DEPARTMENT OF MATHEMATICS

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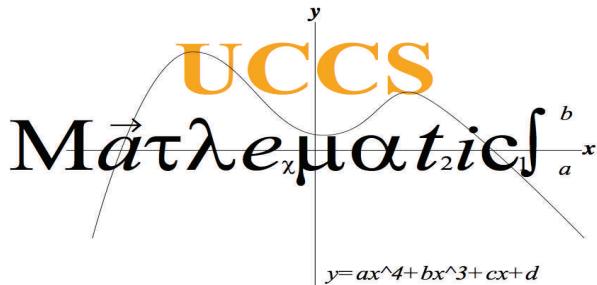
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$y = ax^4 + bx^3 + cx + d$

OUTSTANDING STUDENT AWARDS

During "end of year awards ceremonies" in May 2008, the following mathematics students were honored for academic achievements during Academic Year 2007/2008 by the College of Letters, Arts, and Science:

Susan Rollins and **Jerrad Hampton** were named the co-recipients of the Outstanding Undergraduate Student in Mathematics award. **Dustin Keck** was named the recipient of the Outstanding Graduate Student in Applied Mathematics award.

Congratulations to:
Susan, Jerrad, and Dustin for jobs very well done !!

VOLUME 13, ISSUE 1

In this issue:

"ALL THE ∇ 's THAT'S FIT TO PRINT"

Special points of interest:

* The prefix for all UCCS phone numbers changed from "262" to "255" starting January 1, 2009. To reach the math department main office phone please dial (719) 255-3311 and to fax information please use (719) 255-3605.

AROUND THE DEPARTMENT (IN ALPHA ORDER...)

Gene Abrams continued to do research in the area of Leavitt path algebras. He hosted two research visitors from Spain (one in April, one in May). He gave talks about his research at various universities, including U. Houston, U. C. Santa Barbara, U. C. Berkeley, and DePaul U.
  Gene also continued his efforts with K-12 math education. He is working with the UCCS PIPES project. He attended three math education conferences, including a conference in June on Math Teachers' Circles at the American Institute of Mathematics (in Palo Alto, CA). The Pikes Peak Math Teachers' Circle will hold its first summer Academy in June 2009 for middle school math teachers.   In addition, Gene is again teaching the *(Continued on next page…)*
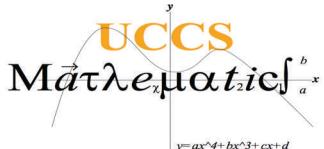
(**ABRAMS CONTINUED**) the new Math 131/132 sequence, "Calculus with Refresher Pre-calculus" during the 2008/2009 academic year.

BOB CARLSON

In the summer of 2008 **Bob Carlson** enjoyed an interesting mathematics conference in Wales, at a small conference center called Gregynog (see picture). Once a home of the local nobility, this conference center has some sixty bedrooms, a music room that can easily seat 100 (with a built in pipe organ), and about 750 acres of surrounding countryside. Gregynog is about as far from everything in Wales as it is possible to be. The conferees are locked up for a week, with nothing to do but work, stroll around the grounds, or retire to the basement pub after dinner. A good and productive time was had by all.

Before Bob joined the UCCS faculty, he worked as a signal processing engineer in the aerospace industry. Some of his recent research harks back to those days. In studying analysis on graphs, he discovered a generalization of the discrete and fast Fourier transforms commonly used in signal processing. He is currently investigating possible applications.

RADU CASCAVAL

Radu Cascaval has had an 'optimal year', by completing his work on a CRCW grant on the "Analysis of Kinematic Effects during Sustained Exercise on the Human Cardiovascular System". At the conclusion of this project, he participated in the international workshop on "Optimal Transport in the Human Body: Lungs and Blood" at the Institute for Applied and Pure Mathematics at UCLA, in June 2008. During the summer semester he taught a graduate level course on "Optimization", in a compressed 5-week format. During Fall 2008 he continued his efforts of implementing computational tools (e.g. *Matlab*) in the Math curriculum, specifically in the Linear Algebra and Methods in Applied Mathematics courses. This has turned out to be optimal, both from the teacher's and from the learner's perspective. He is looking forward to teaching the new 1-hour lab course in Computational Mathematics to be offered in Spring 2009 for the first time.


GREGYNOG

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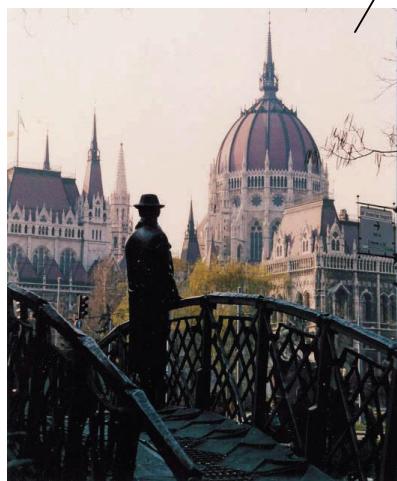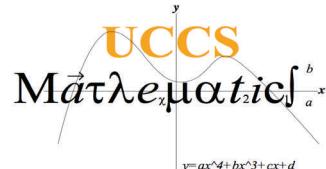
S A R B A R I S H   C H A K R A V A R T Y

Sarbarish Chakravarty continued his research work on 2-dimensional line-soliton solutions, and published three articles on this topic during AY 2007-8 jointly with his collaborators. This work is now supported by an NSF grant that he received in July 2008. Sarby gave a Physics colloquium at CSU in Spring 2008, and co-chaired a session on integrable systems at the 2008 AIMS Conference held at Arlington, Texas in May 2008. He hosted a research visitor (Dr. Ken-ichi Maruno from U. Texas PanAm) for two weeks during July-August.

J I M   D A L Y

Jim Daly continues to work with colleagues at Elte U. in Budapest, Hungary on various research projects. In particular, Sandor Fridli, Ferenc Schipp, and Jim have finished a paper on multiplier operators on dyadic Hardy spaces. Also, progress is being made on the boundedness of the perfect square multipliers for Lebesgue spaces. This problem has been worked on for 40 years by various mathematicians, including Rudin and Bourgain. Jim will travel to Budapest this summer to attend a conference for research purposes. Progress is also being made towards a successful retirement from the department next year; Jim shot two rounds of golf of 75 this last year! His goal is to have a 2 handicap by June of 2010.

J E N N Y   D O R R I N G T O N

Jenny Dorrington survived her first year as Director of the Math Learning Center, and really enjoyed the challenges of teaching classes and learning her new job at the same time. Jenny spent much of the year learning administrative procedures and learning about budgets and other fun things that she had never had to think about before. Jenny also attended two conferences on learning centers, and has become involved in the formation of a regional association of math and science learning center directors. She has put some of what she learned at these meetings to use, by establishing a weekly training program for the MLC tutors. Jenny writes: "The best part of the year, though, was getting to know the tutors, the faculty, and many of the students who visit the center."

Talking with students and attending department colloquia have inspired her to pick up books and think about mathematics for the first time in a long while. On a personal note, Jenny became engaged last summer. (Congratulations, Jenny!) She only half-jokingly says that she is "… naively looking forward to the fun of planning a wedding."

CONGRATULATIONS TO TIM LEWKOW— Tim has been working with Dr. Chakravarty on Undergraduate Research in Solitions and was chosen as a recipient of a UCCS Undergraduate Scholarship that will pay for him to attend the IMACS International Conference on Nonlinear Evolution Equations in Athens, Georgia. Great Job Tim!!

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K.M. Rangaswamy gave an invited talk at the centenary celebrations of the Indian Math Society during December 2007- January 2008. He also gave a talk at the Southern Regional Algebra Conference (a.k.a. 'Rangafest'), held at UCCS in September 2008. (See article for more about this conference.)

RANGAFEST HELD AT UCCS

It is somewhat traditional in the mathematical community that when a mathematician retires after a long and distinguished career, her/his colleagues throw a "masquerade party": more precisely, they throw a *conference* which *masquerades* as a *party*! So was the case when our own K.M. Rangaswamy officially retired in Spring 2008, after 25 years of service to UCCS.

The Southern Regional Algebra Conference is an annual gathering of algebraists, typically held each Fall at a university in the southern U.S. (So holding it at UCCS was indeed a bit of a stretch …) This year's conference, held September 26 - 28 at UCCS, attracted more than three dozen research mathematicians from throughout the world, including the U.S., Spain, Ireland, Italy, Japan, Korea, and Columbia.

After a short welcoming address by Chancellor Shockley on Friday afternoon, eight speakers in Ranga's primary area of research expertise (abelian groups) gave talks on their current work. Then the party began! All conference participants, along with many current and former UCCS math department faculty and spouses, attended a banquet in Ranga's honor, held at the Lodge at UCCS. After a nice dinner, a number of people toasted / roasted Ranga. The evening ended with some beautiful words from The Man himself.

The conference continued all day Saturday, and concluded Sunday at noon. In all, 29 talks were presented. There was a great atmosphere of mathematical interaction. UCCS really put its best foot forward. All of the participants seemed to enjoy both the mathematics and the non-mathematical activities greatly. It was a fitting tribute to Ranga's contributions to both the international mathematical community, and the UCCS community as well.

(Editor's note: for Ranga, the word 'retirement' does not mean 'retire from doing mathematics'; rather, it simply means 'keep doing mathematics, but retire from drawing a paycheck'.)

K.M. RANGASWAMY

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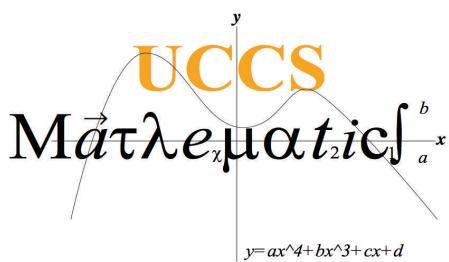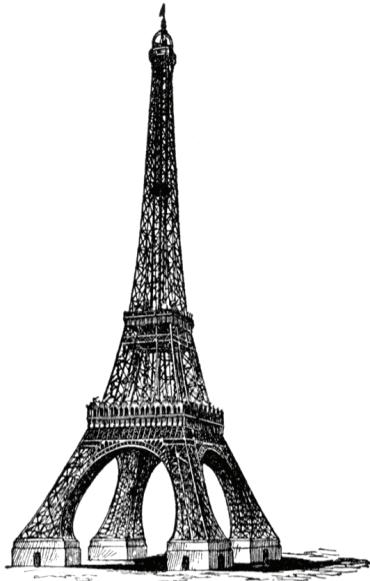
SHANNON MICHAUX

In January 2008, **Shannon Michaux** had the opportunity to complete her second Goofy's Challenge marathon in Walt Disney World. The Goofy's Challenge is a half marathon on Saturday followed by a full marathon on Sunday. In addition to teaching this past summer, she had the opportunity to return to one of the jobs she enjoyed during her college days, by volunteering as a lifeguard for a week at a children's camp outside of Woodland Park. This fall she had the opportunity to teach a *MathOnline* section of Calculus III, with a record 32 online students enrolled! Teaching such a large group of online students was a bit of a challenge to the administrative structure of the course at the beginning, but she enjoys the chance to interact via email with the off campus students.

GREG MORROW, CHAIR

Department chair **Greg Morrow** traveled to a Stochastic Networks conference in Paris this past summer, where he kept up contact with lots of probabilists in his general area of research and enjoyed the markets, food, people, and sights. He also served as interim Graduate committee chair during the summer as a last minute tune-up for his new position as dept. chair in August. (Shortly thereafter he took a crash course in applied accounting, taking lessons mainly from Emanuelita!) He also has had the opportunity to meet the Dean's staff to help him sort out how things work in the Letters Arts and Science College. The non-stop pace of things this fall has been somewhat exhilarating, if not mad. Greg co-wrote a Research Experiences for Undergraduates (REU) grant proposal with Radu Cascaval and Sarbarish Chakravarty. He is also working with Stefan Erickson of Colorado College and several other faculty from the region to co-sponsor the Pikes Peak Regional Undergraduate Mathematics Conference (PPRUMC), that is being held at UCCS on Feb. 28, 2009. Greg has enjoyed working with many new people across campus and thanks everyone for their patience and hard work during a time of swift transition for both the department and the college

KEITH PHILLIPS

Keith Phillips officially retired on July 1, 2008. (Just in time for his retirement nest egg to go south; ouch!) Even more of a disappointment, he lost his office with window (Keith and Rangaswamy are now sharing EAS 277). Keith will teach a section of Differential Equations in Spring 2009, as a kind of free-lancer. There are two sections of Math 340; Radu Cascaval has the other one. Radu found that the DE book which we have been using (Boyce and DePrima, 8th ed.) has a newly increased price of $160. So Keith and Radu switched books to one by Campbell and Haberman, saving each student about $70!

RINALDO SCHINAZI

Rinaldo Schinazi was invited to give two talks at the Cornell University Probability School in July 2008. Rinaldo found the experience to be quite enjoyable, but he felt somewhat long in the tooth, as it seemed that 90% of the attendees were under 30 years old! In September he was invited to give a talk at the Institut Henri Poincare in Paris. It was a very nice meeting, with many of the world's leading probabilists in attendance. Of course, as a bonus, he got to re-experience Paris in September! (Rinaldo said that it brought back 'back-to-school' memories from his youth: "there is something in the Paris air in the fall"). He signed a contract with Birkhauser to publish his third book; this one is titled *From Calculus to Analysis*. Last, but definitely not least, he is really enjoying his Fall 2008 sabbatical, after having chaired the department for the previous four years.

2008 MATH DEPT GRADUATES!!

Master of Science in Mathematics
-Diana Cristina Maal

Master of Science in Applied Mathematics
-Dustin Dale Keck
-Daniel Adam Sohl
-Jeffrey Marsh
-Brian Patrick White
-Michael Popovic

BA Mathematics
-Susan Rollins
-Brandon Shelstad
-Jessica Zeidman
-Kristen Clifton
-Michelle Loretan

BS Mathematics
-Jerrad Hampton
-Patrick Wright
-Ryan Freckleton
-Shemferd Wong

Here is the list of the Academic Year 2008 graduates from each of the department's degree programs. An impressive list, to be sure

SEUNG SON

Seung Son attended the SIAM conference in Denver last spring, along with some graduate students and UCCS Math Club members. Seung began to extend his research expertise by studying some of the mathematical fields in which he can apply mathematical theories and knowledge to application problems or real-world problems. Under the belief that mathematical discipline is crucial in high-tech or future-tech development, he studied a number of intriguing technology areas in which mathematical principles and theories are highly required. In particular, mathematical fields pertaining to information security have been the major areas that he studied and researched. In order to motivate himself, and to learn about others' work, he attended "RSA 2008" in San Francisco; this is the world's biggest information securities conference.

DEPARTMENT FOCUS

EMANUELITA MARTINEZ

In this issue of the UCCS Mathematics Department Newsletter we focus on **Emanuelita Martinez**. Emanuelita has been our department's Program Assistant (a.k.a. 'do-it-all') since August 2007. If you look in an online dictionary under "lifelong learner", don't be surprised if Emanuelita's picture shows up! Talk about an advanced student … she was already attending classes at UCCS by the time she was six years old!!! (Really! Her mother returned to the university once all of Emanuelita's siblings were old enough to attend K-12 school. Emanuelita would accompany her mom to class on a regular basis. Numerous coloring books were filled up over those years …) In addition to her two undergraduate degrees, Emanuelita has been taking classes towards a Master's in Public Administration since her arrival at UCCS. She will complete her degree in Spring 2009.

After graduating from Sierra High School (where, she admits, math was not her favorite subject), Emanuelita headed off to CU Boulder, where she earned dual degrees in business and in ethnic studies. Emanuelita then moved back to Colorado Springs with her daughter Isabella, and after commuting to Denver for a few years to work. she applied for and eventually was offered a job in the UCCS Office of Admissions and Records. When the UCCS math department Program Assistant position became open upon the retirement of Joanie Stephens, Emanuelita was chosen to fill the position. Emanuelita admitted that she had some initial reservations about the job; in particular, she was somewhat concerned that the stereotypical (introverted, single-focused) mathematicians might be hard to work with. Just the opposite! "It was a pleasant surprise when I found out that the people in this department, faculty and students, are really pretty interesting. They have lots of hobbies and activities outside of mathematics, and they're fun to chat with."

YU ZHANG

In 2008 **Yu Zhang** published two papers in the journal Annals of Probability. The topic of the first paper is to estimate the rate of convergence of variance in the first passage percolation model, while the goal of the second one is to investigate the infinite oriented percolation cluster. Yu visited Beijing Normal University for a month in Summer 2008 to work with Professor Wu. In addition, he visited Kobe University (Japan) for a month to work with Professors Higuchi and Takei.

SPOTLIGHT CONTINUED …

The biggest challenge of the job, according to Emanuelita, is wading through some of the oceans of university bureaucracy. (She mentioned, for instance, the *six* different signatures required in order to serve wine at Ranga's retirement dinner.) On the other hand, the most enjoyable aspect of the job is that "every day is different; the tasks are so varied, from faculty support to helping students to financial stuff to planning conferences."

When asked about any advice she might have for students, she didn't hesitate: "See your professor!" She thinks it's unfortunate that students are sometimes too shy or intimidated to ask professors for help, especially when professors are glad to give it. At the conclusion of the interview, Emanuelita shared with a smile: "My family thinks it's funny that I work in a math department: I was always bad at math!". (Reviewer's note: NOT! You should see some of the spreadsheets and financial stuff Emanuelita wades through with apparent ease.) Emanuelita Martinez "is glad to be working in the UCCS math department". And the department is glad to have her!

HAVE A HAPPY 2009!