

MATHEMATICS DEPARTMENT  
North Carolina State University

**DIFFERENTIAL EQUATIONS SEMINAR**

Tuesday, April 26, 2005  
2:35 p.m. 335 Harrelson Hall

**Gregory Hicks**

Kirtland Air Force Research Lab

**An Overview of Some Concepts Essential to the Study  
of Mechanics and Control**

This presentation will provide a brief overview of mathematical concepts that are invaluable aids to the understanding and study of mechanical control systems. The point of the talk is to introduce the mathematical concepts from an intuitive standpoint, emphasizing the efficacy of the related results modulo the analysis used to arrive at them. Of particular importance are the topics of topology, modern algebra, and geometry. Applications include global formulation of dynamic systems, estimating the number and type of (stable or unstable) equilibria for a given mechanical system, and gleaning insight into nonlinear control design.

**Graduate students are invited to attend**

For questions, comments, and offers to talk, contact Kris Jenssen, [hkjensse@unity.ncsu.edu](mailto:hkjensse@unity.ncsu.edu),  
or Dmitry Zenkov, [dvzenkov@math.ncsu.edu](mailto:dvzenkov@math.ncsu.edu). Please visit the DE Seminar web page at  
<http://www.math.ncsu.edu/DE/>