

Logical Times

"News You Can Count On"

Denison University

Spring 2008, Issue 1

Congratulations

... to Dr. Ludwig! Our very own **Dr. Lew Ludwig** was notified by President Knobel in January that he was awarded tenure and promotion to Associate Professor.

Visiting speakers

We are honored to welcome three esteemed visitors to campus this semester. First, **Dr. Kevin Hutson** from Furman University will visit on February 26-27. Some of you fondly remember Dr. Hutson from the three years (2003-2006) he taught here. Dr. Hutson will be giving a talk on Tuesday, February 26 at 3:30pm.



Dr. Colin Adams (Williams College)

On March 27-28, we will welcome **Dr. Colin Adams** from Williams College. Dr. Adams is the Francis Christopher Oakley Third Century Professor of Mathematics at Williams College. His research interests lie in the mathematical theory of knots, their applications and their connections to hyperbolic geometry. He is the author of *The Knot Book*, an elementary introduction to the mathematical theory of knots and a co-author of *How to Ace Calculus: The Streetwise Guide*. Dr. Adams will be delivering this

semester's Gordon lecture on the evening of March 27.



Dr. Daniel Huttenlocher (Cornell Univ.)

On April 14-15, **Dr. Daniel Huttenlocher** will be visiting us. Dr. Huttenlocher is the John P. and Rilla Neafsey Professor of Computing, Information Science and Business and Stephen H. Weiss Fellow at Cornell University. Among his myriad research interests are computer vision, large-scale social networks, and autonomous vehicles. He is co-leader of Cornell's entry in the DARPA Urban Challenge race. He will be displaying their vehicle at the Pentagon on April 11, so we look forward to hearing more about this exciting project during his visit.

Student briefs

In January, **Rachel Grotheer** ('08) presented her joint research work with Professor Ludwig at the 2008 Joint Mathematical Meetings Undergraduate Poster Session in San Diego. 185 undergraduates were selected from across the nation

to present their original work at this international meeting. From this highly qualified group, Rachel and 34 others (the top 20%) were chosen to receive a \$100 cash award for the quality of their work and presentation. This is Rachel's second award for her research. She won a similar \$100 cash award at the 2007 MathFest in San Jose this past summer. Seniors **Nicole Scholtz** and **Matt Steinke** also attended the conference and presented their work.

Joanna Kreiselman ('09) and **Rui Li** ('10) attended the Nebraska Conference for Undergraduate Women in Mathematics (NCUWM) from February 8-10 at the University of Nebraska—Lincoln. The conference hosts undergraduate female mathematicians from all over the country, as well as graduate students and alumni who currently serve as professors and professionals in government and industry. The conference offers a variety of information for undergraduate students about preparing for graduate school and future mathematical careers. Panelists answer questions ranging from "What classes should I take to prepare myself?" and "What job or REU should I attend this summer?" to "What is graduate school like?" and "What options do I have outside of academia?" The conference also allows undergraduate participants to give a talk or poster sharing their personal research. Joanna presented her project entitled *Modern Cryptology Conundrums: Efficient Factoring Methods for Large Integers* conducted with Dr. Feil during the summer of 2007. Joanna and Rui had a wonderful time at the conference and recommend the experience to all undergraduate women mathematicians, especially freshmen and sophomores looking to find out more information about possibilities for a future in mathematics.

Faculty briefs

The department was recently notified that **Dr. Tom Bressoud** was awarded a Robert C. Good Faculty Fellowship for spring semester 2009. This was a very competitive award; only eight were awarded campus-wide. Dr. Bressoud will combine this with his sabbatical year leave in the fall of 2008. While on leave for the year, Dr. Bressoud will be working with colleagues at Intel Pittsburgh.

Dr. Lew Ludwig had an article accepted by the AMS Contemporary Mathematics Series with Joel Foisy from SUNY - Pottsdam, entitled *When graph theory meets knot theory*.

Dr. Tom Bressoud and **Dr. Joan Krone** have received a Mellon grant to hold a workshop on CS2 at Denison on June 16 and 17. CS faculty members from eight colleges (Denison, DePauw, Furman, Harvey Mudd, Middlebury, Rhodes, Scripps, and Vassar) will meet to present and discuss ideas for the second CS course. This workshop is a follow-up to a CS1 workshop held in June, 2007.

On February 10-12, **Dr. Joan Krone** participated in an external review for the Computer Science Department at DePauw University.

Updating cryptanalysis

While on leave this semester, **Dr. Feil** is revising a classic cryptanalysis book. Here is a description of the project in his own words:

Elementary Cryptanalysis was written by Abraham Sinkov in 1966 and published

by the MAA. Sinkov was one of the pioneers of American cryptology. He was one of three civilians hired by William Freidman for the Army's Signal Intelligence Service (SIS) in 1930. The SIS was responsible for cracking the Japanese machines in the 1930's. He was one of the first Americans to visit Bletchley Park in England and learn about the British efforts in breaking Enigma. The SIS morphed into the NSA after the war and Sinkov worked there until 1962.

This text was meant as an introduction that was not particularly mathematical, but also not a 'lite' version. It gives probably the best description of techniques for breaking transposition ciphers of the 'columnar' type.

Cryptology has changed a lot in 40 years. Don Albers, director of publications for the MAA, asked me to update the book and that is what I'm doing this semester, adding chapters on public-key encryption, particularly RSA, and on one-time pads. There will also possibly be a chapter on the Data Encryption Standard or the Advanced Encryption Standard, which has replaced DES.

The software I've used in the cryptology course will also be modified to be used with the text.

Quantum processes

While on leave this semester, **Dr. Westmoreland** is writing a book with Dr. Benjamin Schumacher of Kenyon College. Here is a description of the project in his own words:

I am currently working on the book *Quantum Processes, Systems and Information*. We are under contract with Cambridge University Press for delivery of the manuscript by August 31, 2008. The book is intended to be an introductory text for undergraduate courses in quantum mechanics and to incorporate many of the results recently obtained in analyzing quantum mechanics using an information theoretic point of view.

The 4 Colleges Math Contest

On February 9, seventeen teams from Denison, Kenyon, Ohio Wesleyan, and Wittenburg gathered in Olin Hall for the annual 4 Colleges Math Contest. Denison fielded five teams this year. Team members were: **Corey Ackerman, Neal Barcelo, Sam Behrend, Amanda Daniels, Rob Flax, Rachel Grotheer, Heather Kincaid, Katie Leight, Matt Matteri, Amanda Moore, Joe Paat, Yuechao Pei, Bryce Pioske, Nicole Scholtz, and Matt Steinke**. The results won't be back for several weeks but we're sure Denison was represented well.

Looking for work?

Then we're looking for you! We need a motivated student to help us improve the department's web site. No previous experience is necessary. If you are interested, please see Dr. Havill.

Upcoming Events

February 23	Spring programming contest
February 27	FaSt Talk: Kevin Hutson (Furman University) — 3:30 pm in Olin 114
March 10 – 14	Spring Break
March 27 – 28	Dr. Colin Adams (Williams College) visit – sponsored by the Gordon Lecture Series
March 28 – April 11	Fall 2008 Pre-registration meetings with advisors
April 1	Current Juniors registration cards due to Registrar's Office
April 4	Current Sophomores registration cards due to Registrar's Office
April 9	Current FYS registration cards due in Registrar's Office
April 14 – 15	Dr. Daniel Huttenlocher (Cornell University) visit – sponsored by Phi Beta Kappa