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**Simulating Mono-energetic Proton Radiographs of Inertial Confinement Fusion Experiments using the Geant4 Monte Carlo Particle Transport Toolkit** M.J.-E. MANUEL, F.H. SEGUIN, C.K. LI, J.R. RYGG, J.A. FRENJE, R.D. PETRASSO, MIT PSFC, R. BETTI, O. GOTCHEV, J. KNAUER, F. MARSHALL, D.D. MEYERHOFER, V.A. SMALYUK, UR LLE — Proton radiography has been used to image Inertial Confinement Fusion (ICF) capsules during their implosions as well as to quantitatively measure magnetic fields generated by laser-plasma interactions at the OMEGA laser facility. An imploded, D<sup>3</sup>He-filled capsule provides mono-energetic, ~15-MeV protons for radiographing another capsule. We are developing simulated models of these experiments using the Geant4 Monte Carlo Particle Transport Toolkit (G4). Of particular interest are the limitations on spatial resolution caused by scattering effects. Experimental and simulated results will be presented for different experiments and models. This work was performed in part at the LLE National Laser User's Facility (NLUF), and was supported in part by US DOE, LLNL, LLE and FSC at Univ. Rochester.

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