

MATHEMATICS DEPARTMENT
North Carolina State University

DIFFERENTIAL EQUATIONS SEMINAR

Wednesday, October 1, 2003
2:35 p.m. 330 Harrelson Hall

Dmitry Zenkov

Department of Mathematics
North Carolina State University

**“Constrained dynamics, conservation laws,
and control”**

This talk will overview some modern trends in dynamics and control of constrained systems. The behavior of such systems is often counterintuitive. For example, in the absence of external dissipation, such systems conserve energy but nonetheless can exhibit asymptotically stable relative equilibria. Another interesting behavior which does not occur in unconstrained systems is that symmetries do not always lead to momentum conservation laws as in the classical Noether theorem. Instead, the momentum satisfies a dynamic momentum equation. Conditions for conservation of some of the components of the momentum will be discussed. Usability of both the presence and lack of conservation laws in control will then be covered.

Graduate students are invited to attend.

For questions, comments, and offers to talk, contact Steve Schecter, schecter@math.ncsu.edu.
Please visit the DE Seminar web page at www.math.ncsu.edu/seminars.html.