

Abstract Submitted
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Energetics of jellyfish locomotion determined from field measurements using a Self-Contained Underwater Velocimetry Apparatus (SCUVA) KAKANI KATIJA, Bioengineering, California Institute of Technology, JOHN O. DABIRI, Graduate Aeronautical Laboratories (GALCIT) and Bioengineering, California Institute of Technology — We describe the development and application of a Self-Contained Underwater Velocimetry Apparatus (SCUVA), which enables a single SCUBA diver to make DPIV measurements of animal-fluid interactions in the field. The device is used to study *Aurelia labiata* swimming in the coastal waters of Long Beach, California. SCUVA measurements of animals over a range of sizes are used to directly quantify the kinetic energy in the flow field induced by the swimming motions of individual medusae and are compared with existing theoretical models. The method provides details regarding the temporal evolution of the energetics during the swimming cycle and their scaling with bell diameter. These types of measurements will allow for the determination of propulsive efficiency, which can be used to compare various methods of biological propulsion.

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