

Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

Hydra modeling of the effect of nearly complete inflight ice and ablator mix in a NIF implosion on several key diagnostics ANDREA KRITCHER, SCOTT SEPKE, HOWARD SCOTT, Lawrence Livermore National Laboratory, SEAN REGAN, Laboratory for Laser Energetics, LAURENT MASSE, KUMAR RAMAN, Lawrence Livermore National Laboratory, GARY GRIM, Los Alamos National Laboratory, CHARLIE CERJAN, MARTY MARINAK, BRIAN SPEARS, NATHAN MEEZAN, LARRY SUTER, Lawrence Livermore National Laboratory — A programmed mix model is used with the radiation hydrodynamics code HYDRA to explore the effects of nearly complete inflight mixing of the ice and ablator on NIC implosion performance and diagnostic signatures. In NIC DT implosions, nearly complete mix of the DT ice and ablator can be envisioned via cold jets of material penetrating the ice possibly combined with turbulence at the fuel-ablator interface. The quantitative impact of this scenario on several key NIF diagnostics, including yield, ion temperature, downscattered neutron spectrum, neutron imaging, Ge and Cu atomic emission analysis, gated x-ray imaging, and streaked x-ray radiography will be discussed. This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344. LLNL-ABS-564191.

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Date submitted: 19 Jul 2012

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