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# THE FIELDS INSTITUTE FOR RESEARCH IN MATHEMATICAL SCIENCES

## DIRECTOR'S SEMINAR

**SPEAKER:**


**SHELDON NEWHOUSE**
**University of North Carolina**


On the Topic:

**"Strange Attractors in Dissipative Planar Maps"**

Numerical simulation frequently shows the existence of chaotic motion in smooth systems. Among the simplest examples of this is the so-called Henon mapping $(x,y) \to (rx(1-x) + by, x)$ for appropriate parameters r and b. The rigorous treatment of this family has turned out to be quite difficult. Significant progress was made a few years ago when Benedicts and Carleson were able to prove the existence of chaotic motion for sufficiently small b and a positive measure set of r's. Following this work, Benedicts and Young proved existence of BRS or 'natural' measures for these systems, and Mora and Viana were able to show that similar behavior occurs near a 'typical' homoclinic tangency in dissipative systems. Hence, such phenomena occur in a wide class of systems with two degrees of freedom. Recently, together with Yakobson, we have obtained different proofs of the above results, and our proofs are valid for more general systems. In this lecture, we will survey these and related results.

**Monday, March 1, 1993**

**4:00 pm, room 3018**

**at**

**The Fields Institute**


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



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