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Rayleigh–Taylor Measurements in Planar Cryogenic D_2 Targets Using X-Ray Radiography on OMEGA J.D. HAGER, V.A. SMALYUK, S.X. HU, D.D. MEYERHOFER, T.C. SANGSTER, Laboratory for Laser Energetics, U. of Rochester — Understanding how areal-density modulations grow in cryogenic D_2 at ablative Rayleigh–Taylor unstable interfaces is crucial to achieving ignition in direct-drive inertial confinement fusion. Experiments were preformed on OMEGA where planar cryogenic targets, consisting of 50 μm of D_2 in between two 5-μm CD windows, were driven with square and shaped laser pulses. Initial modulations consisted of 2-D preimposed and 3-D imprinted perturbations. Once the foot of the drive ablates the front CD window, the modulations grow in the D_2 during the main part of the pulse. These modulations feed through to the rear surface as they grow, where they can be detected with face-on, x-ray radiography using an $\sim$1.3-keV uranium backlighter. Temporal growth of these modulations and results of 2-D simulations will be presented. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement DE-FC52-08NA28302.

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