Abstract Submitted
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**Alternative approach to ICF ignition and burn propagation**[1] R. E. OLSON, B. M. HAINES, R. R. PETERSON, G. A. MOSES, LANL — The path to ICF ignition and propagating burn via high convergence ratio (CR) DT ice layer capsules has been challenging. In the present study, we use xRage and Hydra simulations to explore an alternative path to ignition and burn propagation. In this alternative approach, we propose that hot spot formation and burn propagation can be explored in sequential experiments. We begin with DT gas-filled capsules with modest CR to demonstrate a relatively large ignition-level hot spot. Although energy invested in the hot spot increases with size, important tradeoffs are that the stagnation pressure required for self-heating is reduced as hot spot size increases and that hot spot formation has improved robustness to instabilities and asymmetries as CR decreases[1]. In follow-up experiments, we would add a liquid DT layer[2] to explore burn propagation from the previously demonstrated ignition-level hot spot. Designs of both the DT gas capsules and the corresponding DT liquid layer capsules will be discussed. 1. B. M. Haines et al., "The effects of convergence ratio on the implosion behavior of DT layered ICF capsules," Phys. Plasmas 24, 072709 (2017). 2. R. E. Olson et al., "First Liquid Layer Inertial Confinement Fusion Implosions at the National Ignition Facility," Phys. Rev. Lett. 117, 245001 (2016).

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