Department of Mathematics and Statistics Colloquium

State Space Analysis using Wavelet Packets

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Abstract: Wavelet analysis was originally introduced in order to improve seismic signal processing by switching from short time Fourier analysis to new algorithms better suited to detect and analyze abrupt changes in signals. Number of real life and engineering problems including control theory can be analyzed through wavelet analysis.

In control engineering, a state space representation is a mathematical model of a physical system as a set of input, output and state variables related by first-order differential equations. In this article, we use Walsh Wavelet Packets and Haar Wavelet packets to solve linear state space equations using the operational matrix defined by Glabisz (2004). We are comparing the results obtained using the Walsh Wavelet Packets and Haar Wavelet Packets with exact solution. Also we are solving bilinear state equations using wavelet packets.

Monday, March 17 at 3:45 in Roop 103

refreshments at 3:30