The Colorado College Department of Mathematics and Computer Science

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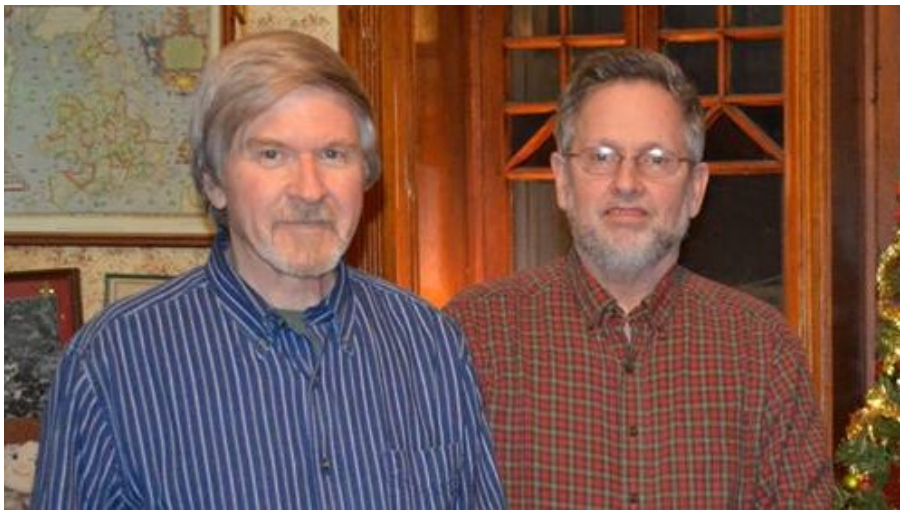
COUNTABLE BITS

INSIDE THIS ISSUE:

Awards for our Seniors!

We are excited this year to be adding two awards specifically aimed at our great computer science majors. The **Steven Janke Award in Computer Science** goes to the student who "best demonstrates unusual talent and achievements" in CS; this year's winner is **Soeren Walls**. The **Grace Hopper Award** in CS goes to the student who best demonstrates an unusual commitment to the CS community, and the winner this year is **Gillian Hyde**. In addition, **Nate Mankovich** received the **Sophie Germain Award**, which honors the mathematics student "who demonstrates an unusual commitment to the mathematics community" and "passion for the field." And **JJ Calhoun** won the **Fearless Award**, for the best talk write-ups of the year.

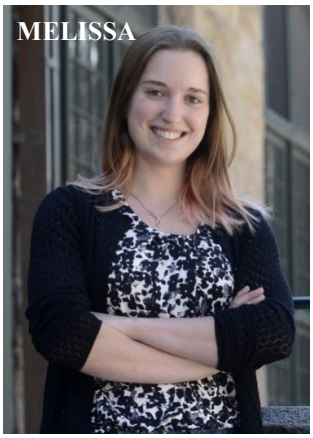
Fred Tinsley and Steven Janke retire



Last spring, **Steven Janke** completed his third year of phased retirement (teaching 3 blocks a year), and retired fully. He was honored at festive retirement party at Stewart House, featuring many current and former faculty and students. The endowment for a **Steven Janke Chair in Computer Science** was announced at the party (see story on page 3). Steven arrived at Colorado College in 1975, with training in probability theory at Berkeley, later finishing his Ph. D. in 1982 (after several years teaching nine blocks a year at CC!). Steven was the creator of the CC computer science program, first as a concentration in the math major, and eventually leading to a free-standing degree in CS. He defended the discipline eloquently as an essential part of the liberal arts. Steven also made important contributions to the Environmental Studies Program, and helped create the CC offerings in probability and statistics. Steven was a master teacher, widely admired by his colleagues and students. Although he is "retired", he taught a section of CSII for us this year, and also co-taught the adjunct course in robotics; he will be teaching Computer Graphics next year. When the department created an award for the best Computer Science major of the year, it was obvious that it should be called the **Steven Janke Award** (see the story to the left about the first winner).

Fred Tinsley completed his second year of phased retirement this spring, and is now fully retired too. His retirement party featured a special Fearless Friday lecture on Fred's research, by his long-time collaborator Craig Guilbault of the University of Wisconsin at Milwaukee (Craig is also Molly Moran's thesis advisor). Fred arrived at CC in 1977, and has thus completed 40 years of service to the college. Fred's undergraduate degree was at Middlebury, and he completed his Ph. D. at the University of Wisconsin, in geometric topology. In addition to his continuing research in topology, Fred contributed his sterling teaching across the mathematics curriculum. Fred also served as a consulting statistician to many CC students and faculty; his interest in statistics eventually led to the book on linear statistical models he co-wrote with Steven Janke. Fred was also for many years actively involved in faculty governance, serving several terms on the Faculty Executive Committee; he also was for a long time the data maven for AAUP and Phi Beta Kappa. Fred was one of the founders of the annual Workshop on Geometric Topology, often held at CC, and now going 33 years strong. Like Steven, Fred is "retired" but will still be teaching a block for us next year.

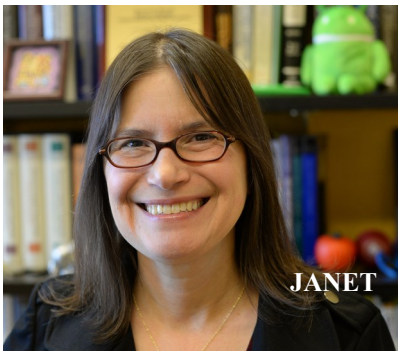
The *Euclid Scholarships* are made possible by donations from generous friends and alumni (see stories on page 3). If you'd like to help, you may send a check (made payable to "Colorado College" and with "Euclid Scholarship Fund" on the memo line) to:
Development Office,
The Colorado College, PO Box 1117, Colorado Springs, CO 80901-9897



Rawles Exam
Our department's annual math contest, the Rawles exam, was held in Block 6. Our *upper division winner* was **Jiawen Qi** and our *lower division winner* was **Vlad Vintu.**

Three New Tenure Track Hires

Last year the department hired **Janet Burge** as a tenure-track professor of Computer Science. Janet joins her computer science colleagues Matthew Whitehead and Ben Ylvisaker in this new tenure track line. Janet brings lots of industry and teaching experience to CC; she was most recently an Associate Professor at Wesleyan. Her Ph. D. in Computer Science was from Worcester Polytechnic Institute. Janet has already made a real impact on our department and program in her first year here at CC. Her research interest is in Design Rationale, a sub-field of Aritificial Intelligence in Design. She brings expertise in Software Engineering to the department. She is joined in Colorado Springs by her husband William Craighead, who has a position in the Economics Department.

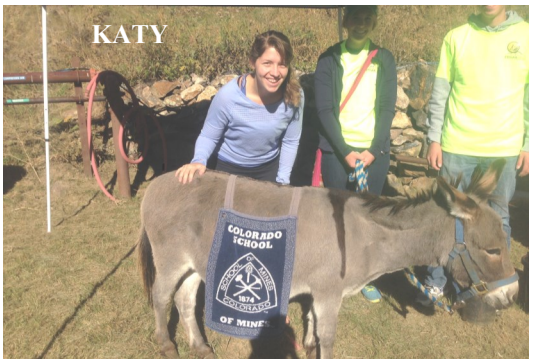


This spring the department hired **Molly Moran** and **Beth Malmskog** in two tenure-track positions in mathematics. These two positions replace Amelia Taylor (who left academia to explore new opportunities in Oregon), and the retiring Fred Tinsley (see the story on page 1).
Molly Moran graduated from CC in 2009, and earned her Ph. D. in Geometric Group Theory from the University of Wisconsin at Milwaukee. She returned to CC in a visiting position in the fall of 2015, and is now on tenure track. She has already established herself as an important member of the department, and an accomplished and popular teacher. During block 8 of this year she had 19 students enrolled in her senior level topology course!

Beth Malmskog received her Ph. D. in number theory from Colorado State University in 2011. After a year at Wesleyan, she spent two years as a visitor at CC, and then moved on to a position at Villanova. The department was pleased that Beth agreed to return to CC in our tenure track position. Beth is a lively and enthusiastic teacher, with lots of research problems in cryptography, number theory and combinatorics which are well suited to undergraduates.

Alumni win prestigious fellowships!

Two recent math alumni, **Katy Martinez ('15)** and **Melissa Jay ('16)** have earned prestigious Graduate Research Fellowships from the National Science Foundation. These highly competitive fellowships provide funding for PhD students during the first few years of graduate school.



Katy is currently a first year graduate student in Computational and Applied Mathematics at Colorado School of Mines. The fellowship will support Katy's research on mathematical modeling of infectious diseases. Katy reports: "Currently I am working on a partial differential equation model for the spread of Ebola. I am developing methods for incorporating stochastic (random) behavior into the models and analysis techniques for the spatial models necessary to properly characterize the disease." Katy got her start in mathematical research by modeling the spread of bullying among children as an infectious process, during her senior thesis work with Andrea Bruder.

Melissa will begin graduate studies in Biostatistics at Harvard in August. She states that "My current interests are in developing statistical methods to analyze clinical trial results with missing outcome data. I'll be on an NIH training grant in either cancer or HIV/AIDS research and hope to contribute to the design and analysis of clinical trials…" Like Katy, Melissa was a stand-out math major at CC, whose current research interests trace back to her senior thesis work.

Melissa and Katy are in good company. In the past 11 years, a total of 35 CC alumni have received NSF Graduate Research Fellowships, including a bumper crop of six this year. Math majors have been well represented, with recent awardees including **Jessica Coyle ('08)**, **Sarah Wolff ('10)**, **Lauren Shoemaker ('11)**, and **Evan Ranken ('12)**.

The Kindness of Non-Strangers

These are exciting times in the department, with rapid enrollment growth, great accomplishments by our students, and the addition of new faculty. Another part of the story is the generosity displayed by alumni and friends of the department. In the past two years, the department has received four major gifts.

First, **John Tompkins** ('89), whose gifts started the Euclid Scholarships in 2009, made a major contribution that endowed the scholarship fund in perpetuity. Then, **Jeanne Lenhoff Williams** ('58) left her entire estate to the Euclid Scholarship Fund when she passed away last year. Jeanne was a math major who went on to a career as an analyst, programmer, and software developer. Her generous gift is transformational: the Euclid Scholarship Fund will allow us to award over $40,000 annually in merit-based scholarships, as well as fund summer research opportunities and travel to conferences for students. "We are deeply honored by these gifts", said Assoc. Professor David Brown. "These scholarships make a real difference to our students, and they have generated a lot of excitement around our department."

Upon **Steven Janke's** retirement in 2016, one of his former advisees (an anonymous member of the class of '82) pledged an extraordinarily generous gift to the college in Steven's honor. Part of the gift will go towards need-based financial aid for students across the college, while another part will one day endow the Steven Janke Chair in Computer Science. An endowed faculty chair will allow the department to continue to grow and meet the needs of future students. Said Steven: "I am completely overwhelmed by this generous gift to the college. It will be a major plus for the department and I'm honored to have played a role. Our students are the best."

Jeanne Lenhoff Williams

Finally, the parents of a current student have pledged $100,000 to support horizon-expanding opportunities for computer science students over the next four years. The intent of the donors is to help students experience the breadth and vitality of computer science, while preparing for a wide range of career options. Our faculty are planning a set of activities that will emphasize the intersection of computer science and other fields of study. These activities will include special topics courses, visiting speakers, and field trips.

Euclid Scholars

Thanks to the Lenhoff Williams and Tompkins gifts described in the article above, the department was able to increase the number of Euclid scholars from 4 to 9 students. These scholarships are given to first and second year students who show unusual talent and interest in mathematics or computer science. The sophomores who have the scholarship next year are **Malcolm Gabbard, Miguel Guerrero, Jia Kang, Maggie Mehlman** and **Clara Richter**. The first year students for next year are **Beau Carlborg, Lauren Stierman, Vlad Vintu** and **Nicole Woch**. Congratulations to all!

Plans for our graduating seniors!

Ana Doktorova, **Nate Mankovich** and **Gareth Hardwick** are all heading to graduate programs in mathematics, at Purdue, Colorado State and the University of Washington, respectively. Meanwhile, **Sunil Butler** will be studying statistics at Colorado State. **Phoebe Porter** and **Olivia Chandrasekhar** will both be data analysts at a Colorado Springs firm, while **Rebecca Watson** will be a contractor for Northrop Grumman in Aurora. **Abbe Holtze** will be joining Teach for America, and **Soeren Walls** has a position at Google. **Ian Hay** will be studying German at Regensburg in Germany. CS minor **Zach Eberhart** will start graduate school in CS at Notre Dame. **Ellen Smith** (math minor '16) will begin her graduate studies in geology at Montana. **Jessica Badgeley** (math minor, '15) recently received an NSF Fellowship to continue her studies at the University of Washington, in the department of Earth & Space Sciences.

Graduating Majors, 2017:

Mathematics:
Sunil Butler
JJ Calhoun
Olivia Chandrasekhar
Anastassia Doktorova
Gareth Hardwick
Ian Hay
Abbe Holtze
Jarrett Kong
Nate Mankovich
Hannah Neustadt
Phoebe Porter
Mengyuan Wang

Computer Science:
Hannay Al-Mohanna
Tierre Allen
Jack Borthwick
Jonah Broh
Natalie Browning
Clayton Coggeshall
Gillian Hyde
Yifei Ma
Caden MacKenzie
John McGue
John Orrell
Tim Reynolds
John Silvester
Soeren Walls
Rebecca Watson
Winston Xu

Mathematical Economics:
Derek R. Bell
Sayorn Chin
Theodore S. Corwin
David P. DeMay
Nicholas E. Edel
Quinten J. Eggink
Sean B. Fite
Perry J. Fitz
Samuel V. Hale
Annika Hanson
Qi Jin
Daniel S. Keogh
Niyanta Khatri
Adelynn X. Khoo
Toan M. Luong
Rebecca E. Mathieson
Madigan G. Miller
Stephen W. Petersilge
Anubrat Prasai
Jiawen Qi
Junnor S. Shin
Ryan T. Sin
Baran Yildiran

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Math and Computer Science Faculty (2016-2017)

Marlow Anderson
Janet Burge
David Brown
Andrea Bruder (on sabbatical)
Kathryn Bryant
Stefan Erickson
Kirsten Hogenson
Rodney James
Jane McDougall
Michael Penn
Mike Siddoway (Assoc. Dean)
Fred Tinsley
Matthew Whitehead
Benjamin Ylvisaker

Departmental Staff

Marita Beckert (Staff Asst.)
Austin Eide (Paraprof.)
Anjali Ravunniarath (Paraprof.)
Amy Pacheco (Tech. Dir.)

Visiting Faculty

An important part of our departmental life is the role that visiting faculty play in and out of the classroom. This year we are saying goodbye to two great colleagues after four years teaching for us. **Michael Penn** studies vertex algebras, and has supervised several theses by some of our finest students; he is moving on to a tenure track position at Randolph College. **Rodney James** has brought his great teaching style to many courses, both pure and applied, and helped create our new course in Discrete Mathematics. **Kathryn Bryant** (a knot theorist with her Ph. D. from Bryn Mawr) was only with us for one year, as she has decided to pursue opportunities outside academia, but she contributed strongly to our program, in the classroom and out. Meanwhile, we're looking forward to having graph theorist **Kirsten Hogenson** with us for another year; Kirsten received her Ph. D. from Iowa State. In addition, we will be joined by **Nguyen Nguyen**, who studies boundary value problems in linear partial differential equations; she has an undergraduate degree from Hamilton College, and her Ph. D. from the University of Chicago. Next year's visitor in Computer Science is **Daniel Ellsworth**, who is just finishing his doctoral work at the University of Oregon. He studies the power demands of high performance computing.

Block Visitors

The continued success of our department is due in no small part to the contributions of wonderful block visitors. They allow us to offer enough sections of needed courses, teach topics that we wouldn't otherwise be able to offer, and inject new ideas and insights into our discussions. We're happy to rely on the considerable expertise of our retired faculty: **John Watkins** will return again to teach our number theory course, out of his own text. **Steven Janke** will teach Computer Graphics out of his own text. And not to be left out, newly retired **Fred Tinsley** will return to teach Linear Statistical Models out of his own text (co-written with Steven)! **Andy Glen, Gene Abrams** and **Rob Gordon** will continue to help out with our offerings in statistics, calculus and applied math. **Robin Wilson** (Open University, UK) will return again to teach our capstone course on the history of mathematics. Finally, **Richard Koo** (CC '82) will teach a course for us for the third year in a row, teaching Database Systems. Richard brings his practical experience, liberal arts background and his Ph. D. from Columbia to our CS students. The Block Plan gives us the ability to bring in world-class talent and enhance our curriculum in wonderful ways.

Paraprofs old and new!

Each year the department hires two recent CC graduates, who spend a year acting as teaching assistants, mentors, and event organizers; these are our paraprofessionals! The math paraprofessional this year was **Austin Eide**, who will be heading on to graduate school in mathematics at the University of Nebraska. Our computing paraprofessional has been **Anjali Ravunniarath**; she is returning to India to work as a fellow for the Global Education and Leadership Foundation. Our paraprofessionals from last year are now both in graduate school, **Trevor Barron** studying Computer Science at Arizona State, and **Gautam Webb** doing math at Oregon. And we are excited to have graduating seniors **Yifei Ma** (computer science) and **Hannah Neustadt** (math) join our team as paraprofessionals next year.

Sabbaticals!

This past year **Andrea Bruder** was on sabbatical all year long (although she did selflessly participate in our tenure track hiring process). She taught a block class in calculus at Quest University in Canada. In addition she worked on two papers "Coffee to Go! Modeling Thermoclines in Multivariable Calculus" with Brynja Kohler, and "Modeling Transport in Streams" (with CC's own Miro Kummel). She's also working with Heidi Lewis on a FemSTEM symposium for next year. **Marlow Anderson** was on sabbatical in the fall, and pursued an historical project on the 18th century mathematician Colin Maclaurin and his pioneering calculus text (to the left Marlow is pictured with **Robin Wilson**, at the Bodleian Library in Oxford). This year **Ben Ylvisaker** passed his Third Year Review with flying colors, and will celebrate by pursuing his research on a sabbatical in the fall. This spring **David Brown** will finish his long service to the department as chair and associate chair, and will take a sabbatical in the spring semester. Meanwhile, **Stefan Erickson** will complete his second year as chair next year, while **Andrea Bruder** will join him as Associate Chair.