

## Events

[Current Events](#)[Lectures ▾](#)[Events Archive ▾](#)

## Special Guest Lectures

**An Efficient Spectral Element Model for Submerged Bendable Cylinders Relevant to Wave Attenuation****Don Liu, Louisiana Tech University**Johnston Hall 338  
June 28, 2012 - 02:30 pm**Abstract:**

Vegetation along a coastal region helps reduce wave energy and surge height. Using the Virtual Cylinders Model (VCM), we model vegetation stems as bottom clamped and bendable cylinder arrays which are either staggered or aligned. We start with a single bottom clamped cylinder subject to different inclination angles and study parametrically its drag and torque on the fluid around it. Then we approach cylinder arrays with different configuration. A modal spectral element method with *hp*-capability was used to obtain numerical solutions for these cylinder-fluid interaction problems. For stationary cylinders, direct numerical simulations are performed to provide data for comparison. The efficiency and accuracy of VCM will be discussed. Drag resistance induced by vegetation stems relevant to flood risk reduction in wetlands along the coast is to be estimated near the end of this research.

**Speaker's Bio:**

Dr. Don Liu received his Ph.D. in applied mathematics from Division of Applied Mathematics, Brown University in 2004, and worked as research fellow at NASA Goddard Space Flight Center and postdoctoral research associate at University of Maryland Baltimore County. He has been a tenure-track assistant professor at Louisiana Tech University since 2006. His areas of research are scientific and parallel computing, computational fluid dynamics, microfluids, and computational two-phase flows.