

Abstract Submitted
for the SHOCK07 Meeting of
The American Physical Society

Decreasing Impact Tilt on a High Performance Two-Stage Gas Gun M.E. BYERS, P.A. RIGG, J.S. ESPARZA, Los Alamos National Laboratory — There are four high-performance two-stage light gas guns in operation in the DOE complex. All four guns are similar in performance and diagnostics capabilities. Projectile velocity on these guns has typically been measured using a combination of magnetic coils and two frames of flash radiography. This requires that the projectile be in 'free flight' for a long distance (18 to 25 inches typical) in order to capture the projectile in flight. This leads to typical projectile tilt at impact in excess of 10 mrad. Recently, we have replaced the coil/x-ray system on the LANL high performance two-stage gun with Photonic Doppler Velocimetry (PDV) to obtain high accuracy (0.1%) projectile velocity measurements. This allows us to move the target very close to the end of the barrel to potentially decrease the impact tilt significantly. We will present the results of this study and compare them to the performance of the gun when the free flight section was present.

Paulo Rigg
Los Alamos National Laboratory

Date submitted: 26 Feb 2007

Electronic form version 1.4