Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

Simulations of Xenon Activation in Indirect Drive Exploding Pushers on NIF[1] SCOTT M. SEPKE, LAURA BERZAK HOPKINS, CHARLES CERJAN, MARTY MARINAK, Lawrence Livermore National Laboratory — The indirect drive exploding pusher (IDEP) has proven to be a robust and well understood platform for experiments at the National Ignition Facility. We investigate the effect of adding xenon dopant in different concentrations to the DT gaseous fuel in IDEP capsules at various fill densities of experimental relevance — 1.5–3 mg/cc — through integrated capsule-hohlraum simulations using HYDRA. The primary metrics used to evaluate the performance are changes in neutron shock flash time and bang time, neutron yield, and the neutron time of flight temperature. In addition, the new post-processing code KUDU is used to explore the nuclear activation of the xenon dopant for natural xenon as well as pure Xe-124 and Xe-134 using the new post-processing code KUDU: a multiprocess (MPI), multithreaded (POSIX threads), and accelerator capable (CUDA and OpenACC) rate equation solver developed at Lawrence Livermore National Laboratory for radiochemistry modeling.

[1]This work (LLNL-ABS-656222) performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

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Date submitted: 08 Jul 2014 Electronic form version 1.4