MATHEMATICS DEPARTMENT
North Carolina State University

DIFFERENTIAL EQUATIONS SEMINAR

Tuesday, January 24, 2006
3:00 p.m. 330 Harrelson Hall

Zhiwu Lin

Courant Institute of Mathematical Sciences
New York University

"Stability of collisionless plasmas"

A plasma is a completed ionized gas. In many applications, such as nuclear fusion and astrophysical phenomena, the plasma has high temperature or low density, and collisions can be ignored. The standard kinetic models for a collisionless plasma are the Vlasov-Maxwell and Vlasov-Poisson systems. The Vlasov-Poisson system is also used to model galaxy dynamics, where a star plays the role of a particle. There exist infinitely many equilibria for Vlasov models, and their stability is of central importance in physics. I will describe my recent work on stability and instability of various Vlasov equilibria. I will focus primarily on some methods and techniques that have been developed recently. One of these utilizes the geometric properties of the dynamical system that describes the particle paths.

Dr. Lin is a candidate for a faculty position in partial differential equations.

Please note the unusual day.

Graduate students are invited to attend.

Tea will be served in HA 243 at 4:00 p.m.