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Perturbation Growth Seeded by a Metal Foam[1] S.G. GLENDINNING, K.L. BAKER, A.W. COOK, D.M. DOANE, T.R. DITTRICH, S.A. FELKER, R.M. SEUGLING, S.A. MACLAREN, Lawrence Livermore Natl Lab, A.S. MOORE, S. MCALPIN, AWE — We have designed experiments for the Omega laser investigating the growth of pertubations between a Cu foam (density ~ 1 g/cc) and a carbonized resorcinol formaldehyde (CRF) foam (density ~ 0.05 g/cc). The interface between the two foams is impulsively accelerated by a 1 ns (7.5 kJ) laser drive in a gold hohlraum (peak $T_R \sim 185$ eV). The growth is seeded by internal structures in the Cu foam that are characterized by x-ray tomography. Because of the strong dependence of viscosity on ionization, the Cu plasma is expected to have a much lower viscosity (and higher Reynolds number) than a comparable experiment with plastic in place of the Cu, and the Cu experiment is predicted to quickly become turbulent. We have simulated this experiment with the radiation-hydrodynamics code LASNEX (integrated hohlraum simulations). Various void structures were then simulated using the codes KULL and MIRANDA to test the effect of differing initial conditions.

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