Abstract Submitted
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Measurement of ultra-fast material dependent heating from solid foils in high-intensity laser-plasma interaction experiments[1] R.L. WEBER, E. CHOWDHURY, R.R. FREEMAN, J. MORRISON, L. VAN WOERKOM, The Ohio State University, E. GARCIA SAIZ, F. KHATTAK, D. RILEY, Queens University Belfast, S. ROSE, Imperial College, S. GLENZER, S. HANSEN, S. WILKS, LLNL, B. BARBREL, M. KOENIG, LULI, A. PELKA, M. ROTH, T.U. Darmstadt, R.J. CLARKE, M. NOTLEY, D. NEELY, RAL, G. GREGORI, University of Oxford and RAL — Ultra-fast material dependent radiative heating of dense matter was observed at the Vulcan 100 TW laser facility at RAL (UK). These processes are driven by the transport of fast electrons which isochorically heat the solid at temperatures where radiative processes may become important. The peak laser intensity on target was $\sim 10^{19}$ W/cm^{-2} for irradiation of 200 μm square solid foils consisting of PVDC sandwiched between either 1 μm Au, CH, or Al to study differences between high and low Z materials in the radiation drive. Characteristic x-ray emission from Cl was analyzed using time resolved and time integrated graphite Bragg crystals, as well as an XUV spectrometer. The plasma expansion at the rear of the target was monitored with a pinhole camera. Numerical simulations of the characteristic Cl emission have been used to infer the plasma conditions in the target.

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Rebecca Weber
Department of Physics, The Ohio State University

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