Abstract Submitted
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Simulations of high-mode Rayleigh-Taylor growth in NIF ignition capsules[1] B.A. HAMMEL, S.W. HAAN, M.J. EDWARDS, D. CLARK, M.M. MARINAK, M. PATEL, J. SALMONSON, Lawrence Livermore National Laboratory — Hydrodynamic growth at mode numbers up ∼1000 is important for several unstable surfaces in ICF capsules. The "buried" ablator:fuel interface is unstable during acceleration, and supports short wavelength (∼ 2 μm) Rayleigh-Taylor (R-T) growth. Roughness on the inner ablator surface grows by a factor of ∼1000, leading to mixing of the pusher into the dense fuel. The roughness of the inner DT fuel surface, which can include fine cracks, can also seed short wavelength growth at this interface. On the outer ablator surface, very high mode growth is stabilized by ablation and the density gradient, however, for some target designs modes up to ∼200 are important. Finally, features of the capsule "fill-tube" are ∼ 5 μm scale length, and can seed short wavelength growth at the ablation front and the ablator:fuel interface. To optimize capsule designs, we are performing 2D and 3D HYDRA simulations that resolve up to mode ∼1000. The results of this work will be presented.

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