The Colorado College Department of Mathematics and Computer Science

Volume 2, Issue 1

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COUNTABLE BITS

INSIDE THIS ISSUE:

Karin Boes and future math major

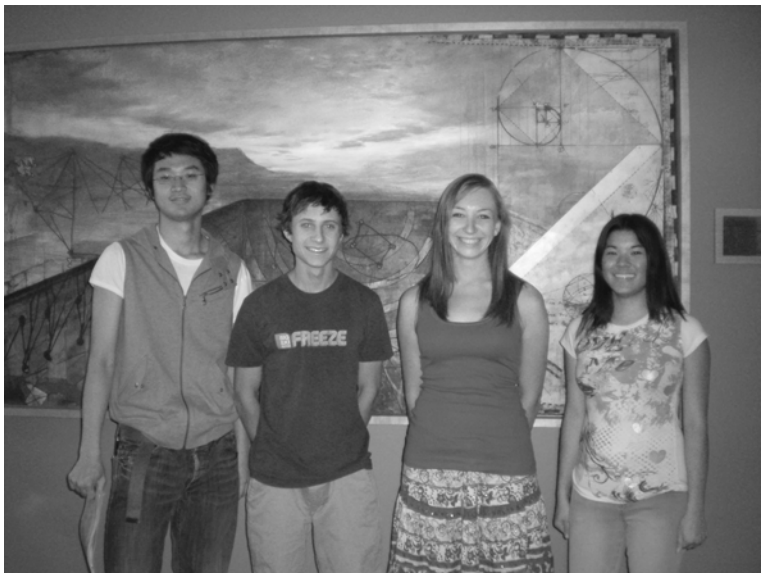
EUCLID SCHOLARSHIPS AWARDED!

Thanks to a generous gift from CC alumnus John Tompkins '89 the department has just awarded its first ever Euclid Scholarships to four students for the 2009/10 academic year: first-year students Allison Hasegawa and Chris Lowenstein; sophomore Lauren Hinkle; and junior Lung Li. The goal of these merit-based $2000 scholarships is to support the study of mathematics and computer science within the context of the liberal arts.

Tompkins feels deeply appreciative for what the study of mathematics at CC has meant for him over the years and has established this scholarship in the hope that other graduates of the college would also be inspired to contribute to this fund. Tompkins himself has provided funding for us to run this scholarship for five years and several other donations have now been made as well, including a contribution from Jane Rowntree Dowding '68 and her husband Charles. These new contributions allowed us to award four scholarships this year instead of just three.

To contribute to the Euclid Scholarship Fund you may send a check (made payable to "Colorado College" and with "Euclid Scholarship Fund" on the memo line) to: Development Office, The Colorado College, PO Box 1117, Colorado Springs, CO 80901-9897, or you can also do this online at the college website: www.coloradocollege.edu (click on "SUPPORT CC").

The 2009 Euclid Scholars:
Lung Li
Chris Lowenstein
Lauren Hinkle
Allison Hasegawa



NEWS FROM KARIN BOES, CLASS OF 1991

I was already a math major at CC when I took the Introduction to Programming class. For me, it was a "Eureka" moment as I suddenly knew what I was going to do for the rest of my life. There were not very many computer science courses at that time, so I took as many as I could. When I decided to go to graduate school, Professor Janke was an enormous help as he spent countless hours trying to teach me what I needed to learn that CC did not yet offer. I went on to get my Master's from the University of North Carolina at Chapel Hill. I returned to Colorado and found a wonderful job as a software engineer. For me both math and especially computer science were a form of puzzles. To get paid to solve puzzles seemed unbelievable and I consider myself lucky.

Graduating Majors, 2009:

Mathematics:

Andrew Bean (distinction)
Noah Brostoff
Amy Hepner
Molly Moran (distinction)
Hunter Oliver-Allen
Brian Thirkell
Kayla Valvo

Computer Science:

Buddy Ferreira

Mathematical Economics:

Dillon Baer (distinction)
Benjamin Beadle-Ryby
Ryan French
Nicholas Kreczko
Charles Paddock
Stephen Polk (distinction)
Michael Scheuer (distinction)
Janet West
Zachary Yates

Mathematics Minors:

Matthew Chase
Marie Hoerner
Jessica Koncak
Lindsay Morrison
Sara Roggensack

Molly Moran was the winner of the *Florian Cajori Award*, for her distinguished work in mathematics as an undergraduate at CC.

"Sarah's incredible work ethic that has made her ... one of the very best students in the math and computer science department."

Our paraprofessional: Maija Benitz

For many years, the math department has had a recent graduate work for a year in our paraprofessional position. Job duties include tutoring students in lower-level courses, running problem sessions for courses, organizing tutors and graders and helping to foster a positive and fun atmosphere for all students of mathematics, majors and non-majors alike.

This year Maija Benitz joined the Mathematics and Computer Science Department to work as the paraprofessional. Maija graduated from Colorado College in May 2008 with a degree in physics and a minor in mathematics. This fall Maija is moving east to begin graduate school at UMass-Amherst, pursuing a Masters degree in mechanical engineering. She looks forward to focusing on wind energy research. She will continue supporting students next year through her role as a teaching assistant for the engineering school.

The department is looking forward to working with Colorado College math major Andrew Bean as paraprofessional next year.

Maija Benitz, daydreaming about mechanical engineering!

Junior Math Major Sarah Wolff wins second straight academic medal

Junior math major and forward on CC's Division I soccer team, Sarah Wolff recently won the Conference USA Commissioner's Academic Medal for the second consecutive year. Her coaches and teachers agree that it is Sarah's incredible work ethic that has made her not only one of the very best students in the math and computer science department but also allowed her to emerge as an "impact" player on the women's soccer team. Always striving to be the best in everything she does Sarah has twice been honored by her teammates with the Most Improved Player Award.

Sarah, who is fluent in Spanish, spent her spring break this year in Nicaragua as an ambassador of Soccer Without Borders working with disadvantaged girls. She will return to Nicaragua next spring for an entire block. As a sophomore Sarah participated in the Summer Program for Women in Mathematics at George Washington University and this summer will attend the Claremont Colleges Research Experience for Undergraduates program and study Algebraic Voting Theory using group actions, graph theory and representation theory to understand, explain, and construct voting paradoxes and voting procedures.

Sarah Wolff, in 3-1 win against Oklahoma.

News from Amy Wielkoszewski, Class of 1999

I worked for 5 years with Accenture on a variety of projects coding, testing, leading a tech team creating computer-based training, and revamping the reporting for one of MSFT's subunits; ultimately I worked my way into an in-between role helping translate between coding teams and "normal" people ☺ . I've since received an M.A. in Intercultural Relations and am now working on a fantastic new study abroad program that takes undergrad and grad students on a ship around the world.

SUMMER RESEARCH IN MATH BIOLOGY

In 2008, Colorado College was awarded a substantial grant from the National Science Foundation to foster student research that uses mathematical techniques to study biological phenomena. The project is led by math professor David Brown, and involves math faculty Amelia Taylor and Steven Janke, as well as four faculty from biology and environmental science. Over a period of three years, the project will introduce sixteen CC students to mathematical biology, one of the fastest-growing areas of science.

In the spring of 2008, we recruited six students, including junior math majors Noah Brostoff and Andrew Bean. The students were paired up in interdisciplinary teams; each pair of students worked with a pair of faculty – one from math and one from biology. Over the summer, each group tackled a challenging research problem. One team developed a dynamic model for the rapid evolution of bacteria under stringent growth conditions. Another team developed an improved statistical method for inferring evolutionary relationships from genetic data. The third team developed a population model for a species of owl that breeds in the mountains of Colorado and migrates each winter to Central America. Most of the students continued to work on these research projects after the summer ended, turning them into strong senior theses.

David Brown loves mathematical biology!

In addition to carrying out the research projects, the students traveled in July to a mathematical biology conference in Toronto. There they attended a wide range of talks, mingled with undergraduate and graduate students from around the world, and broadened their culinary horizons. During the fall, we had campus visits from two researchers who use mathematics to study biology – Dr. Fred Adler from the University of Utah, and Dr. Matthew Andrews from the University of Minnesota. Both visitors gave fascinating talks, met individually with our students to discuss their research projects, and shared their insights about graduate school and career opportunities over lunch.

This spring, we have already recruited and begun training our second cohort of students. This group includes math majors Ben Rogers and Casey Rommel. We're looking forward to more exciting research and a conference in Vancouver. In addition to benefitting the students, the program has proved to be a boon for faculty: it has helped form partnerships that will strengthen our teaching and research for years to come. If you are interested in finding out more, please see our web page at: http://faculty1.coloradocollege.edu/~dbrown/UBM/UBM%20-%20Research%20Opportunity.html

JANKE GIVES KEYNOTE ADDRESS

Prof. Steven Janke was awarded the 2008 Burton Jones Distinguished Teaching Award by the Rocky Mountain section of the Mathematical Association of America last spring. As part of the award Steven delivered a keynote address at the regional MAA meetings held this spring at The Colorado School of Mines in Golden, Colorado. Steven and his travel companions had to brave a snow storm to get to the meeting!

Here is a picture of Steven during his talk entitled "The Traveling Salesperson Problem: A Cross-disciplinary Example Within the Mathematical Sciences." Steven is the first person from our department to win this prestigious award.

Math and Computer Science Faculty (2008-2009)

Marlow Anderson
Jonathan Bredin
David Brown
Stefan Erickson
Steven Janke
Molly Maxwell
Jane McDougall
Mike Siddoway
Amelia Taylor
Fred Tinsley
John Watkins

Departmental Staff

Marita Beckert (Staff Asst.)
Maija Benitz (Paraprof.)
Amy Pacheco (Tech. Dir.)

"In addition to benefitting the students, the program has proved to be a boon for faculty."

McMillin is Top Student Athlete

Brian McMillin (Mathematical Economics) received The Paul Markovich Award as the top student athlete of the 2008 - 2009 school year. The award is presented annually to Tiger Hockey's top student-athlete in honor of former defensemen and Rhodes Scholar Paul Markovich. Brian was also named to the WCHA All-Academic team (3.0 GPA or higher) and a WCHA Scholar Athlete (3.5 GPA or higher).

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EDITOR'S NOTE:

Thanks so much to Laura, Karin and Amy for sharing your memories and thoughts about our department! It's always great to hear from you, and we look forward to including more stories about our alumni in this newsletter, so that classmates can reconnect, and so that current students can learn about the many successful paths that can be taken by math and computer science majors.

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New colleague Andrea Bruder

News from Laura Hegerle Montague, class of 1992

After graduating from CC, I spent two years in the Peace Corps in Kenya and then went to graduate school at Dartmouth College. I finished my Ph.D. there in 2000, working in matroid theory with Ken Bogart. I taught high school math for a year and then moved to Greece for my husband's studies. We have been here six years and now have three daughters, Zoe (6), Theodora (3), and Sophia (7 months). We will return to the U.S. at the end of June and plan to live in St. Johnsbury, Vermont. I will be teaching math part-time at a private high school there and we plan to homeschool our daughters, so that should keep me busy!

When I think of the CC Math Department, I still picture you all in Palmer Hall.

Internet Security Course

This block 5, the Department invited Gerald Tompkins from the United States Department of Defense to teach a Internet-security course to seven of our computer-science majors. Mr. Tompkins serves as the Internet-applications expert and educational liaison for the DoD's Red Team – an organization established to probe Federal networks for possible security leaks by exploiting the network flaws using publicly-available software.
Mr. Tompkins' course presented students with knowledge of technologies commonly used to build web-based applications. He and his students then explored common vulnerabilities present in many deployed applications through network-traffic analysis, undocumented and unplanned feature-use, and the use of malformed or properly-timed input to web-based applications. During the course, students developed and presented their own sample web-based applications. The final exam asked students to expose security shortcomings in their classmates' projects. The class drew high praise from its participants, including representation from the College's information-technology department.
The network-security course prepared four of the College's five students entering the third-annual Computer and Network Vunerability Assessment Simulation (CANVAS), hosted by Colorado State University Prof. Dan Massey in Fort Collins this past May. At CANVAS, students are assigned to one of fourteen teams to analyze and report upon the security of a network application, similar in spirit to "Capture the Flag" computer-security competitions, but the organizers attempt to promote a cooperative environment by comprising teams of students with different backgrounds. The contest judges students' efforts on their ability to expose security faults, as well as their report convincing role-played corporate executive officers to adopt more-secure networking practices. Colorado College junior Adam Urban worked in the second place team at CANVAS.

Math Modeling Contest!

Each year, the Mathematical Contest in Modeling challenges college students from around the world to work in teams on challenging, open-ended problems. This year, two teams from CC participated and did wonderful work.

A team consisting of Andrew Bean (senior math major), Noah Brostoff (senior math major), and Stephen Polk (senior mathematical economics major) was awarded Honorable Mention, meaning that they finished in the top 35% of over two thousand entries.

A team consisting of Marie Hoerner (senior geology major and math minor), Casey Rommel (junior math major), and Rob Preston (sophomore) was awarded Meritorious, meaning that they finished in the top 15%.

Both teams chose to work on a problem involving the optimal design of traffic circles. Over four busy days, each team developed computer simulations of traffic flow, analyzed various scenarios, and wrote up their solution in a paper. Of course, under the block plan, four days is like four weeks - so our students have an unfair advantage! Congratulations to all on a job well done. To learn more about the contest, and read this year problems, visit: http://www.comap.com/undergraduate/contests/mcm/

Andrea Bruder Joins Department

The department is really excited to welcome Dr. Andrea Bruder to our department for next fall. She has just completed her Ph. D. in applied analysis at Baylor University. She is interested in the ways differential equations can be applied to biology and physics. Andrea did her undergraduate work in her native Germany, and also studied at Utah State. When not studying mathematics, she may be found rock-climbing!