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The effects of fill tubes and capsule perturbations on NIF ignition implosions. JOHN EDWARDS, MARTY MARINAK, BRIAN SPEARS, TOM DITTRICH, STEVE HAAN, LLNL — The notion of using a fill tube to charge an ignition capsule in-situ with DT fuel is very attractive because it eliminates the need for cryogenic transport of the target from the filling station to the target chamber, and in principle is one way of allowing any material to be considered as an ablator. A nominal configuration we are studying is a ~ 1 mm radius Cu doped Be capsule with a $\sim 10 \mu\text{m}$ diameter glass fill tube driven at ~ 300 eV. To explore the effect of the tube on capsule performance we use the radiation hydrocode HYDRA in 2D. For the capsule above, the perturbation is small and HYDRA predicts very close to 1D clean yield. In this talk we will consider how this result is affected by the choice of capsule and tube material, the specifics of how the tube is attached to the capsule, and by interaction with perturbations from surface roughness. This work was performed under the auspices of the U.S. Department of Energy by the University of California, Lawrence Livermore National Laboratory under contract No. W-7405-Eng-48.

John Edwards
LLNL

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