Abstract Submitted
for the DFD07 Meeting of
The American Physical Society

**Automating Digital Holographic Spray Analysis** DAVID OLINGER, KHALED SALLAM, Oklahoma State University — The physics of the breakup of liquid jets are of interest in many disciplines. Primary breakup along the liquid jet surface and the secondary breakup in the dense spray region drive the droplets' size and velocity distributions. Experimental techniques, such as shadowgraphy and Phase Doppler Interferometry, can be inadequate due to the limited depth of field or the restriction to spherical droplets. Holographic diagnostics have been successful in probing this dense region, providing 3D size and velocity measurements. Current digital holographic reconstruction has solved most of the problems associated with chemical development of holographic plates; however, the current methods of holographic data reduction using visual focusing is time consuming and subject to human error. The objective of the present research is to automate the process of identifying, locating, and measuring liquid droplets in the dense spray region near the liquid core. Edge detection and dynamic filtering are tested on droplets in "cluttered" holograms in the near injector region of an aerated liquid jet in subsonic crossflow. The results include automatic identification of the droplets' locations and velocities using particle tracking techniques.

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Date submitted: 03 Aug 2007 Electronic form version 1.4