

Abstract Submitted  
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**Distributed Processing of PIV images with a low power cluster supercomputer** BARTON SMITH, KYLE HORNE, THOMAS HAUSER, Utah State University — Recent advances in digital photography and solid-state lasers make it possible to acquire images at up to 3000 frames per second. However, as the ability to acquire large samples very quickly has been realized, processing speed has not kept pace. A 2-D Particle Image Velocimetry (PIV) acquisition computer would require over five hours to process the data that can be acquired in one second with a Time-resolved Stereo PIV (TRSPIV) system. To decrease the computational time, parallel processing using a Beowulf cluster has been applied. At USU we have developed a low-power Beowulf cluster integrated with the data acquisition system of a TRSPIV system. This approach of integrating the PIV system and the Beowulf cluster eliminates the communication time, thus speeding up the process. In addition to improving the practicality of TRSPIV, this system will also be useful to researchers performing any PIV measurement where a large number of samples are required. Our presentation will describe the hardware and software implementation of our approach.

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