

Abstract Submitted
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Error Reduction in Molecular Tagging Velocimetry (MTV) Processing Using Image Filtering DOUG BOHL, MIKE CASO, Clarkson University — Prior work has shown that the error level in MTV measurements is closely tied to the image Signal to Noise (SN) level. In practice the SN ratio will depend on experimental conditions such as attenuation, Field of View, laser power, camera, etc.; however, there is a minimum SN level that can be achieved for any given experiment. Experience has shown that MTV images typically have a SN=2-8. It is therefore desirable to be able to lower image noise after the images are acquired to reduce measurement error. In this work post processing MTV images using standard image filtering schemes such as Gaussian Blur, FFT (band pass), median filtering etc. were investigated. Past results on synthetic images showed that for very noisy images (i.e. SN<4) all filtering techniques improved the displacement error by 10-40%. As the SN increased filtering became less effective in decreasing error and in some cases increased the measurement error. The current work investigates the effect of image filtering on experimental images and compares those results to the synthetic image study.

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