

Abstract Submitted  
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**Dynamic Phase Imaging using Ultrafast High-Energy X-rays<sup>1</sup>** J. WORKMAN, J. COBBLE, K. FLIPPO, D.C. GAUTIER, D.S. MONTGOMERY, D.T. OFFERMANN, Los Alamos National Lab — High-energy x-ray images of laser-shocked polystyrene produced through phase contrast imaging performed on the Trident 200-TW laser facility are presented. The plastic targets are nominally transparent to traditional x-ray absorption but show detailed features in regions of high density gradients due to refractive effects often called phase contrast imaging. The 200-TW Trident laser is used both to produce the x-ray source and to shock the polystyrene target. X-rays at 17-keV produced from 2-ps, 100-J laser interactions with a 12-micron molybdenum wire are used to produce a small source size, required for optimizing refractive effects. Shocks are driven in the 1-mm thick polystyrene target using 2-ns, 200-J, 532-nm laser drive with phase plates. X-ray source characteristics, x-ray images and shock comparisons to 1-D hydro calculations, HELIOS-CR, will be presented.

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Jonathan Workman  
Los Alamos National Laboratory

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