



**The Center for Control, Dynamical Systems, and Computation  
University of California at Santa Barbara  
Spring 2008 Seminar Series  
Presents**

## **On Pseudospectral Methods of Nonlinear Optimal Control**

**Wei Kang**

**Naval Postgraduate School**

**Friday, April 25, 2008 3:00-4:00pm Harold Frank Hall 1104**

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### **Abstract:**

Computational mathematics has long been recognized as a powerful tool to penetrate the barrier of nonlinearity and complexity of dynamical systems and it has become increasingly attractive to control theorists and engineers. The focus of this talk is on the Pseudospectral (PS) method for the optimal control of nonlinear systems subject to mixed state and control constraints. Originally developed as a method for large-scale fluid dynamics, PS methods have been rapidly developed during the last decade as an efficient approach in solving complicated optimal control problems. In this talk we will address the problems of feasibility, convergence, and the rate of convergence for PS optimal control methods. Some illustrative examples will also be presented.

### **About the Speaker:**

Dr. Wei Kang received his bachelor's and master's degrees, both in mathematics, from Nankai University, China, in 1982 and 1985 respectively, and his Ph.D. in mathematics from the University of California at Davis in 1991.

From 1991 to 1994, he was a visiting assistant professor of Systems Science and Mathematics at Washington University in St. Louis. He joined the faculty of Applied Mathematics at US Naval Postgraduate School in 1994, where he is currently a full professor. He has held visiting positions at various institutions and companies including: University of California at Davis, AFRL at Wright-Patterson Air Force Base, Nankai University, Intel Corporation, and University of Reims Champagne-Ardenne.

Dr. Wei Kang's research interests are in control theory with applications including: computational mathematics in control design, bifurcations and normal forms, H-infinity control, manufacturing and process control, autonomous vehicles, space systems, and data assimilation in weather prediction. His research was funded by Air Force Research Laboratory, Air Force Office of Scientific Research, Army Research Office, Naval Research Laboratory, Ford Motor Company, and Intel Corporation. Dr. Kang has an extensive publication list of more than one hundred technical papers.

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