

Abstract Submitted
for the SHOCK19 Meeting of
The American Physical Society

Uncertainty Analysis for Transverse Surface Velocity Measurements JEFF LAJEUNESSE, Sandia National Laboratories, PETER SABLE, JOHN BORG, Marquette University — Transverse surface velocity measurements are fundamental to performing pressure-shear plate impact experiments. Recent works have utilized slight variations of traditional velocimetry techniques that measure apparent velocity from a combination of fiber optic probes aligned at non-zero angles relative to a surface normal. Various methods involving active and/or passive angled probes are proposed. This work compares the uncertainty in each approach using a multi-component velocity test case and explores the influence of parameters such as probe angle relative to the surface normal, impact angle, and measurement uncertainty of the velocimetry system. Recommendations for optimal configuration are presented. Sandia National Laboratories is a multi-mission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA0003525.

Jeff LaJeunesse
Sandia National Laboratories

Date submitted: 02 Mar 2019

Electronic form version 1.4