

Abstract Submitted  
for the DFD17 Meeting of  
The American Physical Society

**Stereo Particle Shadow Velocimetry** JEFF HARRIS, CHRISTINE TRUONG, MICHAEL MCPHAIL, ARNIE FONTAINE, Pennsylvania State University — An extension of planar particle shadow velocimetry (PSV) to obtain stereoscopic measurements is presented. PSV is a measurement technique comparable to particle image velocimetry (PIV), the difference being the method of flow field illumination. Pulsed LEDs are used for backlighting in PSV, whereas a laser sheet is used in PIV. PSV is a useful alternative to PIV when there is not optical access for a laser sheet while also providing improved safety and reduced cost. The planar method of PSV has been proven a viable substitute for PIV in 2-component measurements, but the method has not yet been benchmarked for 3-component measurements, such as in stereoscopic imaging. A comparison of stereo PIV and stereo PSV is presented for flow from a simple round jet. The jet was situated in-line with the focal plane (flowing parallel to the laser sheet) and off the focal plane flowing through the laser sheet, thus giving a measurable third component of velocity.

Jeff Harris  
Pennsylvania State University

Date submitted: 31 Jul 2017

Electronic form version 1.4