

Abstract Submitted
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Quasi-Isentropic and Shock Compression Measurements of Iron Response by Direct Laser Illumination¹ THOMAS E. TIERNEY, IV, DAMIAN C. SWIFT, SHENG-NIAN LUO, Los Alamos National Laboratory, JONATHAN NIEMCZURA, University of Texas at Austin — We performed a series of dynamic loading experiments on iron with pressures of 50-400 GPa at the Trident Laser Laboratory. We used 2.4 ns laser pulses of varying shapes and irradiances, 2 to 1000 GW/cm² to load a 5-mm diameter region of rolled iron foils that were 25-50 microns thick. The temporal characteristic of the laser irradiance was tailored to produce shock or quasi-isentropic loading histories. Line-imaging VISAR was used to time-resolve free surface velocities. In most experiments, two different thickness samples, placed side-by-side, were subjected to the same irradiance history. We describe the experiment configuration, analysis, and results.

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