



McMaster University



University of Toronto



University of Waterloo

THE FIELDS INSTITUTE FOR RESEARCH IN MATHEMATICAL SCIENCES

COLLOQUIUM IN DYNAMICAL SYSTEMS

SPEAKER:

EDWARD R. VRSCAY
University of Waterloo
and The Fields Institute

On the Topic:

"Inverse Problems Using Iterated Function Systems I. Measures"

This talk will be concerned with the approximation of probability measures on a compact metric space (X, d) by invariant measures of "traditional" Iterated Function Systems (IFS): systems of contraction mappings on X , $w = \{w_1, w_2, \dots, w_N\}$, with associated probabilities, $p = \{p_1, p_2, \dots, p_N\}$. The various IFS approaches to approximating measures have involved some form of "moment matching": Given a target measure (on $[0,1]$ for simplicity) ν with moments $h_k \equiv \int x^k d\nu$, $k = 1, 2, 3, \dots$, find an IFS invariant measure μ whose moments $g_k \equiv \int x^k d\mu$, are "close" to the h_k . (In fact, one tries to do the same with Padé approximants.)

During the early years of IFS (1986-88), invariant measures of IFS were seen as a promising way of representing images. This view has changed: IFS-type methods over function spaces are now being used. (This will be the subject of II.) Nevertheless, there are still some interesting mathematical questions and applications of measure approximation with IFS. I shall describe some recent work with B. Forte which differs from previous attempts and represents a great simplification in the moment matching algorithm.

Friday, February 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