

# Math



# Mess

Department of Mathematics  
St. Olaf College  
Northfield, MN 55057

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## **This Week's Mathematics Colloquium**

Title: Statistical Consulting in Cancer Research and Opportunities in Biostatistics

Speaker: KyungMann Kim

Time: Tuesday, November 12th, 1:30 pm

Place: SC 182

### **This Week's Colloquium**

The first half of this week's colloquium highlights statistical issues in cancer research that consulting statisticians face daily at a typical National Cancer Institute-designated cancer center. In particular, Professor Kim will discuss the design of phase I trials involving cytostatic, as against cytotoxic, chemotherapy, the design of two-stage phase II trials that are clinically relevant, and analysis of gene expression data generated from microarrays. In the second half, he will look at various biostatistics programs and describe professional opportunities for biostatisticians in academia, government and industry.

KyungMann Kim received his PhD in statistics from the University of Wisconsin in 1985. His research interests include sequential methods of statistical analysis, clinical trials methodology, categorical data analysis, survival analysis, repeated measures analysis, and the interface between statistics and computer science.

Professor Kim is currently a faculty member in the Department of Biostatistics and Medical Informatics at the University of Wisconsin, Madison.

### **Grad School Info**

This Thursday, November 14<sup>th</sup>, Dr. Craig Tracy from the University of California at Davis will be on campus to talk to interested students about his department's VIGRE program. VIGRE (Vertical Integration of Research and Education in the Mathematical Sciences) sites NSF-funded programs that encourage innovation in graduate programs, with particular emphasis on preparing future PhD's for productive careers in research and teaching. Professor Tracy will be available in the Student Lounge from 3:30 to 5:00 on Thursday, November 14th. See Matt Richey for more information.

### **NCS Contest**

To participate in the NCS problem solving contest this Saturday from 9 to 12, show up in SC182 by 8:45am. Pizza will arrive around 12!

## Strike up a Conversation

The quasi-annual *Bowling With The Professors* event is coming upon us more quickly than you can say “gutterball!” This event gives students and faculty a chance to bond while rolling spheroids down a horizontal plane with some three-dimensional objects at the far end. The projectile rolling will commence at 7:30 on Wednesday, November 13<sup>th</sup>, at Jesse James Lanes. If you’re interested in carpooling, please meet at 7:10 in the SC Lobby. We promise you’ll be bowled over with fun!

## The Next Big Thing

The next big thing in mathematics? Biology. As biologists discovered the value of mathematics for decoding the genome, mathematicians in turn rediscovered that some of the most interesting parts of their subject have roots in the real world. The mathematics involved in studying the genome and the folding of proteins is deep, elegant, and beautiful—all words that often were reserved only for pure mathematics in the past century. The sophisticated blending of mathematics and biology already is a spectacular new area of research that is certain to grow enormously in the next 10 years.

Scientists and mathematicians will soon come to see the false distinctions between pure and applied mathematics. Already in the past 25 years, applications of mathematics to information science have shown that mathematics recently viewed as pure is in fact applied, and vice versa. More and more, mathematicians will see their subject as underlying all science and social science—not as a humble servant but as an essential companion [John Ewing, American Mathematical Society, 1999].

## Last Week’s Problem

Two plates of donuts—one with 8 and another with 27—sit between you and hungry Molnar. You take turns eating donuts from one of the two plates according to the following rule: you may take from the plate with the larger number of donuts *any multiple* of the number of donuts on the other plate. Whoever is forced to finish off the donuts on

either of the two plates *loses*. Do you want to go first or second, and what strategy will you follow?

Solvers for last week were Kyle Haemig '03, Adam McDougall '05, Jason Saccomano '05, Mike Heggeseth '04, Phillip Schulte '06, Jennifer Albright '06, Mike Raiter '99, and Robert Orme '05. Solvers noted that it is generally best to leave one's opponent without options. Going first and eating 16 donuts achieves this goal. On the next turn, you are faced with a plate of 8 donuts and a plate of 3. Both of your possible moves leave Molnar with only one option, but eating 6 donuts is the proper move. Something to think about: what are the situations when there are two possible moves which leave your opponent with no options, and what is the proper move in these situations? There is something interesting to discover here.

## Problem of the Week

Find the shortest possible sequence which contains somewhere in it all possible sequences of four 0s and 1s. (For example, if four were replaced by two, 11001 would suffice, as it contains 00,01,10,11.)  
\*\* Please submit all solutions to David Molnar (molnar@stolaf.edu) by noon on Sunday.

If you would like to receive a copy of the Math Mess in your P.O. Box weekly, please e-mail Donna Brakke at [brakke@stolaf.edu](mailto:brakke@stolaf.edu).

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