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An Experimental Investigation of the Feeding Currents Generated by Upside-Down Jellyfish ARVIND SANTHANAKRISHNAN, LAURA MILLER, UNC Chapel Hill — The flow characteristics of oblate medusan swimmers such as the moon jellyfish (*Aurelia*) have been examined to understand the bio-fluid mechanics of feeding via unsteady propulsion (see Dabiri *et al.*, J. Exp. Biol., 2005). The upside-down jellyfish (*Cassiopea*) differs from the commonly observed swimming forms of scyphomedusae in that it is naturally found adhered to the muddy bottoms of shallow ocean waters. While they swim when disturbed, these organisms prefer to otherwise attach their bell surface to the floor and direct their oral arms upwards. Prey capture is accomplished by pulsatile contractions of the bell. The flow generated by the unsteady pulsations is examined using a combination of DPIV and morphological measurements. The phase-averaged flow field closely resembles a blowing jet centered about the body, with fluid entrainment occurring near the bell surface. Reversed flow regions are identified during both the contraction and relaxation phases. The effect of changing bell diameter on the jet as well as the production of flow structures is investigated. A qualitative comparison of the flow field between these organisms and swimming medusae will be presented.

Arvind Santhanakrishnan
UNC Chapel Hill

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