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Center for Environmental
& Applied Fluid Mechanics

Weekly CEA FM Seminar: Spring 2014

Date: **Friday, February 21, 2014**
Time: 11:00 AM
Location: Gilman # 50 (Marjorie M. Fisher Hall)
Speaker: **Dr. Bharatham Ganapathisubramani** (University of Southampton)
Title: ***"Flow Past Fractal Objects"***

Abstract

Turbulent flows are ubiquitous in various engineering applications and the natural environment. We have always tried to take advantage of turbulence in applications like mixing while our goal has been to minimize the impact of turbulence in other applications where we need to reduce turbulent dissipation and improve efficiency. This has led to a variety of ways by which we attempt to manipulate and control turbulent flows. In this talk, I will present some results from a new approach to manipulating turbulent flows: The use of fractal devices that provide a means to simultaneously shape and control multiple scales in a turbulent flow. This novel approach not only enables unique flow control/manipulation solutions but also presents us with opportunities to develop new theories for turbulence. I will present results from three different examples: 1) Fractal grids- provides a new prism through which we can examine the small-scales of turbulence, 2) Fractal spoilers- enables us to maintain aerodynamic performance while reducing noise, and, 3) Fractal plates- allows us to generate more drag and yet reduce the intensity of vortex shedding and associated fluctuations. These are just three examples from a myriad of applications and work is currently underway across these different application areas.



*This work is carried out in collaboration with Prof. Vassilicos at Imperial College London.