Abstract Submitted
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Thermal conduction study of warm dense aluminum by proton differential heating[1] Y. PING, G. KEMP, A. MCKELVEY, A. FERNANDEZ-PANELLA, R. SHEPHERD, G. COLLINS, LLNL, H. SIO, MIT, J. KING, R. FREEMAN, OSU, R. HUA, C. MCGUFFEY, J. KIM, F. BEG, UCSD — A differential heating platform has been developed for thermal conduction study (Ping et al. PoP 2015), where a temperature gradient is induced and subsequent heat flow is probed by time-resolved diagnostics. An experiment using proton differential heating has been carried out at Titan laser for Au/Al targets. Two single-shot time-resolved diagnostics are employed, SOP (streaked optical pyrometry) for surface temperature and FDI (Fourier Domain Interferometry) for surface expansion. Hydrodynamic simulations show that after ˜15ps, absorption in underdense plasma needs to be taken into account to correctly interpret SOP data. Comparison between simulations with different thermal conductivity models and a set of data with varying target thickness will be presented.

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