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Thermal conductivity measurements of warm dense iron at the LCLS[1] A. MCKELVEY, S. JIANG, G. COLLINS, R. SHEPHERD, S. P. HAURIEGE, Lawrence Livermore National Laboratory, M. P. HILL, C. R. D. BROWN, E. FLOYD, J. D. FYRTH, J. W. SKIDMORE, Directorate of Research and Applied Science, AWE plc, R. HUA, F. N. BEG, University of California San Diego, M. KIM, B. CHO, J. LEE, GIST, J. KING, R. R. FREEMAN, The Ohio State University, H. J. LEE, E. GALTIER, SLAC National Accelerator Laboratory, P. AUDEBERT, Ecole Polytechnique, A. LEVY, Pierre and Marie Curie University, Y. PING, Lawrence Livermore National Laboratory — Accurate knowledge of conductivity characteristics in the strongly coupled plasma regime is extremely important for ICF processes such as the onset of hydrodynamic instabilities, thermonuclear burn propagation waves, shell mixing, and efficient x-ray conversion of indirect drive schemes. Recently, an experiment was performed at the LCLS at SLAC to measure the thermal conductivity of warm dense iron. The experiment used 6.8 keV x-rays to differentially heat thin bi-layer Au/Fe targets and establish a prompt temperature gradient at the layer interface. We used a SOP and a FDI to measure the rear layer's time-resolved temperature, expansion velocity, and reflectivity. Data from the time-resolved diagnostics for 100 nm Au and 50 to 100 nm Fe targets will be presented along with analysis and comparison with various models in the strongly coupled plasma regime.

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