

Abstract Submitted
for the SHOCK11 Meeting of
The American Physical Society

Two-dimensional Imaging Velocity Interferometry: Technique and Data Analysis¹ DAVID ERSKINE, RAY SMITH, LLNL, CINDY BOLME, LANL, PETER CELLIERS, GILBERT COLLINS, LLNL — Velocity interferometers measuring target motion to high precision have been an important diagnostic in shockwave physics for many years. Until recently, this diagnostic has been limited to measuring motion at points or lines across a target. We describe an emerging interferometric technique for measuring motion across a two-dimensional image. Future advances in detector technology allows two-dimensional motion pictures, but the current implementation with integrating detectors uses pulsed illumination to freeze the target motion and return a velocity map at a specific moment in time. An ordinary image (lacking fringes) is also produced simultaneously. The preferred experimental arrangement includes a traditional line velocity interferometer measuring the same target, so that complementary records of velocity vs time and velocity vs x,y target position at a specific time are both measured. The 2-d interferometric technique, fringe analysis, and example data from recent experiments are described.

¹This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

David Erskine
LLNL

Date submitted: 25 Jan 2011

Electronic form version 1.4