

University of  
Colorado at  
Colorado Springs

Department of  
Mathematics

2012  
NEWSLETTER

"ALL THE V'S THAT'S FIT TO PRINT"

VOLUME 16 NUMBER 1

IN THIS ISSUE

## Outstanding Student Awards



During the "end of year awards ceremonies" in May 2012, the following mathematics students were honored for academic achievements during Academic Year 2011/2012 by the College of Letters, Arts, and Sciences:

### Outstanding Undergraduate Students

- Veronica Marth, BA
- Hannah Harris, BA
- Tommy McDowell, BS
- Daniel Dauwe, BS

### Outstanding Math Graduate Student

- James Parmenter, MS

## Lorch Endowed Scholarship Awarded

The family of former UCCS Professors Bob and Barbara Lorch established the Robert S. and Barbara R. Lorch Department of

Mathematics Endowed Scholarship in 2009. The late Drs. Lorch taught political science and sociology, respectively, for more than 30 years. Bob and Barbara's son John earned a B.A. degree in mathematics at UCCS in 1988, went on to earn his Ph.D. in mathematics, and is now a faculty member at Ball State University in Indiana. The funding provides for merit-based scholarships for junior or senior math majors.

In this, the fourth year of its existence, the department awarded the Lorch scholarship to **Lindy Shae O'Neil**. "I feel very honored to have been chosen for the Lorch scholarship", Lindy shared. "I feel it has been a great privilege to expand my studies through this award. It has been a true gift to attend UCCS; everyone I have met and worked with, especially the faculty, has been extraordinary and this scholarship is nothing short of that. I will be continuing my education in graduate school after I finish my undergraduate degree in May of 2013, and my preferred area of study would be algebra with an emphasis in group theory."

Congratulations to Lindy O'Neil on this achievement. Lindy joins the entire mathematics department in expressing their deep appreciation to the Lorch family for the establishment of this scholarship fund, which will be used to support UCCS mathematics students in perpetuity.



## Undergraduate News

Our Undergraduates were busy this year doing research with faculty members, going to conferences and getting involved in various competitions.



## New Department Members!

**Dr. Peter Braza** and **James Parmenter** joined the Math Department in Fall of 2012. Check out the profiles for both Peter and James further down in the Newsletter!



# CONGRATULATIONS 2012 Graduates!

Here is the list of the graduates from each of the department's degree programs in 2012. An impressive list, to be sure.

## Undergraduate Degrees

### B.A. Mathematics

Reece B. Adragna  
Greg H. Bliss  
Quanling Du  
Hannah C. Harris \*  
Christopher T. Hinson  
Breann Leier  
Veronica J. Marth\*

Andrew D. Sudzinski  
Ashley E. Tatum  
Alexandria S. Wood  
Chaz A. Woodson  
Steve D. Zamora

### B.S. Mathematics

Allen G. Boartfield  
Daniel Dauwe\*  
Thomas W. McDowell\*  
Roger T. Pennington  
John M. Webber  
Diana J. Wright

## Graduate Degrees

### M.S. Applied Mathematics

Joshua P. Carnahan  
James B. Eberle  
David A. England  
Tracey L. Morland  
James J. Parmenter\*\*  
Michael A. Steinman

### M.S.C. Math Emphasis

Michael J. Bihn

\*Outstanding Undergraduate Student Award

\*\*Outstanding Graduate Student Award



## Distinguished Lecture Series



Dr. Jerry L. Bona  
University of Illinois at Chicago

The fourth annual UCCS Distinguished Lecture was delivered on September 20, 2012 by Professor Jerry L. Bona of the Department of Mathematics, Statistics and Computer Science at the University of Illinois at Chicago. Professor Bona discussed mathematics and the ocean, providing an overview of important milestones in the study of mathematics of the ocean. He then demonstrated an example of the use of water wave theory to create mathematical models. These models include descriptions of tsunami propagation, rogue waves, and near-shore zone sand bars.

Professor Bona is known for his contributions to the study of fluid mechanics, partial differential equations and computational math. He earned a Ph.D. from Harvard University and worked at the Fluid Mechanics Research Institute at the University of Essex. Later, he was a faculty member at the University of Chicago, Pennsylvania State University, and the University of Texas, Austin, before joining the University of Illinois at Chicago.

# Undergraduate News

## Undergraduate Research

A number of UCCS students and faculty attended the Pikes Peak Regional Mathematics Undergraduate Conference (held at Colorado College in Colorado Springs in February 2012).



## COMAP Modeling Competition

The 2012 UCCS Mathematics Contest in Modeling team consisted of **Taylor Klotz**, **Danny Dauwe**, and **Cristopher Karwin**. **Greg Morrow** served as faculty advisor to the MCM team. This weekend-long competition, organized and sponsored by the Consortium for Mathematics and Its Applications, pits teams from universities throughout the country in a quest to solve a real-world, applied mathematics problem. For more info:

<http://www.comap.com/undergraduate/contests/mcm/>

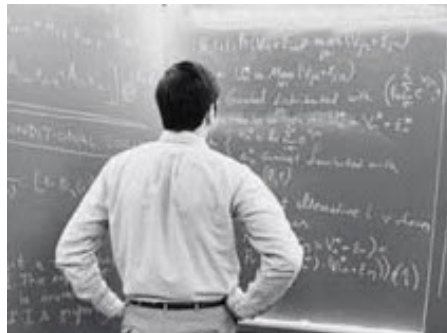
## SIAM News



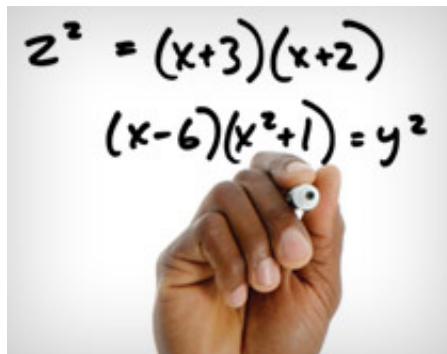
After the February MCM competition, **Danny** and **Taylor** presented some of their work at the 2012 SIAM - Front Range Applied Mathematics student conference (held at CU Denver in March). This work was based on some ideas from the answers they produced during their MCM experience. At the SIAM meeting in

Denver we also had **Michael Steinman** (a UCCS graduate student in mathematics) present his Masters Thesis work (under the supervision of **Barbara Prinari** and **Marek Grabowski**), and also saw a presentation by **Jewell Anne Hartman** of some of her work. For more info: <http://amath.colorado.edu/cmsms/index.php?page=archives>

## Gronski earns LAS College research Award



UCCS math major **Jessica Gronski** is doing research involving neural networks, in collaboration with Associate Professor **Barbara Prinari**. These two researchers applied for and subsequently were awarded one of six 2012 LAS Faculty-Student Research/Creative Works Awards, to support their project Artificial Neural Networks as a Predictive Mathematical Modeling Tool. Well done!



## 2012 William Lowell Putnam Competition

The Putnam Competition is one of the most prestigious of all mathematics undergraduate competitions; universities throughout the world compete in this problem-solving challenge. UCCS had a team of five participants for the December 1 contest: **Jonathan Thompson**, **Taylor Klotz**, **Kevin McCaw**, **Katrina Eidolon** and **Casey Chalifour**. Information about the Putnam Exam can be found at <http://www.maa.org/awards/putnam.html>

## Shhhhhh...Math Club is Back!



Fall 2012 saw the revival of the UCCS Math Club, which has a number of plans for Spring 2013. The club's goal is to encourage interest in math and to provide a venue for students to present projects, research, and other math related subject matter. In addition, the Math Club will invite guest speakers to discuss various topics such as research and career opportunities, and organize trips to events such as conferences and competitions.

The club is open to all students with an interest in math. Currently, **Tori Slattum** is serving as president, **Taylor Klotz** as vice-president, and **Kevin McCaw** as treasurer. There is an information poster and a sign up sheet in the Math Center.

For more information please contact **Tori Slattum** ([vslattum@uccs.edu](mailto:vslattum@uccs.edu)).



## UCCS Math Incline

The newly formed Math Incline is a problem-solving seminar geared towards UCCS students who are interested in staying “mathematically fit” by attempting to solve challenging problems based on the undergraduate curriculum. The seminar also serves as training for the prestigious Putnam competition. The Incline is the brainchild of **Dr. Cascaval**, who helps organize and deliver the Friday sessions. Math Incline derives its name from the Manitou Incline, the old Pikes Peak train whose abandoned railbed now provides an incredibly exhausting venue for runners of all fitness levels.

As part of a true bonding experience, in May a number of courageous Math Incliners also became Manitou Incliners! (see photo to the right). Well done! The official Math Incline logo also appears in this Newsletter. Any readers who might be interested in Math Incline activities or other math department undergraduate activities should contact Dr. Cascaval.



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## MathFest 2012

The Mathematical Association of America's Annual Summer Meeting, a.k.a. MathFest, was held this past summer in Madison, WI. Five UCCS students: **Jessica Gronski, Taylor Klotz, Kevin McCaw, Tori Slattum, and Audrey Szarka** were in attendance, accompanied by UCCS Math Center Director Jenny Dorrington.

The students attended a wide variety of talks, ranging from student presentations to invited addresses. They came away from the conference with a much stronger sense of the breadth of mathematics, and the possibilities for their future careers. In particular, Taylor gave a presentation in the student session (which went quite well, despite some technical difficulties).



## Two New Faces in The Department

The department welcomes two new members to the fold. **James Parmenter**, who completed his M.S. Applied Math degree here at UCCS in Spring 2012, was hired by the department as a full-time Instructor as of Fall 2012.

Also as of Fall 2012, **Dr. Peter Braza** joined the UCCS faculty as Dean of the College of Letters, Arts, and Sciences. Peter is a mathematician whose most recent faculty appointment was at University of Northern Florida.

We know both James and Peter will make valuable contributions to the UCCS community. You can find out more about both of them below.

### James Parmenter



James Parmenter began his duties as Instructor in the department of mathematics as of August 2012. That's "capital I" - Instructor ... James had already been a "lower case i" - instructor for us since August 2010.

James grew up in the northern California town of Arcata. He remembers that, as a young kid, he had already figured out that math was cool. (He

started learning his multiplication tables at age 5, even though he had no idea at the time what the heck multiplication even meant!) After finishing high school he lived for a year in France, and then attended the University of California at Davis, where he earned a B.S. degree in mathematics. James admits that he began college with the intention of earning an aeronautical engineering degree (he had seen the movie *Apollo 13*, from which he realized that he could maybe use his taste for math in an interesting way). But then, prior to having to enroll in a required notoriously-killer chemistry course, James changed his major to math.

James became involved in the culture of teaching while still in his undergraduate years. James was hired as a Teaching Assistant at UC Davis for a large calculus class, where he cut his teeth on the teaching process. He began to learn what techniques were effective in getting students to understand the material, and what techniques just didn't seem to pan out. In addition, James very much enjoyed his role as a 'peer advisor' for the Educational Opportunity Program. In this setting he was able to work with freshmen students on both their mathematics skills as well as their "how-to-succeed-in-college" skills.

James' road to his current position as Instructor of Mathematics was not the more-traditional "undergrad work then straight to grad school then get a job in academia" route. Although upon finishing his undergraduate studies James enrolled in a math PhD program at Davis, he left the program after two years with no advanced degree in hand. He then worked various jobs (including Target price changer, tutor for Sylvan Learning, and at the financial aid office at UCD), before landing a job in the Learning Skills Center at UC Davis. The LSC job was an outstanding fit for James: he got to use his people skills to motivate young students to try to succeed in college, while simultaneously teaching these students some mathematical ideas as well.

Luckily for James, and by implication for the UCCS math department as well, James met Katy in 2002 (in a sociology class at UC Davis); they were married in June of

2007. (editor's note: having met Katy, it's clear why this was lucky for James!!) The reason it was lucky for UCCS is that when Katy was transferred from the Sacramento office to the Colorado Springs office of USAA Insurance in 2009, James then called the Mountain Time Zone his new home.



After a year of downtime ("... mostly playing *Zelda* on my Wii, which was fun for a few months, but got really old after that ..."), James enrolled in the MS Applied Math program here at UCCS, where he finished his degree in May 2012. During his two years as a student at UCCS James was also one of our Graduate Teaching Fellows. Because of his extensive experience, not only with mathematics but with the educational process as a whole, James earned kudos from his students for his effective teaching methods and enthusiastic style. So it was not a surprise to most of us, when our nationwide search for a full-time Instructor came open last Spring, that James was a perfect candidate for the job.

James had already taught a variety of introductory-level courses for us during his graduate student days. In his new role as Capital-I-Instructor, he has now also taught the Math 3130 Linear Algebra course (via MathOnline), and will teach both Calculus 1 and Calculus 2 next spring.

**James' office is ENGR 279.** Please feel free to stop by and say hi to our new Instructor of Mathematics! (editor's note: a photo of "clean-shaven James", taken in Prague, accompanies this Newsletter. But if you do meet him, you may actually encounter one of the many alter egos of James, including "long-sideburn James", "bearded James", or maybe even "goatee James".)



## Dr. Peter Braza



During the past year the UCCS math department welcomed a second new member to the family: as of August 2012, **Dr. Peter Braza** began his duties as the Dean of the College of Letters, Arts, and Sciences.

Most of Peter's formative years were spent in Milwaukee, where his interest in mathematics started quite early. He immediately set high standards for himself, vowing, for example, to not miss ANY math problems on any of the tests throughout his entire 5th grade year! His enthusiasm for math continued throughout his K-12 years; he especially enjoyed participating in various math competitions.

Peter earned an undergraduate degree in mathematics from the University of Wisconsin (Madison). Even though UW is a very large school, "... I had a great undergraduate experience ... most of my professors were so full of energy and enthusiasm!" Although his love for mathematics didn't wane throughout his undergraduate years, it was not clear to Peter that he should make his living doing mathematics in an academic setting. Indeed, for a time he very seriously considered becoming an actuary. But one of the applied mathematics professors at Northwestern University had a chance to convince him otherwise (via a lengthy phone conversation during Peter's senior

year at Wisconsin), and so off to Evanston, Illinois he went.

During the course of his graduate studies, Peter spent time outside of academia working at the Woods Hole Oceanographic Institute in Massachusetts, where he learned much about how to use mathematics in modeling complex systems. "Woods Hole was really an exciting place to be, especially because I felt I was helping to contribute to the overall scientific effort of understanding various mysterious properties of the oceans, while at the same time I was learning a lot of fascinating mathematics." He subsequently returned to Northwestern, and finished his Ph.D. in 1988.

With Ph.D. in hand, had a number of opportunities to put his mathematics knowledge to use, including being offered a position at the National Security Agency. But he decided to enter the academic world, accepting a position in the math department of the University of North Florida in Jacksonville, FL. Until he took the dean's position at UCCS this past August, the UNF position was the only academic institution at which he held a fulltime position. Peter very much enjoyed his time in Florida, where he rose through the ranks from Assistant to Associate to Full Professor in mathematics, as well as Associate Dean (of the College of Arts and Sciences), Interim Dean (of the College of Engineering), and Acting Associate Provost (of the entire UNF campus).

During his more than two decades at UNF, Dean Braza was deeply involved in all aspects of academic life, including the triad of research, teaching, and service. He was an excellent teacher and mentor: for instance, he earned one of UNF's 2003 Undergraduate Teaching Awards, and was for many years the coach / advisor of the UNF Mathematical Modeling Team. (UNF, as does UCCS, annually enters a team in the COMAP-sponsored Mathematics Contest in Modeling.) He taught numerous math courses, as well as some non-standard courses he created / delivered, including courses in operations research and applied engineering.

Dr. Braza has written a number of articles for peer-reviewed research

journals over the years, and remained research-active throughout his time in Florida, including during his administrative appointments. Indeed, Peter was able to author two articles that appeared as recently as 2012. One article, titled "A bridge for functions between even and odd," appeared in the International Journal of Mathematical Education in Science and Technology. He explains: "The idea for this paper came from a master's level engineering math course that I taught when I was interim dean of the engineering college. We were doing Fourier series decomposition of some signals (functions) and the coefficients of the sine terms (odd terms) and the coefficients of the cosine terms (even) had different convergent properties ... Characterizing a function's evenness or oddness is not so simple via looking at the coefficients of the cosine or sine terms in its Fourier representation, so I came up with a simpler way of looking at that. The paper is / was fun and is intended really for anyone with a calculus background." The second article, which appeared in the journal Nonlinear Analysis: Real World Applications, has to do with a predator-prey system in which the predator interacts with the prey along the boundary of the prey's domain (a fairly common occurrence in some ecosystems).

As Dean of the UCCS LAS College, Peter is especially focused on continued improvement / excellence in undergraduate education, and on establishing stronger ties between the College and the Pikes Peak community. (Editor's note: in that sense, he'll fit right in to the department!)

The Braza family (Peter, his wife, and five children) relocation to Colorado Springs last summer was not without serious stress: the house that they had picked out the previous spring, and were set to purchase, burned down in the Waldo Canyon fire three days prior to the scheduled closing. But they were able to find a nice place to live, snuggled up next to the foothills. Peter enjoys the outdoors, including bicycling in the hills around town. In his free time (which of course is extremely limited in his role as dean), he also enjoys exploring Colorado with his family.

## AROUND THE DEPARTMENT IN REVERSE ALPHABETICAL ORDER...

### Yu Zhang

**Yu Zhang** spent two weeks this past summer visiting Kobe University in Japan. Along with Professors Higuchi and Takei, Yu worked on (and continues to work on) the topic of conformal mappings in a multiple domain for the critical crossing probability. The three researchers plan to write a joint paper in this field.

### George Rus

This year **George Rus** continued his work teaching courses through the Extended Studies Program, both through MathOnline as well as a GRE preparation course. Additionally, George continued collaborating with undergraduate and graduate students. In the spring, he was honored by the UCCS Office of First Year Experience by being selected by the RAs and students as one of the top twelve professors who made the biggest impact on their lives. (**editor's note:** Congratulations, George, well deserved!) In the fall, he was invited by the students to participate the first annual Faculty "Meet and Greet" in the residence halls.

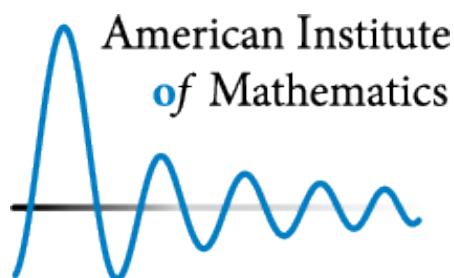
### Kulumani Rangaswamy



Professor Emeritus **Kulumani Rangaswamy** had a quiet, academically enjoyable year. Ranga continued his investigations into the structure of Leavitt path algebras (these are a type of ring structure associated to directed graphs). Activities included authoring

papers on the ideal structure and specific ring-theoretic properties of these algebras. Ranga also gave a talk as part of a special session on ring theory at the March meeting of the American Mathematical Society in Hawaii.

### Barbara Prinari



**Barbara Prinari's** year was certainly memorable, as she was awarded tenure in our department, and promotion to associate professor! Barbara was extremely busy professionally as well. She published a paper on integrable systems (coauthored with some colleagues in Italy), and worked on two more articles which are currently in the pipeline.

Barbara was awarded a Committee on Research and Creative Works seed grant from the UCCS Graduate School to work on a project on "Artificial Neural Networks: an application to health-care dynamics and social climate". This project involves two undergraduate students: **Jessica Gronski** (a math major, and recipient of an LAS College research award with Dr. Prinari), and **Parker Boyce**.

In February Barbara was invited by the American Institute of Mathematics (AIM) to spend a (second) week at their headquarters in Palo Alto, CA, as co-organizer of an approved, three-year-long SQuARE project. In addition, she gave invited talks on her research work at the conference on Nonlinear Evolution Equations and Dynamical Systems in Kolymbari, Greece (July); at the SIAM conference on Nonlinear Waves and Coherent Structures in Seattle, WA (June); and at the International School/workshop on Dispersive Shock Waves in Trieste, Italy (March).

### Greg Oman

Now in his second year at UCCS, Assistant Professor **Greg Oman** continued his research program in the areas of algebra, logic, and problem-posing. In particular, he had three papers accepted in refereed journals, including one with UCCS undergraduate student **Veronica Marth** (who is now applying to graduate school in math). The topic of the paper with Veronica was group theory; of the second, ring theory; and of the third, universal algebra. Greg also authored and subsequently had published several "Problems Posed" in various MAA and AMS journals.

In addition to his research, Greg chaired the instructor search committee (culminating in the very successful hire of **James Parmenter**,) and he currently serves on multiple committees within the department. Greg gave two invited talks: one in Atlanta in April (he enjoyed seeing some green grass for a change!), and the other in The Big Easy in October (he even brought home some souvenir beads, but refuses go into detail regarding how they were obtained ...)



### Greg Morrow

**Greg Morrow** continued in the role of math department chair. In collaboration with Shannon Michaux and the Office of Student Success, Greg helped guide the process of establishing automatic prerequisite enforcement in lower division mathematics courses. This prerequisite checking is happening for the first time with the Spring 2013 computer registration system. Prerequisite enforcement is one part of a combined retention strategy in Mathematics, an effort that also includes continuing efforts

to: track Math Placement data and grades; provide guidance to students by means of diagnostic quizzes and advising; introduce course coordination; and offer sections of courses with pedagogically effective student sizes. During Fall semester, Morrow authored the Mathematics Self Study, a 15 page document that is part of the Math Program Review which is taking place this academic year. As part of this review process, various mathematicians from outside the UCCS community will come to campus during February 2013, in order to study the all aspects of the UCCS Mathematics program. (editor's note: every department in the University of Colorado system undergoes an external review every seven years. The reviewers typically offer very constructive suggestions to the department regarding possible avenues toward improvement.)

Greg also found time to travel to Zurich, Switzerland in the spring, in order to participate in an international conference on process work, IAPOP 2012. The IAPOP (International Association of Process Oriented Psychology) conference is devoted to academic style approaches to issues of diversity, gender, and rank, and includes many approaches to working with a group of people who are in some stage of conflict. This is ongoing education for Morrow in the role of chair. Zurich sits right next to a big lake in the middle of the Alps. One day of his visit to Zurich in particular was a bit wild: the annual May Day Celebration and March was happening (so the otherwise-legendarily-punctual Swiss public transportation system was, well, not so much that day), but the celebrations included a May Day fair going all weekend with international foods ranging from the Mideast to Switzerland. So the energy was incredibly nice (despite the many police lines and delays on May Day itself).



## Shannon Michaux



During 2012, **Shannon Michaux** continued teaching several courses for the MathOnline program. She enjoys the opportunity to work with these students, who often have different backgrounds and viewpoints than some of her in-class students. "It's fun to teach the high school students because they often have different questions from our typical students. The military students that enroll in MathOnline courses are also a pleasure to have 'in class'. I'm often amazed at how hard-working some of them are. It impresses me that they work full time in their military role but still take the time to really dive into the mathematical material. I've even had students who were stationed overseas in areas of conflict who still stuck with the course. Their dedication really inspires me."

Shannon also continued her work on course coordination for the department's courses numbered below 1350. She has been working on documents to help standardize what is taught across different sections of these courses and trying to support the adjunct instructors in these courses. One important development on this front is that, starting with Spring 2013 semester, the campus will begin enforcing prerequisite requirements for 1000 level math courses. There have been so many people campus wide who have worked many long hours to help develop and implement the math placement test. We in the math department are excited to see the enforcement happen because we believe that students who are placed into an appropriate level of math class are much more likely to succeed!

## Zak Mesyan

**Zak Mesyan** had a busy 2012. In addition to an article he wrote about commutators in Leavitt path algebras, he is currently putting the finishing touches on another article about multilinear polynomials. Zak gave lectures about his work at conferences in Hawaii (March) and Ohio (May). "Practically everyone who heard about my trip to Hawaii envied me, but I found Honolulu rather unpleasant, with its excess of humidity and tourists." [Editor's note: waaah.]

On a personal note, Zak's wife Maria moved to Colorado from Germany earlier this year. It took some time for her to get established in Colorado Springs and to find a job, but she's settled in pretty well now. Last winter Zak and Maria spent a few weeks in Israel, where they celebrated the one-year anniversary of their wedding.



## Jenny Dorrington

Math Center Director **Jenny Dorrington** continued to be very much occupied with increasing the services offered by the Math Center, as well as encouraging increased student usage of the Center. The Center now has over 20 math and physics tutors, two computer science tutors, and one electrical engineering tutor. During Fall 2012 the Center had over 8,000 student visits, which is an increase of about 8% over last year at this time.



Two “special events” made Jenny’s year! The first was her trip to the MAA MathFest in Madison, WI, in August, with a group of five UCCS undergraduate math students. (For more on that, see the article near the front of the Newsletter.) The second was that in October Jenny and some of the Math Center tutors participated for the second time in the Cool Science carnival on campus, an event that kicked off the week-long Cool Science festival in town. Six tutors ran booths on a variety of math-oriented topics, including: soap films and minimal surfaces; paper airplanes; the science of flight; origami; solving Rubik’s cubes; and a kinesthetic method for learning and remembering the multiplication table. The carnival was attended by over 5,000 people, and it seemed like most of them came through the Math Center at some point that day!

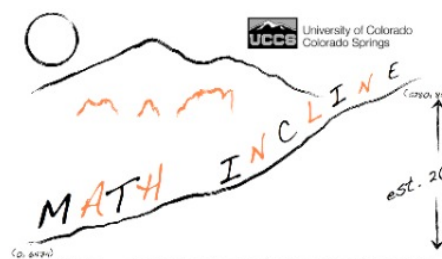


## Sarbarish Chakravarty

**Sarbarish Chakravarty** continued his research on nonlinear waves and integrable systems. He received an NSF grant (in 2011) to fund collaborative research with Yuji Kodama of Ohio State University. Sarby visited Ohio State in June 2012. He then hosted Professor Kodama for a visit at UCCS in November.

In November 2011, Sarby went to South Africa where he visited a colleague

in Cape Town and attended a meeting held at Port Elizabeth. (editor’s note: info about Sarby’s 2011 Cape Town visit missed the very strict deadline imposed by the 2011 Newsletter’s very strict editor ...)



## Radu Cascaval

In 2012 **Radu Cascaval** gave two invited presentations on his ongoing research on controllability of spatial networks: the first was during the Fearless Friday Seminar at Colorado College, and the other was during the Midwest PDE Conference held at the University of Memphis (his alma mater). In September Radu hosted the UCCS Distinguished Lecturer, Dr. Jerry L. Bona of the University of Illinois at Chicago.

During Fall 2012 Radu delivered our very first Calculus for Life Sciences course (Math 1330), a course Radu was responsible for developing. Radu also revived the Optimization (Math 4420/5420) course.

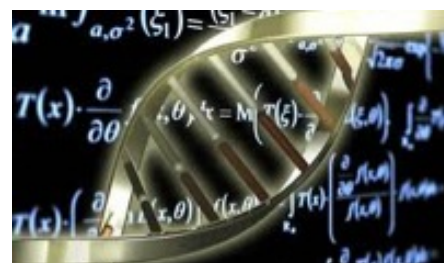
Radu was very involved in increasing the “outside-the-classroom” experiences for our math majors. Efforts include organization of the Math Incline (see article which appears at the start of the Newsletter), a revitalization of the Math Club, the creation of an ‘honors track’ in mathematics, and, in his role as department undergraduate committee chair, an effort to provide improved advising and counseling for our majors.

(editor’s note: Radu, as well as the editor, are both looking forward to their sabbatical assignments during Spring 2013.)

## Bob Carlson

**Bob Carlson’s** research continues to draw inspiration from modeling problems in biology. He completed a project on mathematical ecology with two collaborators from the University of

California at Riverside: Kurt Anderson and Jonathan Sarhad. The project extended ecological ideas about connections between habitat size and population growth to include the complex geometric structures seen in river and stream ecosystems. Their jointly coauthored paper “Population Persistence in River Networks” is currently under review for publication. Bob and Jonathan will be presenting their results at the January 2013 American Mathematical Society meeting in San Diego.

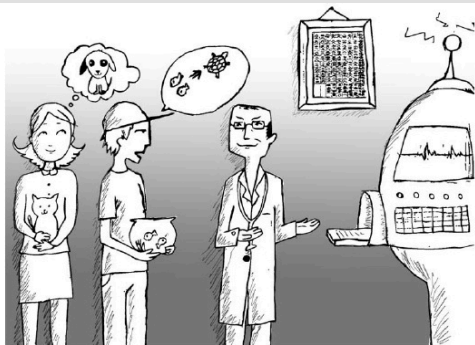


Bob’s continued work on network problems in mathematical biology is being supported by a UCCS Biofrontiers grant. The grant is providing support for student research conducted by **Henri Ndaya**. Bob and Henri are considering spatially distributed predator-prey systems, hoping to find novel features of such systems when network geometry plays a role. So far the research has focused on the development of software models.

In October Bob gave a talk entitled “Boundary Value Problems for Infinite Graphs” at the AMS meeting in Tucson. Despite the exotic title, this work grew out of research on modeling the human circulatory system and other biological networks. In addition to hearing about interesting mathematics, the meeting gave Bob a chance to catch up with some friends he hadn’t seen in more than 20 years.



## Gene Abrams



(graphic courtesy of the Mathematical Association of America.)

**Gene Abrams** continued his work with the Pikes Peak Math Teachers' Circle throughout 2012. He helped organize a four-day workshop in Estes Park in June for a group of 20 middle school teachers. At the workshop, the participants learned various ideas and practiced activities related to problem solving in mathematics; some of these activities will be incorporated into these teachers' classrooms. The PPMTC also involves a once-per-month evening session, held at UCCS, at which teachers learn additional problem-solving methods, and also share their own classroom experiences.

Gene was involved in some 'recreational math' projects as well. He continued development of a Math Teachers' Circle activity called "Mad Veterinarian Puzzles", which is based on some of his research work. He presented this activity (in various forms) to the San Francisco Math Teachers' Circle in March, the PPMTC in June, and (in collaboration with a PPMTC participant) at Coronado High School in November. He also wrote an essay entitled "A mathematician does the New York Times Sunday Crossword Puzzle", which appeared in the book "Mathematics in Popular Culture" (McFarland Publishers, 2012, ISBN 0786449780).

Gene had the opportunity to give a variety of lectures on his research work in Leavitt path algebras, at places including the aforementioned AMS meeting in Honolulu (attended with Zak and Ranga); the University of San Francisco; the Math Research Institute at Oberwolfach (Germany); Ohio University; Ohio State University; and the University of Southern California.

## Fulbright Scholar Sees Opportunity in UCCS Visit

By Tom Hutton

Visiting math professor **Muge Kanuni Er** from Boğaziçi University, Istanbul, Turkey, is at UCCS to work on a project, "Algebras on Discrete Structures" involving her areas of specialty, incidence and path algebras.

As part of the Fulbright Visiting Scholar Program, she will spend six months at UCCS hosted by **Gene Abrams**, and work closely with other members of the math department. She will extend her stay for another six months with assistance from an International Postdoctoral Research Scholarship from the Scientific and Technological Research Council of Turkey.



She learned of Abrams' work while a graduate student at the University of Connecticut (she earned master's and doctoral degrees there), later corresponding with him by email and meeting at conferences. In Feb. 2011, Kanuni Er delivered a colloquium talk to the math department at UCCS. When the opportunity for a sabbatical from her assistant professor position at Boğaziçi University presented itself, she searched for more than a year to find funding and to visit UCCS.

"The world is small," Kanuni Er said. "The math world is even smaller. I am happy to have the chance to do mathematics, to write papers together,

and to share ideas with my UCCS colleagues."

Kanuni Er arrived at UCCS Sept. 5 accompanied by her husband and sons, ages four and six. "Everyone has been very helpful to make our move easy," she said. "I appreciate my colleagues in the Math Department and both the principal and the staff at Bates Elementary School where my sons are enrolled. My sons don't speak English so this has been both a challenge and an opportunity for them. But they like hiking and the outdoors. I think this is going to be good for all of us."

The U.S. has a large international population," Kanuni Er said. "This gives color to the mosaic. I had the opportunity to meet people from different countries and many cultures of the world while in graduate school at UConn in the 90s. My small classmates group consisted of American, Greek, Korean, Irish, French, Dutch, Turkish, Croatian, German and Kazakh students. I can say that I met the world in the United States."

As she becomes more acclimated to campus and the Colorado Springs community, Kanuni Er hopes to undertake outreach projects similar to what she did while at UConn. There, she was president of the Turkish Student Association and often participated in cultural fairs where cuisine and traditional costumes were introduced. On other occasions, she made presentations about Turkey to the university community.



To reach Kanuni Er, email **mkanunie@uccs.edu** or visit her office, Engineering 271.

Invaluable Service ...  
Our honorarium instructors!

*Thank  
You*

The department is extremely fortunate to have number of dedicated, effective instructors who help us meet the mathematical needs of UCCS students. We thank them for their time, effort, and enthusiastic teaching!

**Michael Bihn**

**Edward Boggess**

**Dionisia DeLaCerde**

**Tim Eiles**

**Andrea Essler**

[.html](#)

**Ron Haeckel**

**Jewell Anne Hartman**

**Heather Heath**

**Christine Irons**

**Caroline Kellackey**

**Dr. Bill Kiele**

**Thelma Latimer**

**Mike Popovic (GTF)**

**Virginia Ramos**

**Allison Scheel**

**Ben Schoonmaker (GTF)**

**Wendy Spratte**

**Michael Steinman (GTF)**

\*Note: GTF denotes "Graduate Teaching Fellow"

You can find photos and contact information for all of our honorarium instructors at:

<http://www.uccs.edu/~math/lecturers>

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