

Abstract Submitted
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Tomographic particle image velocimetry over a triangular prism in unidirectional flows IN MEI SOU, National Research Council Postdoctoral Fellow, JOSEPH CALANTONI, Marine Geosciences Division, Naval Research Laboratory, Code 7434 — Using tomographic particle image velocimetry (Tomo-PIV), the full three-dimensional-three-component (3D-3C) flow structure and turbulence characteristics over a triangular prism in a recirculating water tunnel were investigated. Here we present preliminary results from a new Tomo-PIV system for subcritical Froude number flows. Large-scale vortex shedding from the tip of the triangular prism is observed. Results of coherent structure organization analyzed by 3D vorticity calculation will be presented. Using the full 3D-3C instantaneous velocity field, turbulent kinetic energy is directly evaluated without any of the assumptions often needed for 2D PIV measurements. Details of the experimental setup including a unique device designed to perform our Tomo-PIV volume calibration will be discussed. We perform an in-depth turbulent kinetic energy budget and explore the feasibility of extending the measurement technique to other complex flows.

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