

Weekly CEA FM Seminar: Fall 2017



JOHNS HOPKINS
Center for Environmental
& Applied Fluid Mechanics

Date: **Friday, December 8, 2017**

Time: 11:00 AM

Location: Hodson Hall # 210

Speaker: **Dr. Christin Murphy** (Naval Undersea Warfare Center, DIVNPT)

Title: ***"Whiskers as Hydrodynamic Sensors: Structures, Signals, and Sensitivity"***

Abstract

Pinnipeds have the most highly specialized vibrissae (whiskers) of all mammals. They can utilize their vibrissal system for the detection and tracking of underwater hydrodynamic disturbances generated by swimming prey, with fine discrimination of features such as size, shape, and movement direction. Seals' hydrodynamic detection abilities are unparalleled among animal systems and surpass that of any current sensor technology. As the vibrissae move through the water, self-excited vibrations are induced. We hypothesize that the features of these vibrations encode information about the disturbance source. We utilize laser vibrometry and high-speed videography to examine the fluid interactions of the vibrissae and CT scanning to investigate their unique morphology. These efforts aim to improve the understanding of this sophisticated biological system and advance efforts for bio-inspired sensor technology.

Bio

Christin Murphy received her PhD in biological oceanography from University of South Florida's College of Marine Science. She is a Fulbright scholar and a National Science Foundation Graduate Research fellow with a background in marine biology, neuroscience, and bioacoustics. Christin specializes in the sensory biology of marine organisms and spent her graduate studies working with seals and sea lions to investigate how their whiskers are adapted for underwater prey detection. She is currently a research scientist at the Naval Undersea Warfare Center in Newport, RI working on the development of bio-inspired underwater sensor systems.