

# MCEN GRADUATE SEMINAR

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## **Wavelet Methods in Computational Fluid Dynamics**

Oct 22nd 2009 3:30PM-4:45PM ECCR-200

### **Abstract:**

Wavelet methods in Computational Fluid Dynamics is a relatively young area of research. Despite their short decade-long existence, a substantial number of wavelet techniques have been developed for numerical simulations of compressible and incompressible Euler and Navier--Stokes equations for both inert and reactive flows. This talk will provide a general overview of wavelet methods in CFD, introduce different numerical approaches for solving the Navier—Stokes and Euler equations in adaptive wavelet bases, and discuss state-of-the-art adaptive multiresolution wavelet methodologies for modeling and simulation of turbulent flows. Perspectives for modeling and computing industrially relevant flows will be also given.

### **Biography:**

Dr. Oleg V. Vasilyev is an associate professor in the Department of Mechanical Engineering at the University of Colorado. Dr. Vasilyev received his MS (1994) and PhD (1996) in Mechanical Engineering from University of Notre Dame and Master of Science in Applied Mathematics and Physics (1991) from Moscow Institute of Physics and Technology. His research interests are in the general area of theoretical and computational fluid mechanics. Dr. Vasilyev is the author and co-author of more than 70 peer-reviewed journal and conference publications including three invited feature articles. In 2002, Dr. Vasilyev won the Faculty Early Career Development Award (CAREER) from the National Science Foundation. Dr. Vasilyev has given more than 120 lectures at conferences and universities around the world. His solid international reputation is evident from frequent citations of his papers: according to the on-line Web of Science Citation Index 40 of Dr. Vasilyev's articles listed there have been referenced over 800 times and his h-factor is 15, which highlights the impact of his research. In recognition of his accomplishments Dr. Vasilyev has been recently elected the recipient of Friedrich Wilhelm Bessel Research Award in recognition of lifetime achievements in research and teaching in the field of fluid mechanics.