

MATHEMATICS DEPARTMENT SEMINAR SCHEDULE

April 28– May 2, 2003

All seminars are held in Boyd Graduate Studies unless otherwise noted

MONDAY, April 28, 2003

Group Representation and Cohomology

2:30p.m., Room 410

Speaker: Dave Benson

Title of talk: *Local Cohomology*

Topology

2:30p.m. Room 326

Speaker: Nancy Wrinkle, University of Georgia

Title of talk: *The Markov theorem for transverse knots (part II)*

Faculty and Graduate Social

3:00 p.m., Room 409

Coffee, Tea, Cookies

C A T S

Combinatorics, Algorithms, and Theoretical Computer Science Seminar

4:40 PM, 306 Boyd Graduate Studies

Speaker: Junfeng Qu, Graduate student, UGA Computer Science Dept.

Title of talk: *Bellman-Ford algorithm and Arbitrage Opportunity*

Abstract: The use of computers in the finance industry has been marked with controversy lately as programmed trading -- designed to take advantage of extremely small fluctuations in prices -- has been outlawed at many Wall Street firms. The ethics of computer programming is a fledgling field with many thorny issues. The presentation tries to use the Bellman-Ford algorithm to discover the arbitrage opportunity in currency exchange. A tentative solution is proposed with further suggestions given.

TUESDAY, April 29, 2003

VIGRE

2:00-3:15, Room 304

Speaker: Caroline Wright, University of Georgia

Title of talk: *Representation Theory and the Symmetric Group*

Abstract: In this talk, I will introduce some Representation Theory and how it can be used. I will especially look at some of the Character Tables of different groups. I will talk a little about what we have done in our VIGRE research group this year and introduce some of the conjectures we have talked about and worked on this semester. I will then discuss some future research opportunities.

Student Number Theory

3:30 p.m., Room 222

Speaker: Joe Rusinko, University of Georgia

Title of talk: *Sieving for Rational Points in Homogeneous Spaces*

Analysis

3:30 p.m., Room 322

Speaker: Jingzhi Tie

Title of talk: *Fourier-Bessel transform on SC^n and the Laguerre calculus on the Heisenberg group.*

Abstract: I will talk about a connection between the two topics in the title.

WEDNESDAY, April 30, 2003**Wavelet Analysis**

10:10-11:10 a.m., Room 524

Speaker: Kyunglim Nam, University of Georgia

Title of talk: *Preliminary lemmas to construct tight frames.*

Graduate Student Teaching Seminar

2:30 p.m., Room 302

Speaker: Kai Laemmle, University of Georgia

Title of talk: *Course Homepage and More with WebCT*

Abstract: What is WebCT? What does WebCT offer? How to get started? I will discuss assignments/projects, announcements, surveys, quizzes, notes, calendar and mail. Is WebCT useful for the calculus lab? What is convenient or what is inconvenient with WebCT? Do students like WebCT?

Algebraic Geometry

2:30 p.m., Room 303

Speaker: Valery Alexeev, University of Georgia

Title of talk: *Mixed Hodge structures, 1-motifs and degenerations of abelian varieties, continued*

Abstract. I will review the connection between these three subjects and give a description of Mumford's toroidal compactifications of A_g as moduli of 1-motifs and MHSs.

Problem Solving Group

2:30 p.m., Room 322

Faculty and Graduate Social

3:00 p.m., Room 409

Coffee, Cookies, Tea

Numerical Analysis

3:30 p.m., Room 410

*TBA***Lie Theory**

3:30 p.m., Room 303

*No Meeting this week***Arithmetic Geometry/Number Theory**

3:30 p.m., Room 304

Speaker: Charles Pooh, University of Georgia**Title of talk:** *An Effective Version of Fekete's Theorem***VIGRE Research Group**

4:30 p.m., Room 410

Speaker: Ivan Cheltsov, University of Georgia**Title of talk:** *"Birational geometry of 3-folds"***THURSDAY, May 1, 2003***Last Day of Classes***Faculty and Graduate Social**

3:00 p.m., Room 409

Coffee, Cookies, Tea

Colloquium

3:30p.m., Room 304

Speaker: Jack Heidel, UNOmaha, Mathematics**Title of talk:** *Boolean Networks and Cellular Automata: A New Kind of Science in Cell Biology*

Abstract: The traditional way of modeling biochemical processes such as intracellular signaling is to use differential equations. To do this one needs rate parameters and initial conditions which are determined in small scale in vitro (in the test tube) experiments. But in large signaling networks such as occur in the interior of a single cell, accurate information of this kind is often unavailable.

In such situations a conceptually simpler model such as a Boolean network is useful. A node (gene, protein, etc) has either the value 1 or 0, on or off. Thus an n node system can have different states. In this context a way to avoid the combinatorial explosion of global "size ???" state space is to use local "size n" methods such as scalar equations.

In carrying out this program it is convenient to express Boolean logic in terms of Boolean algebra. But then which Boolean algebra is the best one to use? Is it Boole's original algebra ($1+1=1$) favored by electrical engineers or the alternate mod 2 ($1+1=0$) version? Resolving this issue leads to interesting questions with one dimensional cellular automata.

FRIDAY, May 2, 2003

Reading Day

Geometry

2:30 p.m., Room 322

Speaker: TBA

Title of talk: *TBA*