Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

High Gain Fast Ignition Point Design P.K. PATEL, P. AMENDT, C.D. CHEN, D. CLARK, B. COHEN, D.S. HEY, L. DIVOL, D. HIGGINSON, D. HO, D. HOMOELLE, A.J. KEMP, M.H. KEY, D. LARSON, B. LASINSKI, S. LE PAPE, T. MA, H. MCLEAN, D.J. MEEKER, Y. PING, H. SHAY, D.J. STROZZI, M. TABAK, R.P.J. TOWN, B. WESTOVER, S.C. WILKS, Lawrence Livermore National Laboratory — The fast ignition (FI) approach to inertial confinement fusion offers the potential for achieving the high target gains required for Inertial Fusion Energy (IFE). In FI a D-T fuel capsule is first compressed via a quasi-isochoric implosion to form a high density core, and then ignited with a short-pulse laser-generated relativistic electron beam. This paper reports progress on the development of a point design for an indirect-drive re-entrant cone FI target. The design incorporates 2-D radiation-hydrodynamics modeling of the capsule implosion around a cone, particle-in-cell (PIC) modeling of the short-pulse laser absorption and electron generation at the cone tip, and hybrid-PIC modeling of the electron transport and heating in the compressed fuel. This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

P.K. Patel
Lawrence Livermore National Laboratory

Date submitted: 20 Jul 2010 Electronic form version 1.4