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Validation of LASNEX Calculations of the Beryllium Ablator Microstructure and Stability Experiments BARBARA G. DEVOLDER, S. ROBERT GOLDMAN, NELSON M. HOFFMAN, JAMES A. COBBLE, THOMAS E. TIERNEY, Los Alamos National Laboratory — The Omega laser at the University of Rochester is being used to evaluate ablative Rayleigh-Taylor instability growth rates in beryllium, a candidate for capsule ablator material for the National Ignition Facility. Recent experiments ("Late-time Radiography of Beryllium Ablators in Long-pulse Gas-filled Hohlraums," J.A. Cobble, invited talk) using a gas-filled hohlraum drive with a composite 6-ns laser pulse have characterized unstable growth of machined sinusoidal surface perturbations on copper-doped beryllium samples, radiation temperatures in the hohlraum, and preheat and shock behavior in the beryllium. The two-dimensional radiation-hydrodynamics code LASNEX has been used to simulate these experiments. With the goal of matching calculations and experimental results, we have tested different models and parameters in the code. We describe a range of calculations, indicating those that are validated by experimental data and assessing possible limitations of the models that may preclude validation. This work was performed under the auspices of the U.S. Department of Energy under Contract No. W-7405-ENG-36.

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