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Ion Heating of Plasma to Warm Dense Matter Conditions for the study of High-Z/Low-Z Mixing[1] R. ROYCROFT, G.M. DYER, E. MCCARY, C. WAGNER, A. BERNSTEIN, T. DITMIRE, University of Texas, Austin, B.J. ALBRIGHT, J.C. FERNANDEZ, W. BANG, P.A. BRADLEY, D.C. GAUTIER, C.E. HAMILTON, S. PALANIYAPPAN, M.A. SANTIAGO CORDOBA, E.L. VOLD, L. YIN, Los Alamos National Laboratory, B.M. HEGELICH, University of Texas, Austin — The evolution of the interface between a light and heavy material isochorically heated to warm dense matter conditions is important to the understanding of electrostatic effects on the hydrodynamic models of fluid mixing. In recent experiments at the Trident laser facility, the target, containing a high Z and a low Z material, is heated to around 1eV by laser accelerated aluminum ions. In preparation for continued mixing experiments, we have recently heated aluminum to ˜20eV by laser accelerated protons on the Texas Petawatt Laser. We fielded a streaked optical pyrometer to measure surface temperature. The pyrometer images the rear surface of a heated target on a sub-nanosecond timescale with 400nm blackbody emissions. This poster presents the details of the experimental setup and pyrometer design, as well as results of ion and proton heating of aluminum targets, and ion heating of high-Z/low-Z integrated targets.

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