Abstract Submitted
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Simulations of high-mode Rayleigh-Taylor growth in NIF ignition capsules[1] B.A. HAMMEL, M.J. EDWARDS, S. HAAN, M. MARINAK, M. PATEL, H. ROBEY, J. SALMONSON, Lawrence Livermore National Laboratory — The inner surface smoothness requirement for NIF ignition capsules is driven by maintaining acceptable Rayleigh-Taylor (R-T) growth at the pusher/fuel interface. During the implosion, the DT fuel reaches higher density than the pusher material accelerating it. Growth near this interface is stabilized only by density gradient effects, plasma viscosity and mass diffusion. The density gradient is influenced by thermal conduction across the interface, in response to the difference in temperature in the x-ray absorbing pusher and the relatively transparent fuel. Thermal conduction models are uncertain in this regime ($\sim$10 g/cc and $\sim$30 eV), and may be significant in determining the overall R-T growth. The growth can be modified by varying the radial profile of a high-Z dopant in the ablator. To optimize capsule designs, we are performing 2D and 3D HYDRA simulations that resolve up to mode $\sim$2000. The results of this work will be presented.

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Bruce Hammel
Lawrence Livermore National Laboratory

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