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PIV Uncertainty Roadmap BARTON SMITH, Utah State University, STEVEN BERESH, Sandia National Laboratories, PAVLOS VLACHOS, Virginia Tech — The error of PIV measurement has dozens of sources that can broadly be categorized as stemming from the particle motion, particle images, the processing algorithm, post processing, or hardware. Some cause bias errors while others cause random errors. In this talk, we will present our current thinking on the most important of these and how their impact can be assessed. While the theory of PIV is quite advanced, for most PIV uncertainty sources, such an assessment has yet to be performed. Hundreds of studies have focused on the accuracy of PIV, but these studies often cannot be generalized in such a way as to provide a 95% confidence uncertainty band for every instantaneous vector in a PIV data set. Methods for assessment include use of synthetic images, image processing of real images, concomitant measurements, or deviation from best practices. Other assessment may be able to be automated and become part of the vector processing. In order for the PIV community to begin producing meaningful uncertainty estimates for PIV data, it is essential that uncertainty estimation for PIV becomes accessible and affordable.

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