

McMaster University





### THE FIELDS INSTITUTE FOR RESEARCH IN MATHEMATICAL SCIENCES

## COLLOQUIUM IN DYNAMICAL SYSTEMS

#### **SPEAKER:**

# JOHN MALLET-PARET Brown University

On the Topic:

### "Solution Profiles for Differential Equations with State-Dependent Delays"

We study the asymptotic shape of solutions of equations such as (\*)  $\epsilon x(t) = -x(t) + f(x(t-r)), \quad r = r(x(t)),$ as  $\epsilon \to 0$ , where f is a given nonlinearity and  $r \ge 0$  is a given delay function. The related planar map

 $(t,x) \rightarrow (t + r (f(x)), f(x))$ 

is used to show how nontrivial solution profiles of (\*) arise. We also prove the (perhaps) paradoxical result that solution profiles of (\*) for nonconstant r are simpler than those with constant  $r \equiv 1$  delay.

### Wednesday, March 17, 1993

3:30 pm, room 3018

at

The Fields Institute

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