MATHEMATICS DEPARTMENT SEMINAR SCHEDULE
February 25 – March 1, 2002

All seminars are held in Boyd Graduate Studies unless otherwise noted.

MONDAY, February 25, 2002

Faculty and Graduate Social
3:00 p.m., Room 409
Coffee, Tea and Cookies

Group Representation & Cohomology
2:30-3:30p.m., Room 302
Speaker: Blake Hindman, University of Georgia
Title of talk: *"Representations of Symmetric Groups", Continued*

Topology
3:00 p.m., Room 322
No Meeting this week

Number Theory
3:30 p.m., Room 304
Speaker: Dr. Kevin James, Clemson
Title of talk: *"The Lang-Trotter Conjecture for elliptic curves with 3-torsion"*
Abstract: In this talk, I will give an introduction to the Lang-Trotter conjecture. I will then discuss the conjecture for elliptic curves with rational 3-torsion and give an outline of a proof that the conjecture holds on average for these curves.

Numerical Analysis
3:30 p.m., Room 410
Speaker: Okkyung Cho, University of Georgia
Title of talk: *"Biorthogonal Wavelets" (cont.)*

Lie Theory
3:30 p.m., Room 302
Speaker: Markus Hunziker, University of Georgia
Title of talk: *"On a Duality Theorem of Wallach"*
Abstract: I will present a general duality theorem for representations of reductive groups and associative algebras that is due to Wallach. It will allow us to discuss several well-known duality theorems in representation theory (Schur-Weyl duality, Howe duality, etc.) in a uniform way. In particular, I will discuss a duality theorem for Weyl group invariant differential operators that gives an algebraic approach to the Springer correspondence between irreducible Weyl group representations and nilpotent orbits.

CATS

4:40 p.m., Room 306
Speaker: Jianping Zhu, Graduate Student in Computer Science
Title of talk: *"Fast Algorithm for Finding Nearest Common Ancestors"*
Abstract: We will present an algorithm to solve the problem of finding the nearest common ancestor of two given nodes x and y in a rooted tree. We begin by observing that on complete binary trees the nearest common ancestor of x and y can be found in O(1) time by direct calculation. We use an O(n) time algorithm to transform an arbitrary n vertex tree to a complete binary tree representation. Finally, this problem is solved with a linear time and linear space algorithm.

TUESDAY, February 26, 2002

VIGRE
2:00 p.m-3:15 p.m., Room 304
Speaker: Tonya Cofer, University of Georgia
Title of talk: *"Hands-On Contact Topology"*
Abstract: What is a contact structure? What does it mean for a contact structure to be tight or overtwisted? How many tight contact structures are there on certain types of 3 manifolds? I will address these questions and I will discuss my Java implementation of Ko Honda's gluing theorem in the case of the solid torus. I will end by stating the results of my recent work classifying some tight contact structures on the product of the genus-2 handlebody with the unit interval.

Teacher Education Seminar
2:30 - 3:30 pm, Room 326
Speakers: Martha Allexsaht-Snider, Department of Elementary Education,
Subject of talk: Will talk about the preparation of elementary school teachers

Algebraic Geometry
3:30 p.m., Room 326
Speaker: Robert Varley, University of Georgia
Title of talk: *"The Gauss map of a hypersurface in hyperbolic space (following Izumiya, Pei, and Sano)"*

Analysis
3:30 p.m., Room 304
Speaker: Akos Magyar, University of Georgia
Title of talk: *"Oscillatory integrals and the Newton polyhedron"*
Abstract: We'll discuss the relation between L^p bounds on basic operators in harmonic analysis (oscillatory integral and Fourier restriction operators) and the so-called Newton polyhedron. These are relatively recent attempts to go beyond the ususal non-degeneracy (curvature) conditions.

Student Number Theory
3:30 p.m., Room 302
Speaker: Paulo Almeida, University of Georgia
Title of talk: *"Sign changes on arithmetic functions"*

WEDNESDAY, February 27, 2002

Group Representation and Cohomology
2:30 - 3:20, Room 410
Speaker: Blake Hindman, University of Georgia
Title of talk: *"Representations of Symmetric Groups", Continued Some More*

UGA Math Club Problem Solving Group
2:30 p.m., Room 302

Faculty and Graduate Social
3:00 p.m., Room 409
Coffee, Tea, Cookies

Arithmetic Geometry
3:30 p.m., Room 304
No Meeting this week

THURSDAY, February 28, 2002

Faculty and Graduate Social
3:00 p.m., Room 409
Coffee, Tea, Cookies

Colloquium
3:30 p. m., Room 304
Speaker: Carl Pomerance (formerly a UGA faculty member, now at Lucent Technologies)
Title of talk: *"Primitive roots"*
Abstract: Are there infinitely many primes p (such as p=7) where p-1 is the length of the repeat for the periodic decimal for 1/p? That there are is a special case of Artin's primitive root conjecture: For any integer g not equal to -1 or a square, there are infinitely many primes p with g generating the multiplicative group modulo p. This talk will review some of the very intriguing partial results concerning Artin's conjecture, discuss some new problems about primitive roots, and discuss a natural generalization of the concept of primitive roots to composite moduli. Various parts of this talk represent joint work with Shuguang Li (of the University of Hawaii and a former UGA graduate student) and Mari Campbell (a current Berkeley graduate student).

FRIDAY, March 1, 2002

Geometry
2:30 p.m., Room 322
Speaker: Boris Thibert, University of Lyon
Title of talk: "Approximation of a smooth surface"
Abstract: The fact of replacing a smooth surface with a triangulated mesh (i.e. a polyedron) "close to it" leads to some errors. The geometric properties of the triangulated mesh can be very different from the geometric properties of the smooth surface, even if both surfaces are very close from one another. We will see examples of ``unfoldable" triangulated meshes (the discrete Gauss curvature is thus equal to 0 at each interior vertex) inscribed in a sphere (whose Gauss curvature is equal to 1 at every point).

However, if we make assumptions on the geometry of the triangulated mesh, on the curvature of the smooth surface and on the Hausdorff distance between both surfaces, we get an estimation of several properties of the smooth surface in terms of the properties of the triangulated mesh. In particular, we give explicit approximations of the normals and of the area of the smooth surface. Furthermore, if we suppose that the smooth surface is unfoldable (i.e. "isometric" to a surface of the plane), we give an explicit approximation of the "unfolding" of this surface. Just notice that in some of our approximation, we do not suppose that the vertices of the triangulated mesh belong to the smooth surface.

Special Seminar Series
3:30 – 4:30 p.m., Room 304
Speaker: Cal Burgoyne
Subject: *"Talks on Electro-magnetic theory."*
Abstract: I plan to give a short series of talks on Electromagnetism. We will be looking at some of the various ways Maxwell's equations have been formulated and try to see what sort of "picture" we get in each case. Some of the ways we will look at are in terms of 3-vectors, 4-vectors, differential forms, Lagrangians and Feynman diagrams. We will also look at various symmetries of Maxwell's equations using some ideas from Lie algebras and invariant algebras.

Upcoming Seminars

THURSDAY, March 7, 2002

Faculty and Graduate Social
3:00 p.m., Room 409
Coffee, Cookies and Tea

Colloquium
3:30 p.m., Room 304
Speaker: Prof. John Etnyre (University of Pennsylvania)
Title of talk: *TBA*

MONDAY, March 11, 2002

Joint Group Cohomology/Lie Theory Seminar
2:30 p.m., Room 302
Speaker: Georgia Benkart, University of Wisconsin, Madison
Title of talk: *"The Ups and Downs of Quantum Groups"*