Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

Using a Fourth Laser Wavelength on the NIF to Control the Flow-Induced Crossed Beam Energy Transfer JOSEPH RALPH, PIERRE MICHEL, ANDREAS KEMP, DAVID STROZZI, BRIAN MACGOWAN, NATHAN MEEZAN, OTTO LANDEN, JEAN-MICHEL DINICOLA, NUNO LEMOS, MIKHAEL BELYAEV, RICHARD BERGER, DEBRA CALLAHAN, THOMAS CHAPMAN, LAURENT DIVOL, DENISE HINKEL, JOHN MOODY, OGDEN JONES, MICHAEL STADERMANN, ABBAS NIKROO, Lawrence Livermore Natl Lab — Controlling and understanding the many laser plasma interactions (LPI) in laser driven inertial confinement fusion (IFC) continues to be a major challenge. Crossed beam energy transfer (CBET) occurs as a result of plasma flows at the laser entrance holes and within the gold hohlraums used in Indirect drive ICF experiments on the National Ignition Facility (NIF). Of the 192 beamlines on the NIF, 2/3s are outer cone beamlines, depositing their energy near the laser entrances within the hohlraum. In these experiments, we use a 1.1 MJ high density carbon ablator platform to measure the transfer that occurs in ICF experiments between outer cone beamlines using a newly developed fourth laser oscillator on the NIF allowing 4 colors. In this series we infer the early time CBET by comparing hohlraum wall expansion and the late time CBET by comparing Stimulated Brillouin Backscatter. We will present data and analysis and compare with simulations results. This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

Joseph Ralph
Lawrence Livermore Natl Lab

Date submitted: 16 Jul 2020 Electronic form version 1.4