

# COMPLEX ANALYSIS SEMINAR

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## SPECTRAL PICTURES OF 2-VARIABLE WEIGHTED SHIFTS

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**ABSTRACT:** In joint work with Jasang Yoon, we study the spectral pictures of (jointly) hyponormal 2-variable weighted shifts with commuting subnormal components. By contrast with all known results in the theory of (single and 2-variable) weighted shifts, we show that the Taylor spectrum can be *disconnected*. We do this by obtaining a simple sufficient condition that guarantees disconnectedness, based on the norms of the horizontal slices of the shift. We also show that for every  $k \geq 1$  there exists a  $k$ -hyponormal 2-variable weighted shift whose horizontal and vertical slices have 1- or 2-atomic Berger measures, and whose Taylor spectrum is disconnected.

We use tools and techniques from multivariable operator theory, from our previous work on the Lifting Problem for Commuting Subnormals, and from the groupoid machinery developed by the author and P. Muhly to analyze the structure of  $C^*$ -algebras generated by multiplication operators on Reinhardt domains. As a by-product, we show that, for 2-variable weighted shifts, the Taylor essential spectrum is not necessarily the boundary of the Taylor spectrum.

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**Date:** Thursday, February 18, 2010

**Time:** 4pm-5pm

**Place:** UH 4010

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**Webpage:** <http://math.utoledo.edu/~sonmez/complexseminar.html>