and various foils used for planar Rayleigh-Taylor experiments, will subject the protons to more scattering that will degrade image spatial resolution. We will present simulations of images of some of these objects and discuss the practical limits of this type of imaging technology. The work described here was performed in part at the LLE National Laser User's Facility (NLUF), and was supported in part by US DOE (Grant No. DE-FG03-03SF22691), LLNL (subcontract Grant No. B504974), and LLE (subcontract Grant No. 412160-001G).

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Date submitted: 25 Jul 2006 Electronic form version 1.4