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Development of a Diver-Operated Single Camera Volumetric Velocimetry System VALERIE TROUTMAN, JOHN DABIRI, Stanford University — The capabilities of a single camera, volumetric velocimetry system for in situ measurement in marine environments are demonstrated by imaging a well-characterized flow in a laboratory environment. This work represents the first stages in the design of a SCUBA-diver operated system to study organisms and biological processes under the natural light in the water column. This system is primarily composed of a volumetric particle tracking diagnostic to investigate fluid-animal interactions. A target domain size of a 20 cm sided cube is sought as a key design feature for the capability of capturing the flow around a variety of benthic and freely swimming organisms. The integration of the particle tracking system with additional diagnostics will be discussed.

Valerie Troutman
Stanford University

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