



McMaster University



University of Toronto



University of Waterloo

## THE FIELDS INSTITUTE FOR RESEARCH IN MATHEMATICAL SCIENCES

### COLLOQUIUM IN DYNAMICAL SYSTEMS

#### SPEAKER:

**LIANJUN AN**  
McMaster University

On the Topic:

#### **"The genericity of ill-posedness in elastic-plastic models and regularizing effect of microstructure"**

The governing equations describing the deformation of elastic-plastic models lose their hyperbolicity when the hardening modulus (represents the accumulation of plastic deformation) reaches some critical values. As a result, the initial value problem becomes ill-posed in certain travelling directions. There are two mechanisms which can cause ill-posedness. One of them, related to shear bands, has been studied extensively; the other, called the flutter instability, was recognized as a theoretical possibility by Rice, but no specific occurrence was known. Based on a topological argument, we shall show that the flutter instability is a generic phenomenon in elastic-plastic models. But by the inclusion of microstructure (classical Cosserate theory), both types of ill-posedness could be inhibited.

**Friday, March 19, 1993**

**3:30 pm, room 3018**

**at**

**The Fields Institute**

185 Columbia Street West, Waterloo, Ontario N2L 5Z5 Telephone: (519) 725-0096 Fax: (519) 725-0704

Supported by the Ministry of Colleges and Universities of Ontario and the Natural Sciences and Engineering Research Council of Canada