



Seminar



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Figure 1: Dye flow visualization of a rectangular panel undergoing a pitch motion.
Granlund et al. (2013) J. Fluid Mech.

Unsteady Fluid Mechanics of Micro Air Vehicles

Conceptual design of small unmanned highly maneuverable air vehicles has turned out to be a significant challenge and a departure from classic configuration aerodynamics of aircraft as developed over the last century. The high rates of motion for flight of Micro Air Vehicles involve highly separated flows and new unsteady aerodynamic mechanisms that aid in force production from lifting- and maneuvering surfaces.

In order to understand the fundamental physics of unsteady fluid mechanics of MAVs, we simplify the complex flexible wing geometries and three-dimensional kinematics with simpler rigid rectangular panels and canonical 1- or 2D translations and/or rotations. New performance metrics are also been developed for sizing of MAVs.

Thursday, March 19, 2015
3:30 PM
ECCR 200

Biography:

Dr. Kenneth Granlund is a Research Engineer at the Air Force Research Laboratory in Wright-Patterson AFB, Ohio. He received his MSc in Vehicle Engineering from Royal Institute of Technology in Stockholm, Sweden and PhD in Aerospace Engineering from Virginia Tech.