

Abstract Submitted
for the SHOCK13 Meeting of
The American Physical Society

Optical distance measurements to recover the material approach missed by optical velocimetry MATTHEW BRIGGS, Los Alamos National Laboratory, DAN KNIERIM, Tektronix, ERIK MORO, SHAWN MCGRANE, Los Alamos National Laboratory — Optical velocimetry is limited to measuring the component of the target velocity along the axis of the optical beam, thereby allowing a laterally moving tilted surface to approach a probe undetected. In some applications it is important to know the distance to the target surface, and the forgoing means that integrating the velocity can give incorrect calculations of position. We will present three approaches to overcome this limitation: Tilted wavefront interferometry to map time of flight into fringe displacement; pulse bursts for which we measure the change in the average arrival time of a burst, and amplitude modulation interferometry in which a change in path length shows up as a change in the phase of the modulation. All three of these have the potential to be integrated with existing velocimetry probes for simultaneous velocity and displacement measurements. We will also report on initial tests of these approaches. LAUR - 13-21022

Matthew Briggs
Los Alamos National Laboratory

Date submitted: 22 Feb 2013

Electronic form version 1.4