



2007 - 2008
MATHEMATICS DISTINGUISHED
LECTURER SERIES (Colloquium)
UNIVERSITY OF CENTRAL FLORIDA



Professor Palle Jorgenson
Department of Mathematics
University of Iowa

will speak on

Mathematical Tools and Theories in
Signal and Image Processing

Abstract: Recent work on wavelet algorithms has given rise to a host of new and exciting interdisciplinary research. It and related mathematical trends have brought together neighboring fields that had otherwise over a generation grown increasingly apart.

These neighboring fields include such areas from engineering as signal and image processing, from mathematical statistics, and from physics.

Presented for a general audience, the talk will sketch these trends, but will focus on the use of hierarchical schemes in mathematics and its applications. They will be illustrated with both discrete and continuous wavelet algorithms, with a computational harmonic analysis for fractals (joint work with Professor Dorin Dutkay), potential theory of graph Laplacians, and their use in physics, sampling and frames.

The talk will try to make connections to both pure and applied mathematics: computational harmonic analysis, functional and numerical analysis, matrix algorithms, operator algebra, and more.

Since computations are facilitated with the use of the notion of a "basis" in function space, or in spaces of discrete data, geometric tools from Hilbert space and from operator algebra offer mathematical underpinnings. Such underpinnings include a new notion of duality of graphs on one side and fractals on the other.

DATE: Thursday, January 24, 2008
TIME: 10:30 – 11:30am
PLACE: MAP 318

Refreshments will be served