

Seminar & Events Bulletin: Student Analysis

07-01-2011 to 12-31-2011

Wednesday, September 07, 2011

4:00pm-5:00pm **Student Analysis** -- () *Organizational Meeting* -- 3096 East Hall

Wednesday, September 21, 2011

4:00pm-5:00pm **Student Analysis** -- Purvi Gupta (University of Michigan) *The Moment Problem* -- 224 Denn

Wednesday, September 28, 2011

4:00pm-5:00pm **Student Analysis** -- Rafe Kinsey (University of Michigan) *An Introduction to BMO* -- 224 Denn

Wednesday, October 05, 2011

4:00pm-5:00pm **Student Analysis** -- Jeff Calder (University of Michigan) *Integral signatures of simple closed curves (joint with Student Aim seminar)* -- 224 Dennison

Wednesday, October 12, 2011

4:00pm-5:00pm **Student Analysis** -- Will Gignac (University of Michigan) *The Mean Value Theorem!!!* -- 224 Denn

Wednesday, October 19, 2011

4:00pm-5:00pm **Student Analysis** -- () *No talk* --

Wednesday, October 26, 2011

4:00pm-5:00pm **Student Analysis** -- Jen Beichman (University of Michigan) *A (Brief) Introduction to Funny Fluids* -- 224 Denn

Wednesday, November 02, 2011

4:00pm-5:00pm **Student Analysis** -- () *Talk postponed due to power outage* -- 224 Denn

Wednesday, November 09, 2011

4:00pm-5:00pm **Student Analysis** -- Allen Wu (University of Michigan) *Unbounded Operators and Their Importance in the Foundation of Quantum Mechanics.* -- 224 Dennison

Wednesday, November 16, 2011

4:00pm-5:00pm **Student Analysis** -- Jeff Meyer (University of Michigan) *Fourier Analysis on Groups* -- 224 Dennison

Wednesday, November 23, 2011

4:00pm-5:00pm **Student Analysis** -- () *No Meeting (Thanksgiving Break)* -- 224 Dennison

Wednesday, November 30, 2011

4:00pm-5:00pm **Student Analysis** -- () *No talk* --

Wednesday, December 07, 2011

4:00pm-5:00pm **Student Analysis** -- () *No talk* -- 224 Dennison

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Abstracts

Student Analysis

Wednesday, September 07, 2011, 4:00pm-5:00pm

3096 East Hall

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Organizational Meeting

We're going to have a quick organizational meeting for the student analysis seminar, to plan for the rest of the seminar and arrange speakers.

Student Analysis

Wednesday, September 21, 2011, 4:00pm-5:00pm

224 Denn

Purvi Gupta (University of Michigan)

The Moment Problem

The k th moment of a measure m on R is the integral of x^k with respect to m . A moment problem is that of finding a positive measure that has prescribed moments. Different versions of it arise out of considering different domains for the measure. In this talk, I will briefly discuss the history of the problem and then elaborate on the question of solubility --- especially the method of M. Riesz. If time permits, I will make some comments on the question of uniqueness. In the course of the talk, connections with some problems in complex analysis and functional analysis will be indicated.

Student Analysis

Wednesday, September 28, 2011, 4:00pm-5:00pm

224 Denn

Rafe Kinsey (University of Michigan)

An Introduction to BMO

The L^p spaces are useful for a wide range of problems in analysis. Unfortunately, things don't work as well for L^∞ . In this talk, I will discuss the space of functions of bounded mean oscillation, called BMO, which serves in many ways as a good replacement for L^∞ in problems of analysis and PDE.

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Student Analysis

Wednesday, October 05, 2011, 4:00pm-5:00pm

224 Dennison

Jeff Calder (University of Michigan)

Integral signatures of simple closed curves (joint with Student Aim seminar)

The representation of curves by integral signatures has become an important step in shape classification and recognition algorithms in the computer vision community. However, for some of the most commonly used signatures, the question of whether the signature uniquely determines the curve is unanswered. In this talk, I will give some background on the problem and then sketch the proof of a new uniqueness result based on the inverse function theorem for the circular area signature for graphs of periodic functions and discuss the difficulties with obtaining a similar result for simple closed curves. This is a joint work with Professor Selim Esedoglu.

Student Analysis

Wednesday, October 12, 2011, 4:00pm-5:00pm

224 Denn

Will Gignac (University of Michigan)

The Mean Value Theorem!!!

OK, maybe not *the* main value theorem. A different one. I will start by proving the Grace-Heawood theorem, a surprising mean value type result for complex polynomials. One of the neat aspects of the proof is that it has (almost) nothing to do with the complex numbers, and therefore the theorem has a shot of generalizing to some other valued fields. I will attempt to say a few words in this direction, relate the theorem to a very recent result of Faber, and throw out a few questions in the process.

Student Analysis

Wednesday, October 19, 2011, 4:00pm-5:00pm

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No talk

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Student Analysis

Wednesday, October 26, 2011, 4:00pm-5:00pm

224 Denn

Jen Beichman (University of Michigan)

A (Brief) Introduction to Funny Fluids

What do mayonnaise and kevlar have in common? They're both fluids, but just a little funny. In this talk, I'll discuss the common types of funny fluids that people study and present a few of the different models for them (along with their mathematical difficulties).

Student Analysis

Wednesday, November 02, 2011, 4:00pm-5:00pm

224 Denn

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Talk postponed due to power outage

Student Analysis

Wednesday, November 09, 2011, 4:00pm-5:00pm

224 Dennison

Allen Wu (University of Michigan)

Unbounded Operators and Their Importance in the Foundation of Quantum Mechanics.

We will look into spectral theorems for bounded and unbounded self adjoint operators on Hilbert Spaces. The results for unbounded operators were developed to meet the needs of a rigorous formulation of quantum mechanics. So we'll also take a look at the foundation of quantum mechanics. You are recommended to attend if you're interested in quantum mechanics but have always wondered at the logical inconsistency of the usual presentation given in physics texts.

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Student Analysis

Wednesday, November 16, 2011, 4:00pm-5:00pm

224 Dennison

Jeff Meyer (University of Michigan)

Fourier Analysis on Groups

Introductory analysis classes often discuss the Fourier transform of complex functions on the real line, the circle, or the integers. What they don't often say is that these results are all part of a single theory of Fourier analysis on locally compact abelian (LCA) groups. In this talk I will survey the basic results on the Fourier analysis of LCA groups such as Fourier inversion and Plancherel's theorem. I will show how we can recover the classical theories as well as capture some new ones. Time permitting I will discuss what can be done over LC not A groups.

Student Analysis

Wednesday, November 23, 2011, 4:00pm-5:00pm

224 Dennison

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No Meeting (Thanksgiving Break)

Student Analysis

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No talk

Student Analysis

Wednesday, December 07, 2011, 4:00pm-5:00pm

224 Dennison

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No talk