Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

**Magnetized HDC ignition capsules for yield enhancement and implosion magnetohydrodynamics**[1] G. ZIMMERMAN, D. HO, J. PERKINS, G. LOGAN, S. HAWKINS, M. RHODES, LLNL — Imposing a magnetic field on capsules can turn capsules that fail, because of low 1-D margin, into igniting capsules that give yield in the MegaJoule range. The imposed magnetic field can be amplified by up to O($10^3$) as it is being compressed by the imploding shell, e.g. if the initial field is 50T, then the field in the hot spot of the assembled configuration can reach $>10^4$ T. (We are currently designing hardware that can provide a field in the 50T range inside NIF hohlraums.) With this highly compressed field strength, the gyro radius of alpha particles becomes smaller than the hot spot size. Consequently, the heating of the hot spot becomes more efficient. The imposed field can also prevent hot electrons in the holhraum from reaching the capsule. We choose capsules with high-density carbon (HDC) ablators for this study. HDC capsules have good 1-D performance and also have short pulses (10 ns or less), allowing the use of low gas-filled or near-vacuum hohlraums which provide high coupling efficiency. We describe a 2-D simulation of a 3-shock HDC capsule. We will show detailed magnetohydrodynamic evolution of the implosion. HDC capsules with 2-shock pulses have low margin because of their high adiabat, and it is difficult to achieve ignition in realistic 2-D simulations. The improvement in performance for 2-shock magnetized capsules will be presented.

[1]This work was supported by LLNL Laboratory Directed Research and Development LDRD 14-ER-028 under Contract DE-AC52-07NA27344.

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Date submitted: 10 Jul 2014 Electronic form version 1.4