JOHNS HOPKINS
Center for Environmental
& Applied Fluid Mechanics

Weekly CEAFM Seminar: Spring 2013

Date: **Friday, March 8, 2013**

Time: 11:00 AM

Location: Gilman 50 (Marjorie M. Fisher Hall)

Speaker: **DR. PETER SCHMID** (École Polytechnique, France)

Title: ***"FLOW CONTROL USING A MODEL-BASED AND DATA-BASED APPROACH"***

Abstract

Flow control aims at the targeted manipulation of inherent flow behavior and is a critical component in efforts to delay instabilities, reduce drag, decrease receptivity's or extend the operational parameter range of a fluid device. The design of flow control strategies relies on a model for the fluid system but also a model for the noise environment.

The latter model poses great challenges and often presents the weakest link in the overall design process. A data-based approach, adapting techniques from system identification, introduces a more promising way of control design that is capable of reducing the inherent noise amplification in linear flows or of diminishing the limit-cycle behavior in nonlinear flows. We will present and discuss the critical steps in the design of flow control schemes for linear and nonlinear flow behavior and compare and contrast a model-based and data-based approach.

Bio

Peter Schmid obtained his Engineer's degree in Aerospace Sciences from the TU Munich, Germany and his Ph.D. in Mathematics from MIT. He was a faculty member of the Department of Applied Mathematics at the University of Washington in Seattle, before joining the French Research Agency (CNRS) and the École Polytechnique in Paris, France.