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Isochoric Heating of Reduced Mass Targets by Ultra-Intense Lasers[1] S.C. WILKS, A.J. KEMP, D.S. HEY, P.K. PATEL, S. LEPAPE, M.M. MARINAK, P. NEUMAYER, S. GLENZER, Lawrence Livermore National Security, G. GREGORI, Central Laser Facility, CCLRC Rutherford Appleton Laboratory, S.N. CHEN, F. BEG, University of California, San Diego, W.L. KRUER, University of California, Davis — Recent results using a novel target design that allows material high temperature ($\sim$ 1 keV) solid density plasmas to be created using ultra-intense laser pulses will be presented. Layered targets composed of titanium and tamped with aluminum were irradiated with 1$<$ E $<$ 200 Joules, 1 and 10 picosecond laser pulses. Significant increases in temperature over standard foil targets were observed. Using refined energy conservation arguments and coupling of PIC simulation results into a rad-hydro code, theoretical predictions of achievable temperatures are compared against temperatures inferred from experimental data. Predictions for plastic, titanium, and copper targets irradiated by a wide range of laser parameters will also be presented.

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