

# MATHEMATICS DEPARTMENT SEMINAR SCHEDULE

## September 2 – September 6, 2002

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

### MONDAY, September 2, 2002

*University Holiday – No Seminars scheduled*

### TUESDAY, September 3, 2002

#### VIGRE

2:00 p.m.-3:15 p.m., Room 304

**Speaker:** David Hemmer, University of Georgia

**Title of talk:** “*Alperin's weight conjecture for the symmetric group*”

**Abstract:** Alperin's weight conjecture, announced at the 1986 Arcata conference, is one of the most important open problems in the representation theory of finite groups. The conjecture is known for several classes of groups, including  $p$ -solvable groups and finite groups of Lie type. In 1986 Alperin and Fong established it for symmetric groups. The goal of this VIGRE seminar will be to learn all the necessary mathematics to understand Alperin and Fong's paper. It will be run in a seminar style, with everyone expected to give fairly frequent presentations, and to work through lots of examples.

We hope to have some coordination with the regular department representation theory and cohomology seminar which will meet weekly this year, and VIGRE group members will be encouraged to attend that seminar as well.

If time permits we may attempt to improve on results of (former UGA postdoc) Luis Valero-Elizondo, who tried to find an explicit bijection proving Alperin's conjecture for the symmetric group. Such a bijection is straightforward in the Lie type case and likely impossible in general, but not inconceivable for the symmetric group.

We may also consider some recent work of Harald Ellers, who used the symmetric group as an example for a possible simultaneous generalization of Alperin's weight conjecture and Brauer's first main theorem.

However working on open problems will not be a crucial aspect to this VIGRE project. Also, in contrast to many of last year's seminars, there will be little or no computation or computer programming necessary.

**Algebraic Geometry Seminar**

3:30 p.m., Room 326

**Speaker:** Ivan Cheltsov, University of Georgia

**Title:** *"Birationally rigid hypersurfaces"*

**Abstract:** I will briefly describe the history and the roots of the problem and then describe the main ideas of the proof and the core of the proof.

(For more, link to <http://front.math.ucdavis.edu/math.AG/0201302>)

**Student Number Theory**

3:30 p.m., Room 303

**Speaker:** Eric Pine, University of Georgia

**Title of talk:** *"What I learned this summer"*

**Abstract:** I'll present some of the ideas discussed at the MSRI short course in Vancouver this past summer. I'll begin with some ideas on factoring sparse integer polynomials, and branch out, touching on other topics relating to integer polynomials.

**WEDNESDAY, September 4, 2002****Wavelet Analysis**

10:10 – 11:00 a.m., Room 410

**Speaker:** Haipeng Liu, University of Georgia

**Title of talk:** *"Sobolev Wavelets", continued*

**Graduate Teaching Seminar**

2:30 p.m., Room 303

*No Meeting this week*

**Faculty and Graduate Social**

3:00 p.m., Room 409

Coffee, Tea, Cookies

**Grant Writing Workshop**

3:30 p.m., Room 302

**Lie Theory**

3:30 p.m., Room 302

*No Meeting this week*

**Number Theory**

3:30 p.m., Room 304

**Speaker:** Dino Lorenzini, University of Georgia

**Title of talk:** *"Reduction of Curves of Genus 1"*

## **FRIDAY, September 6, 2002**

### **Geometry**

2:30 p.m., Room 322

**Speaker:** Jason Cantarella, University of Georgia

**Title of talk:** "*Durumeric's paper on Kink Structure*"

**Abstract:** The thickness of the largest embedded tube surrounding a curve in space is controlled by contacts of the tube with itself (struts) and the radius of curvature of the core curve (kinks).

A region of the curve without struts is a shortest curve with bounded curvature. Can we say anything about the structure of such curves? This talk covers Oguz Durumeric's recent preprint on the properties of these "kink regions". The ropelength VIGRE group is particularly encouraged to attend.