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Shock-Timing Measurements in ICF Targets Filled with Cryogenic Deuterium T.R. BOEHLY, M.A. BARRIOS, D.E. FRATANDUONO, V.N. GONCHAROV, S.X. HU, T.J.B. COLLINS, J.A. MAROZAS, T.C. SANGSTER, D.D. MEYERHOFER, Laboratory for Laser Energetics, U. of Rochester, P.M. CELLIERS, H.F. ROBEY, D.G. HICKS, J.H. EGGERT, G.W. COLLINS, R. SMITH, LLNL — High-performance ICF target designs use multiple shock waves to condition the target before it is imploded. Accurate timing of these shocks is critical to target performance. A series of experiments at the Omega Laser Facility have used velocity interferometry to measure shocks in directly driven cryogenic targets. Multiple spherical shocks were observed propagating in liquid deuterium. The measured shock velocities and shock-coalescence times are compared to hydrodynamic simulations. We discuss similar experiments to be performed at the National Ignition Facility. These will be used to fine-tune laser pulse shapes to achieve the specifications and performance needed for ignition targets. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

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