Abstract Submitted
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Thermal conductivity study of warm dense matter by differential heating on LCLS and Titan[1] M. HILL, AWE, A. MCKELVEY, S. JIANG, R. SHEPHERD, S. HAU-RIEGE, H. WHITLEY, P. STERNE, S. HAMEL, G. COLLINS, Y. PING, LLNL, C. BROWN, E. FLOYD, J. FYRTH, D. HOARTY, AWE, R. HUA, M. BAILLY-GRANDVAUX, F. BEG, UCSD, B. CHO, M. KIM, J. LEE, GIST, H. LEE, E. GALTIER, SLAC — A differential heating platform has been developed for thermal conduction study, where a temperature gradient is induced and subsequent heat flow is probed by time-resolved diagnostics. Multiple experiment using this platform have been carried out at LCLS-MEC and Titan laser facilities for warm dense Al, Fe, amorphous carbon and diamond. Two single-shot time-resolved diagnostics are employed, SOP (streaked optical pyrometry) for surface temperature and FDI (Fourier Domain Interferometry) for surface expansion. Both diagnostics provided excellent data to constrain release equation-of-state (EOS) and thermal conductivity. Data sets with varying target thickness and comparison between simulations with different thermal conductivity models are presented.

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