Abstract Submitted
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Impact of low-mode asymmetry on the integrity of stagnation phase[1] N. IZUMI, B.K. SPEARS, D.C. EDER, A.E. PAK, J.J. RUBY, C.B. YEAMANS, R. HATARIK, S.W. HAAN, D.A. CALLAHAN, O.A. HURRICANE, D.K. BRADLEY, D.T. CASEY, Lawrence Livermore National Lab. — In inertial confinement fusion experiments, kinetic energy of the accelerated shell is converted to the internal energy of the low density core. If an implosion is not uniform enough (in terms of shape, mass, or velocity), the efficiency of the conversion is degraded and a significant fraction of the energy stays as kinetic energy of the fluid motion. Experimentally, it is possible to infer the speed of the fluid motion from the Doppler shift and broadening of the neutrons produced in the burning region [1,2]. In the case of recent "high-foot" shots, the neutron time-of-flight diagnostics are indicating the existence of substantial residual fluid motion. To maximize the efficiency of the conversion, it is important to quantify how the perturbation given to x-ray drive or capsule shape affects the efficiency of the conversion. We carried out implosion experiments with an imposed low mode asymmetry (to the x-ray drive and the ice layer thickness) and measured how the given perturbation affects the core performance (neutron yield, areal density). The results of the experiment and the comparison to hydrodynamic simulations will be reported.

[1] M. Gatu Johnson, et al., Phys. Plas. 20, 042707 (2013)
[2] B. Spears, et al., Rhys. Plas 21. 042702 (2014).

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