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A Study of 2-D Internal Perturbation Evolution in Inertial Confinement Fusion Implosions[1] SAMUEL MILLER, VALERI GONCHAROV, University of Rochester — Performance degradation in direct-drive inertial confinement fusion (ICF) implosions can be caused by several effects, one of which is Rayleigh-Taylor (RT) instability growth. Defects in ICF targets like inner surface voids and surface roughness create seeds for RT growth during the initial phase of implosions. Perturbations created by these defects are propagated along acoustic waves that reverberate within the shell. The presence of an ablator–ice interface creates reflected rarefaction and compression waves that can amplify these initial seeds and perturbations. A comprehensive understanding of the evolution of these particular waves and perturbations is required to characterize the influence of these internal defects. The evolution and amplification of 2-D perturbations and their acoustic wave propagation within a planar target will be presented. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0003856.

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