



McMaster University



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THE FIELDS INSTITUTE FOR RESEARCH IN MATHEMATICAL SCIENCES

COLLOQUIUM IN DYNAMICAL SYSTEMS

SPEAKER:

JOHN PEARSON
Center for Nonlinear Studies
Los Alamos National Laboratory

On the Topic:

"Chemical Pattern Formation"

In recent years a great deal of effort has been devoted towards understanding the processes of self-organization that occur in chemically reacting systems that are maintained far from thermodynamic equilibrium. I will discuss various pattern formation processes that occur in chemical reaction-diffusion systems with stress on the phenomena and not on specific details in the chemistry. These patterns include Turing structures, travelling waves, and rotating spiral waves. Recently, several new types of patterns have been observed. Irregular patterns have been observed both in the laboratory and in numerical simulations. Localized self-replicating structures have recently been observed in numerical experiments. Turing patterns arise spontaneously as the result of an instability. The waves and irregular patterns typically arise in response to finite amplitude perturbations. A great deal of work has been done on all of these phenomena except for the irregular patterns. Thus I will try to spend a finite amount of time discussing the irregular patterns and the self-replicating structures.

Monday, June 7, 1993

1:30 - 3:30 pm, room 3018

at

The Fields Institute