McMaster University

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THE FIELDS INSTITUTE FOR RESEARCH IN MATHEMATICAL SCIENCES

GENERAL SEMINAR SERIES IN DYNAMICAL SYSTEMS

SPEAKER:

SUNCICA CANIC
The Fields Institute

On the Topic:

"Structural Stability of Viscous Shock Profiles"

We present a new approach to the study of the stability of admissible shock wave solutions for systems of conservation laws that change type. We employ the fundamental wave manifold W as a global framework to characterize shock waves that comply with the viscosity admissiblity criterion. Points of W parametrize dynamical systems associated with shock wave solutions. We find the region of admissible waves for a generic, two-dimensional slice of the fundamental wave manifold. The boundary of the admissibility region is associated with the loci of saddle-node, Hopf, Bogdanov-Takens, homoclinic and heteroclinic bifurcations. We obtain global results for quadratic conservation laws. Understanding the global stability of admissible shock waves is the first step in understanding the existence and uniqueness of weak solutions for global Riemann problems, which is still open.

Thursday, March 18, 1993

1:30 pm, room 3018

at

The Fields Institute

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