Abstract Submitted
for the DPP13 Meeting of
The American Physical Society

On FAST3D simulations of directly-driven inertial-fusion targets with high-Z layers for reducing laser imprint and surface non-uniformity growth[1] JASON BATES, ANDREW SCHMITT, U.S. Naval Research Laboratory, MARCEL KLAPISCH, Berkeley Research Associates, Inc., MAX KARASIK, STEVE OBENSCHAIN, U.S. Naval Research Laboratory — Modifications to the FAST3D code have been made to enhance its ability to simulate the dynamics of plastic ICF targets with high-Z overcoats. This class of problems is challenging computationally due in part to plasma conditions that are not in a state of local thermodynamic equilibrium and to the presence of mixed computational cells containing more than one material. Recently, new opacity tables for gold, palladium and plastic have been generated with an improved version of the STA code [A. Bar-Shalom *et al.*, Phys Rev A, **40** (1989)]. These improved tables provide smoother, higher-fidelity opacity data over a wider range of temperature and density states than before, and contribute to a more accurate treatment of radiative transfer processes in FAST3D simulations. Furthermore, a new, more efficient subroutine known as "MMEOS" has been installed in the FAST3D code for determining pressure and temperature equilibrium conditions within cells containing multiple materials [M. Gittings *et al.*, Comput. Sci. Disc. **1**, 015005 (2008)]. We will discuss these topics, and present new simulation results for high-Z planar-target experiments performed recently on the NIKE Laser Facility.

[1]Work supported by DOE/NNSA.

Jason Bates
U.S. Naval Research Laboratory

Date submitted: 10 Jul 2013 Electronic form version 1.4