MSCS Mess

This Week's Colloquium

Title:	Mapping multiple QTL in experimental crosses
Speaker:	Karl W. Broman
	Biostatistics & Medical Informatics
	University of Wisconsin-Madison
Time:	1:30 pm Tuesday, November 6th
Place:	SC 170

Abstract: Many diseases are inherently quantitative (e.g. hypertension). Others are generally viewed as binary (e.g. diabetes), but are closely associated with intermediate quantitative phenotypes (e.g. glucose tolerance). Quantitative traits are generally influenced by multiple genetic loci (called quantitative trait loci, QTLs) as well as the environment. The number, location, and effects of the genetic loci that contribute to a disease-related phenotype help us to understand the biochemical basis of the disease and can lead to the development of improved treatments for human disease.

We consider the problem of identifying QTL in an experimental cross (such as with mice). In the traditional approach to QTL mapping, one considers each genomic position, one at a time, and tests for association between genotype and the quantitative phenotype. Great attention has been placed on the adjustment for multiple hypothesis tests. The simultaneous consideration of multiple QTL can provide greater power, can better separate linked QTL, and allows the investigation of interactions between loci. The problem is best viewed as one of model selection. We describe the key issues and propose a penalized likelihood approach for model selection. Our approach provides an automated procedure that can enable biologists with limited statistical training to obtain a more complete understanding of the set of genetic loci contributing to variation in a quantitative trait.

Women in MSCS Evening

On Thursday, November 8 women faculty from the Department of Mathematics, Statistics, and Computer Science will host a Women in MSCS event, starting at 7 PM in the Norway Room in Buntrock Commons (near the p.o.'s). All women currently enrolled in MSCS courses or who are planning to take math, stats, or computer science in the future are welcome to attend. Come have dessert, meet the faculty and some alumni, and learn about courses and special opportunities in our department and around the country. After introductions, there will be a very short presentation about some math/stats/cs opportunities that shouldn't be missed, then we'll simply open up the evening to conversations. This event is for all women students interested in MSCS, not just majors.

Game Night
Wednesdays 6:30pm - SC188

Join us Nov 7. The Combinatorial Game of the Month for November = Crosscram

Crosscram is played on a checkerboard-like rectangle (though any Ferrar's shape will do). Players alternate placing a domino (2 squares by 1 square) on the checkerboard, covering two vertically or horizontally adjacent squares. Player that places the last domino wins.

MAA-North Central Section Team Contest
Sat. Nov 10 - 9am-noon

Teams of three compete in this annual event, which is a fun introduction to the world of problem solving competitions. St. Olaf has faired well in this event, which includes colleges and universities from Minnesota, Iowa, the Dakotas, and central Canada. Last year, the Oles had the 1st and 3rd place teams.

It's not too late to sign up. If interested, contact Mike Weimerskirch (x3414 or weimer@stolaf.edu)

The problem solving group meets each Tuesday at 7pm in SC188.

Hey, Hey, Hey, Hey, Hey
The Real Analysis Exchange Needs You!!

Are you a first year student, interested in mathematics, not computer phobic and would like a solid, good paying job for your next three years at St. Olaf? Then does Humke have the deal for you!!! The Real Analysis Exchange is a journal that he edits, and he needs help. This job will pay for your training and then 3-4 hours of editing type work per week. If you think you might be interested, drop Humke an email note at analysis@stolaf.edu. Hey, what can you lose? This could be great!

International Research
for Undergraduates in Real Analysis and Dynamical Systems

With significant support from the National Science Foundation and St. Olaf College, the Department of *Mathematics, Statistics and Computer Science* will sponsor four undergraduate research scholars during summer of 2008. These undergraduates will join teams of professional research real analysis at one of two host institutions, Lodz University in Poland or Selesian University in the Czech Republic. See our website for additional info: http://www.stolaf.edu/people/humke/REU2005-2007/REUintro.html.

Grant funding allows full support for three International Interns per summer for each of the next three years. This support includes:

- all travel expenses to/from the host sites
- all living expenses while in residence in Europe
- a $4300 research stipend.

The grant also pays for travel and living expenses at one or perhaps two professional conferences upon return. This is a wonderful opportunity and available only for St. Olaf students. Josh Campbell and David Swanson are our current International Research Scholars.

Application is simple:
*Ask 3 professors to write a letter in support of your application. (Two references must be from mathematicians.)
*Complete a 9 question application form on the right hand column of the math website: www.stolaf.edu/depts/math or directly at http://www.stolaf.edu/people/humke/REU2005-2007/REUintro.html

The Deadline for all materials is **Nov. 9, 2007**

Problem of the Week (POW)

Consider functions of the form f : [0,1] → R, f(0) = f(1) = 0. The function f is said to have a *chord* of length *a* if there exists an *x* such that such that f(x) = f(x+a).

Find a function whose set of chord lengths is {1} U [1/3,1/2] U [1/5,1/4] U ... U [1/(2k + 1),1/2k] U…

Solutions to the Problem of the Week should be submitted to Mike Weimerskirch's mailbox in OMH 201.