



**The Center for Control, Dynamical Systems, and Computation  
University of California at Santa Barbara  
Winter 2009 Seminar Series  
Presents**

**High Performance Digital Control for Precision  
Mechanical Motion**

**Tsun-Chin Tsao  
UCLA**

**Friday, February 20, 2009 4 - 5 PM Chem 1171**

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**Abstract:**

Mechanical motion is ubiquitous in modern technological systems. This talk discusses high performance digital control algorithms for generating precise mechanical motion where disturbances having both deterministic and stochastic components exist. Control algorithms that integrate adaptive filtering for minimizing random disturbances and internal models for suppressing deterministic disturbances will be presented along with application examples in laser beam jitter rejection, track following control of computer disk drive read-write heads track following, and fast tool servo for surface machining. Also discussed is a graduate class on advanced digital control for mechatronic systems, where a magnetic bearing system developed by Professor Paden is used.

**About the Speaker:**

Tsu-Chin Tsao (Ph.D. 1988, M.S. 1984, University of California Berkeley, California, USA, B.S. 1981, National Taiwan University, Taipei, Taiwan) is a professor at University of California Los Angeles (UCLA). His research interests are control systems, digital control, repetitive/iterative learning control, adaptive control, and applications in precision motion for manufacturing, automotive systems, computer peripherals, laser beam pointing/scanning, and medical devices.

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