Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

Reduced indirect drive RT instability growth using a decaying first shock at the National Ignition Facility ANDREW MACPHEE, KEVIN BAKER, DANIEL CASEY, PETER CELLIERS, DANIEL CLARK, Lawrence Livermore National Laboratory, EMILIO GIRALDEZ, General Atomics, ALEX HAMZA, KENNETH JANCAITIS, OGDEN JONES, JEREMY KROLL, KAI LAFORTUNE, BRIAN MACGOWAN, JOSE MILOVICH, Lawrence Livermore National Laboratory, ABBAS NIKROO, General Atomics, LUC PETERSON, KUMAR RAMAN, HARRY ROBEY, VLADIMIR SMALYUK, CHRISTOPHER WEBER, CLIFFORD WIDMAYER, STEVEN HAAN, Lawrence Livermore National Laboratory, LAWRENCE LIVERMORE NATIONAL LABORATORY TEAM[1] — Hydrodynamic instabilities and poor fuel compression are major factors for capsule performance degradation in ignition experiments on the NIF. We are developing modified drives to reduce instability growth compared to previous ignition pulses whilst maintaining the low fuel adiabat needed for increased compression. Laser drive profiles with a decaying first shock ("adiabat shaping") were developed that alter the Richtmyer-Meshkov growth phase and reduce the subsequent inflight Rayleigh-Taylor growth. Using in-flight x-ray radiography of 1D ripples at various wavelengths, the first growth measurements using these new shaped drives will be presented for 3-shock and 4-shock designs.

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

Andrew MacPhee
Lawrence Livermore National Laboratory

Date submitted: 11 Jul 2014 Electronic form version 1.4