Abstract Submitted
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Direct-Drive, Foam-Target ICF Implosions J.P. KNAUER, P.W. MCKENTY, K.S. ANDERSON, T.J.B. COLLINS, V.N. GONCHAROV, Laboratory for Laser Energetics, U. of Rochester — CH foam targets with a glow discharge polymer (GDP) outer layer are mass-equivalent surrogates of cryogenic D_2 targets that can be used at room temperatures. The GDP layer is typically 5 μm thick with a 1000-Å Al overcoat and acts as a gas retention barrier for these targets that can be filled with either D_2 or DT. The ~90-μm-thick CH foam with a density of 0.18 g/cc is the ablator and the imploding fuel layer. The possible adiabats (α, defined as the fuel pressure divided by the Fermi pressure) for these targets are similar to those of cryogenic targets ranging from $1 \leq \alpha \leq 25$. High-gain targets are being scaled to the OMEGA laser energy to study and optimize low-adiabat, and shaped-adiabat, direct-drive implosions. The shell adiabat is shaped with the laser pulse by either launching a decaying shock wave (DS),[1] propagating a supported shock in a relaxing density profile (RX),[2] or a combination of these two techniques. Target implosions will be analyzed with both 1-D and 2-D hydrodynamic simulations and this information will be used to optimize an overall target design for ignition experiments on the NIF. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC2-92SF19460.

[1]V. N. Goncharov *et al.*, Phys. Plasmas **10**, 1906 (2003).
[2]K. Anderson and R. Betti, Phys. Plasmas **11**, 5 (2004).

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