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Non-Spherical Object Tracking Utilizing DDPIV for Ocean Measurements VALERIE TROUTMAN, JOHN DABIRI, Stanford University — Development work for a SCUBA-diver operated imaging system to study organisms and biological processes in the water column is presented. The objective of this system is to track suspended particulate and organisms in the ocean, which are inherently non-spherical and non-uniform. The Defocusing Digital Particle Image Velocimetry (DDPIV) imaging technique is adapted and applied to perform 3D tracking of non-spherical particles, using a single camera. With DDPIV, the out-of-plane position of a particle is determined by calculating the distance between centroids. Limited centroid accuracy of particles leads to prohibitive inaccuracy in the out-of-plane dimension. A correlation based approach for determining the out-of-plane position of non-spherical particles is developed to increase tracking accuracy.

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