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Numerical Simulations of Hydrodynamic Instability Growth in Polar-Direct-Drive Implosions at the National Ignition Facility A. SHVYDKY, M. HOHENBERGER, P.B. RADHA, M.J. ROSENBERG, R.S. CRAXTON, V.N. GONCHAROV, J.A. MAROZAS, F.J. MARSHALL, P.W. MCKENTY, S.P. REGAN, T.C. SANGSTER, Laboratory for Laser Energetics, U. of Rochester — Control of shell nonuniformities imprinted by the laser and amplified by hydrodynamic instabilities in the imploding target is critical to the success of polar-direct-drive ignition at the National Ignition Facility (NIF). To develop a platform for laser-imprint studies, hydrodynamic instability growth experiments in laser-driven implosions were performed on the NIF. The experiments used cone-in-shell targets with sinusoidal modulations of various wavelengths and amplitudes machined on the surface. Throughshell x-ray radiography was used to measure optical depth variations, from which the amplitudes of the shell areal-density modulations were extracted. Results of *DRACO* simulations of the growth of preimposed modulations and imprint-seeded perturbations will be presented and compared with the experimental data. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

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