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The estimation and software implementation of PIV uncertainty

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ABSTRACT

The uncertainty in measurements resulting from particle image velocimetry (PIV) arrives from a wide variety of sources including physical, experimental, and algorithmic. As a developer of PIV software for both image capture and analysis, TSI Inc. has worked with researchers to develop a method whereby the uncertainty bounds of each individual PIV vector can be estimated using information from the cross-correlation and used a validation source in data reduction. The uncertainty information is then calculated and implemented within the framework of the existing PIV software code. Details of the technique, software implementation, and application to real-world data will be presented and discussed.