



# Stereo Imaging Velocimetry Technique Using Standard Off-The-Shelf CCD Cameras

By Elizabeth Gray

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 30 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. Stereo imaging velocimetry is a fluid physics technique for measuring three-dimensional (3D) velocities at a plurality of points. This technique provides full-field 3D analysis of any optically clear fluid or gas experiment seeded with tracer particles. Unlike current 3D particle imaging velocimetry systems that rely primarily on laser-based systems, stereo imaging velocimetry uses standard off-the-shelf chargecoupled device (CCD) cameras to provide accurate and reproducible 3D velocity profiles for experiments that require 3D analysis. Using two cameras aligned orthogonally, we present a closed mathematical solution resulting in an accurate 3D approximation of the observation volume. The stereo imaging velocimetry technique is divided into four phases: 3D camera calibration, particle overlap decomposition, particle tracking, and stereo matching. Each phase is explained in detail. In addition to being utilized for space shuttle experiments, stereo imaging velocimetry has been applied to the fields of fluid physics, bioscience, and colloidal microscopy. This item ships from La Vergne,TN. Paperback.



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