Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Physics of Short Laser Pulse Heated Solid Targets Revealed by Code Comparisons[1] RICHARD LONDON, ANDREAS KEMP, MARK SHERLOCK, Lawrence Livermore National Laboratory, NATHAN SIRCOMBE, MARTIN RAMSAY, AWE Aldermaston — Physical properties of hot dense plasmas, such as opacity and equation-of-state, are increasingly being studied with solid targets heated by short-pulse lasers. In the conventional scenario, an intense laser pulse produces hot electrons, which then heat the bulk of the target. However, there remain many unanswered questions about the physics of the energy coupling and transport in such targets. To answer these questions, we have embarked on a project to compare simulation results produced by several independent computer codes. We describe the role of pre-plasma scale length in determining the hot electron spectra and the importance of various coupling mechanisms between hot electrons and the bulk plasma. We discuss plans to identify optimal simulation methods to better utilize short pulse heated targets for studying hot dense matter.

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

Richard London
Lawrence Livermore National Laboratory

Date submitted: 13 Jul 2017 Electronic form version 1.4