



JOHNS HOPKINS
Center for Environmental
& Applied Fluid Mechanics

Weekly CEA FM Seminar: Fall 2012

Date: **Friday, November 9, 2012**

Time: 11:00 AM

Location: Gilman 50 (Marjorie M. Fisher Hall)

Speaker: **Dr. David W. Murphy** (JHU | Mechanical Engineering)

Title: ***“SENSING AND SWIMMING: THE HYDRODYNAMICS
OF ZOOPLANKTON BEHAVIOR”***

Abstract

The fluid flow surrounding zooplankton such as copepods, sea butterflies, and krill delivers chemical and mechanical information that indicates the presence of food, danger, and mates. Information transfer is bi-directional, however, and zooplankton motion also generates signals that are carried to prey, predators, and potential mates. An understanding of zooplankton behavior must incorporate both knowledge of the flow produced by these animals and the flow to which they respond. Furthermore, both viscous and inertial effects are important in the low Reynolds number flow regime in which zooplankton live, leading to interesting, non-intuitive flow phenomena. Using a high-speed tomographic particle image velocimetry (PIV) system designed to acquire volumetric velocity fields around free-swimming zooplankton, we explore aspects of swimming, sensing, and escaping in copepods and Antarctic krill.