PITTSBURG STATE UNIVERSITY

DEPARTMENT OF MATHEMATICS

Colloquium

Professor Mikhail K. Tchobanou

Moscow Power Engineering Institute (Technical University)
Moscow, Russia

Design of multi-dimensional multirate systems and multi-dimensional wavelets

Abstract

Multirate systems are used in different digital signal processing applications like compression systems, archiving systems and others. The problem of the design of multi-dimensional filter banks with prescribed properties is considered. The most important requirements are perfect reconstruction property, linear phase property, optimization for a given class of signals, maximum number of vanishing moments and others. A survey of different approaches to the problem of filter bank design is presented. The most promising ones are polynomial approaches that allow one to find the result directly in analytical form. They are based on the use of a matrix completion technique and Bernstein polynomials. The results of filter banks' optimization are presented (so that the stop-band energy of the filter is minimum in the least-square sense).

Thursday, August 30, 2001
2:00 p.m.
Yates 215

Students are encouraged to attend.
There will be cookies and conversation afterwards in Yates 210