A postprocessing method for finding flow derivatives on an unstructured grid using PTV data MICAH PAUL, DANA DABIRI, University of Washington — Existing methods of processing particle tracking velocimetry (PTV) data to determine derivative information, such as shear and vorticity, require that the scattered velocity data be interpolated onto a uniform grid. While this makes calculations of flow derivatives simple, it necessarily introduces error. Here, a process is proposed which allows for the calculation of differential properties on unstructured grids. The proposed method first uses an anisotropic diffusion smoothing technique to denoise the velocity data, and then uses a natural neighbors-based Laplace interpolation to calculate local velocity derivatives. Results using this technique are discussed.

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