

# department of Mathematics & Statistics newsletter

V. 20, No. 1, Feb 2006

## RIT Hosts Nineteenth Midwest Conference on Combinatorics, Cryptography and Computing

The Department of Mathematics in cooperation with the College of Science and the Golisano College of Computing and Information Sciences hosted the 19<sup>th</sup> Midwest Conference on Combinatorics, Cryptography and Computing on October 7-9. Organizers of the conference were **Dr. Hossein Shahmohamad**, **Dr. Darren Narayan**, **Dr. Bernard Brooks**, **Dr. Carl Lutzer** of RIT and Dr. Ebrahim Salehi of UNLV. There were more than 50 attendees from all over the world that visited RIT for this international conference.

The keynote speaker for the conference was Dr. Peter Winkler of Dartmouth College. Dr. Winkler's talk "What is Probability?" was an exploration of the uses and misuses of probability in topics ranging from gambling and medicine to the likelihood of intelligent life elsewhere in the universe.

The principal speakers were Ralph Grimaldi of Rose-Hulman Institute of Technology, Ruth Haas of Smith College, Stanislaw Radziszowski of RIT, Douglas Stinson of the University of Waterloo, Walter Wallis of Southern Illinois University, and Earl Whitehead of the University of Pittsburgh.

Among the many contributed talks this year, there were five given by faculty and students from the Department of Mathematics and Statistics at RIT. Undergraduates **Rachell Ashley** (5<sup>th</sup> year Applied Math) and **Carol Callesano** (4<sup>th</sup> year Applied Math) along with Dr. Narayan contributed to two presentations of "Tiling with  $4 \times 6$  and  $5 \times 7$  Rectangles." Undergraduate **Patrick Curran** (4<sup>th</sup> year Applied Math) and Dr. Narayan presented the talk "Rank Numbers for  $k$ -Caterpillars." Undergraduate **Shelley K. Speiss** (4<sup>th</sup> year Applied Math) and Dr. Narayan presented "Holey Knight's Tours." And finally, **Dr. Paul Wilson** presented a very well attended talk on "The Half-Life of Chocolate: A Bit of Combinatorial Chemistry."



graduate student in Applied Mathematics), Mrs. and Dr. Ebrahim



Shahmohamad, Dr. Ruth Haas, Dr. Ralph Grimaldi, and Dr. Carl Lutzer

## New Faculty

### Anurag Agarwal

Dr. Agarwal was born in India and did his undergraduate work at the Indian Institute of Technology. He came to the United States in 1995 and received his Ph.D. from the University of Buffalo. His fields are number theory and cryptography and his thesis dealt with fourth degree Diophantine equations.

Dr. Agarwal lives in Henrietta with his wife Sanghmitra who is currently a Ph.D. candidate in mathematics education at the University of Buffalo. His outside interests include building computers, Indian mythology, ancient civilizations, and physics. He says that RIT reminds him of his undergraduate school, IIT, in its emphasis on undergraduates, especially the involvement of undergraduates in research.



Anurag Agarwal



Likin Simon Romero

### Likin Simon Romero

Dr. Simon Romero joined the RIT Department of Mathematics and Statistics in September, 2005. He was born in Mexico City where he studied at Universidad Nacional Autonoma de Mexico (Autonomous National University of Mexico). He specialized in mathematics and in particular topology. He arrived in the United States in 2000 and completed his graduate program at West Virginia University with Sam B. Nadler, Jr. His doctoral thesis is titled "Hyperspace Graph of Connected Subgraphs." He received the Outstanding Graduate Teaching Award in Mathematics from West Virginia University.

Dr. Simon Romero has a variety of interests, including watching science fiction movies, flying kites, cooking, and enjoying a cup of espresso at Java Wally's. He recently married his wife Nicole, who completed her Master's in Counseling. They are both new to the Western New York State area.

## Student Honorary Memberships

The Department of Mathematics and Statistics is very pleased to announce our majors who have been selected to receive the 2005 Department of Mathematics and Statistics Honorary Membership Award. Along with the award comes a membership for one year to one of the three organizations listed below. These prestigious honors are awarded based on the overall academic achievement and performance of our majors.

### American Women in Mathematics

Julie Blackwood, 5th year SMAM  
Natalie Bragg, 2nd year SMAM  
Caitlin O'Donnell, 5th year SMAM

### Mathematical Association of America

Khaled Abukhidejeh, 5th year SMAC  
Aaron Kaufer, 2nd year SMAC  
David Mittiga, 5th year SMAC  
Renee Reeves, 4th year SMAM  
Nathan Reff, 4th year SMAM  
Robert Yates, 2nd year SMAM

### American Statistical Association

Michael Bird, 3rd year SMAS  
Jonathan Bradley, 2nd year SMAS  
Michael Ferguson, 3rd year SMAS

## Faculty Activities

Assistant professor **Dr. Anthony Harkin** co-organized the 2nd Conference on Mathematical Methods in Counterterrorism, which was held in Columbia, South Carolina on Nov 1-3. The conference brought together researchers from academics, industry and government who are working on counterterrorism problems for which mathematics can provide keen insight. The conference program included talks on analysis of social networks, identifying hidden patterns in graphs, formal concept analysis for mining large data sets and reflexive theory. Dr. Harkin, **Dr. Bernard Brooks** and **Dr. William Basener** are organizing the 3rd Conference on Mathematical Methods in Counterterrorism, to be held next fall in Washington, DC.

Assistant professor **Dr. Hossein Shahmohamad**, as a member of the editorial board of the *Journal of Combinatorial Mathematics and Computational Combinatorics* JCMCC, refereed manuscripts for the 18th Midwest Conference on Combinatorics, Cryptography and Computing. He attended the Fall 2005 SEAWAY section of MAA at SUNY Geneseo on Oct 28-29, 2005 and presented a talk titled "Coefficients of Flow Polynomial of  $K_N$ ." He was elected the Chief Editor for the proceedings of the 19th MCCC in *Journal of Combinatorial Mathematics and Combinatorial Computing* JCMCC 2005-06. He reviewed three new textbooks: *Discrete Mathematics: Mathematical Reasoning and Proof with Puzzles, Patterns, and Games* by Douglas E. Ensley and J. Winston Crowley, *Graph Theory: Modeling, Applications, and Algorithms* by Geir Agranarsson and Raymond Greenlaw, and *Applied Combinatorics* by Alan Tucker.

Assistant professor **Dr. Bernard Brooks** presented "Mathematical Models of the Propagation of Disaster Rumours" at the 2nd Conference on Mathematical Methods in Counterterrorism, Benedict College, November 3, 2005.

Assistant professor **Dr. Michael Radin** and applied mathematics graduate student **Mark Bellavia** published the paper "Long Term Behavior of a Non-Autonomous Rational Difference Equation" in the *Antarctica Journal of Mathematics*. Additionally, the paper "Review of Long Term Behavior of the Positive Solutions of the Non-Autonomous Difference Equation ...etc." has been accepted for publication in the *Antarctica Journal of Mathematics*. The paper will appear in Sept. 2006 Issue 2 of Volume 3.

*"You will never convince me that 1,500 people...can accurately represent a nation of about 180,000,000 citizens."...Jack Benny*

*"By a small sample we may judge of the whole piece."...Miguel de Cervantes*

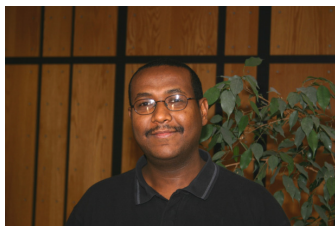
## New Faculty, con't.

### Wondimu Tekalign

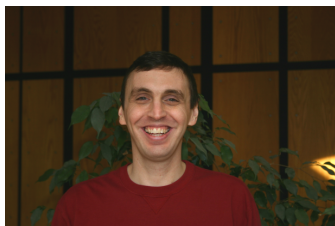
Dr. Tekalign was born and raised in Ethiopia where he received undergraduate and master's degrees. He came to the United States in 1998 and received his Ph.D. from the University of Buffalo. His field is applied mathematics and his thesis dealt with thin films.

Dr. Tekalign lives in Brighton with his wife and two young sons, both under 4. Apart from his professional life, his main interest is his work with the Ethiopian Orthodox Church, of which he is a deacon. He also enjoys tennis but, with two young children to care for, has not had much time to devote to the sport recently.

In his short time with us, Dr. Tekalign has been impressed with the warmth and friendliness he has experienced from the department.



Wondimu Tekalign



Anthony Harkin

### Anthony Harkin

Originally from Brockport, Dr. Harkin was an undergraduate at SUNY Brockport with a triple major in math, physics and computer science (with lots of summer classes to finish in time). He went on to work at Kodak for a few years as a computer programmer and afterwards went to MIT for an MS degree in numerical analysis and fluid dynamics. He wanted more traditional courses and was accepted to the Ph.D. program at Boston University. He went on to be a post doctoral fellow at Harvard before coming here to RIT. His research interests are in computational and applied mathematics, partial differential equations, and dynamical systems.

Dr. Harkin is married and has a two year old daughter. He enjoys tennis but admits that he hasn't had much time to play with his hectic schedule.

## New Lecturers

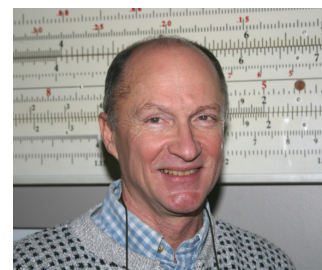
### Gillian Galle

Professor Galle pursued her undergraduate and graduate degrees at the RIT Mathematics and Statistics Department where she completed her MS in Graph Theory in May, 2005. During this time she earned a reputation as an excellent teaching assistant and her love for teaching was recognized by both faculty and students. Her other fields of interests include Cryptography, Number Theory and Discrete Math. Prof. Galle has a broad background that spans Computer Science and English Literature.

Prof. Galle's outside interests includes doing crossword puzzles and hiking throughout New York State. A recent interest for her is geocaching. This is similar to a scavenger hunt that demands the utmost mental acumen and physical endurance. It can be likened to searching for the treasure in the "cache" outdoors, where the treasure has been cleverly hidden throughout hilly areas in New York.



Gillian Galle



Dennis Glanton

### Dennis Glanton

Professor Glanton went to undergraduate school at SUNY Brockport and received an MS in Mathematics Education at the University of Rochester. He has enjoyed 36 years of teaching all levels of Mathematics at Rush-Henrietta High School.

Prof. Glanton has found the transition from teaching in high school to college very rewarding – there is a much greater emphasis in the students and faculty in learning and teaching mathematics. He is married with three children, one of whom is attending RIT and another is three years old. When he has time, Prof. Glanton enjoys playing squash, running and working puzzles.

## In Memory of Eric Gregory Honsberger



The department was saddened to learn of the sudden death one of our undergraduates, Eric Honsberger, on August 14, 2005.

Eric was born in Rochester General Hospital on February 11, 1975. He attended Fairport High School where he was active in wrestling, lacrosse, and football (and was on team when it won

the Division State Championship in 1993).

He joined the Navy November 1994 and began active duty January 1995. His rate was Gunners-mate but by the time he completed boot camp was determined to be a Navy Diver. Eric completed dive school in Panama City Florida and was assigned to the Mobile Diving Salvage Unit 2 at Little Creek, Virginia. His first dive was the TWA 800 which crashed off Long Island. Eric also dove on the expedition to recover the propeller from the Civil War ironclad ship *The Monitor*, off the coast of Norfolk, Virginia. The expedition was filmed as a documentary, entitled "Lincoln's Secret Weapon," for Public Broadcasting's *Nova*.

Eric separated from active duty in August 1998 to enter college. His college career included Tidewater Community College, Old Dominion College, University of Rochester, Monroe Community College, and RIT, all in pursuit of finding the field of study that would interest him the most. Eric earned his Associates Degree (with Distinction) from Monroe Community College, was on the National Honor Society and a member of Phi Theta Kappa Society. It was at MCC that he chose his field of study—mathematics. In 2004, Eric enrolled in the applied mathematics program at RIT in order to complete his bachelors degree. In addition to his studies, Eric was active in RIT's Veteran's Outreach Center and the Amateur Radio Club.

Eric continued to be a part of the Navy as an active reservist and planned to return to active duty as an officer upon graduation from RIT in spring 2006. Eric had a thirst for knowledge and learning. This included his pursuit of his formal education, taking whatever courses the Navy had to offer. Eric returned to Panama City or Pensacola Florida every summer to attend one school or another.

A memorial service was held on October 19th, 2005 at the

## Memorial, con't.

Allen Memorial Chapel. A reception was held immediately following the service in the Bruce and Nora James Atrium. A special thanks to Marcia Birken, Bonnie Connell, and Doug Moyer for sharing their thoughts and memories of Eric.

An endowed scholarship in Eric's name is being established thanks to the initiatives taken by two of Eric's classmates, **Rich Dirmyer** and **Doug Moyer**. Contributions are needed and greatly appreciated. Please contact the RIT Development Office (585-475-5500) to make a donation.



*"He who loves practice without theory is like the sailor who boards ship without a rudder and compass and never knows where he may be cast."*

*Leonardo da Vinci*

## Faculty Activities, con't.

Assistant professor **Dr. Raluca Felea** attended the PIMS-MITACS-VIGRE Summer Graduate School on Inverse Problems at University of Seattle, WA, August 1-6. She attended the IMA Annual Program Year Workshop: Imaging from Wave Propagation, during October 17-21, at University of Minnesota, Minneapolis. Dr. Felea's article "Composition of Fourier Integral Operators with Fold and Blowdown Singularities," appeared in the December 2005 edition of *Communications in PDEs*, vol 30(12).

Assistant professor **Dr. Michael Radin**, Department of Mathematics and Statistics, was elected to serve on the organizing committee of the Society for Chaos Psychology and Life Sciences for the 15th International Conference in Denver, Colorado August 4-6, 2005. He gave a talk on "Discrete Model of Easter Island Population" during the conference. Dr. Radin was an invited speaker at the Mathematics Department Seminar at the University of Guelph in Canada, where he gave a talk on "Monotonicity, Boundedness and Periodicity of the Positive Solutions of a Non-Autonomous Rational Difference Equation." Dr. Radin reviewed a calculus textbook by Jon Ragowsky for the W.H. Freeman publishing company during December 2005.

Assistant professor **Dr. Joel Zablow's** paper "Intersections of Curves on Surfaces with Disk Families in Handlebodies" was submitted to and accepted by the *Journal of Knot Theory and its Ramifications* for publication at a future date.

## Spring / Fall Dean's List

Khaled Abukhidejeh (S*,F*)	Mark Donoghue (F)	Chris Kelley-Hoffman (F)	Carrie Nixon (F)	Marc Weinmuller (S*,F)
Ali Al-Raisi (S*,F*)	Timothy Doster (S,F)	Devin Koestler (S*,F)	Caitlin O'Donnell (S,F)	Jason Weisburd (F*)
Nicole Antonoff (F*)	Gregory Dufore (S*)	Pooja Kosunam (F)	Matthew Piatkowski (F)	Howard Wen (S*,F)
Rachell Ashley (F*)	Theodore Dziuba (S*,F*)	Peter Kurpiewski (F)	Daniel Pike (F)	Heather Wheeler (S,F*)
Nicholas Battista (F*)	Rym Ferahtia (S)	Sebastian Kurtek (F*)	Margaret Pokorny (F)	Brian Witkowski (S*,F*)
Julia Bethel (S,F*)	Michael Ferguson (S*,F*)	Lindsay Latour (F)	James Porter (S*,F)	Robert Yates (S*,F)
Michael Bird (S*,F)	John Feustel (S,F)	Tracy Lester (S)	Renee Reeves (S,F)	Hye Yon Yi (S,F)
Julie Blackwood (S,F*)	Matthew Ford (S)	Jessica Lewis (S*,F)	Nathan Reff (S*,F)	
Jonathan Bradley (S*,F*)	Benjamin Foster (S)	Yi-Hsian Lin (S,F)	Donald Reynolds (F)	
Natalie Bragg (S,F)	Ryan Fuller (S*,F)	Derek Litwin (F*)	Halyna Romanyuk (S)	
Randolph Brown (F)	Terry Fung Ching (S*)	Tammy Lotta (F)	Nicolas Shayko (S,F*)	
Heather Brazeau (S*)	Matthew George (S,F)	Michael Margitus (S*)	Michael Short (S*)	
Bryce Cooney (S)	Jonathan Ginsberg (F)	Paul Martino (F)	Shelley Speiss (S*,F*)	
Joseph Correa (F)	Nicholas Germain (S)	Matthew McEvoy (S)	Chris Steinkirchner (S)	
Patrick Curran (S,F)	Nicholas Greene (S)	Jeffrey McLean (S,F*)	Jeffrey Swanson (F*)	
Marek Cyran (F)	Matthew Heman (F*)	David Mittiga (S*,F*)	Samuel Thieme (S)	
Matthew Denton (S)	Emma Hinke (S)	Richard Moreton (F)	Justin Turk (F)	
Matthew Di Cesare (S*)	Katlyn Hutchins (F*)	Melanie Naumenko (F*)	James Urick (S)	
Richard Dirmyer (S)	Aaron Kaufer (S*,F*)	Matthew Neiman (F)	John Vining (F)	

*Congratulations to all!*  
S – Spring Quarter 2004-3  
F – Fall Quarter 2005-1  
\* denotes 4.0 GPA

## Problem Corner

### Minimizing the Length of an Internal Partition of a Region

A farmer has a square field of side length 100 feet surrounded by a fence. He would like to divide the field into  $n$  smaller pens of equal area with a minimal length of fence (equivalently minimizing the cost). Let's call this minimal length  $L(n)$ . It is a fairly trivial matter to see that  $L(2) = 50$ , but the farmer is more interested in  $L(3)$ ,  $L(4)$ , and  $L(5)$ . What are those values?

Solutions should be submitted to Dr. Coppenbarger at [mecsma@rit.edu](mailto:mecsma@rit.edu).

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*"Are there really among you any so completely deluded that you imagine you know the answers to all these questions?".....Voltaire*

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### Alumni: Please Stay in Touch

We are interested in hearing from you! Feel free to drop us a line to give us an update of your preferred mailing address and phone number, any career changes you've made and your extra curricular activities. Please let us know if you have e-mail, too. As the new edition of the newsletter becomes available on our web site, we'll send you an e-mail about it. Almost two-thirds of our readers enjoy accessing the web version rather than receiving a paper copy.

Also, please let us know if your company has position openings and is interested in hiring our graduating or co-op students. We'll gladly share the news with our majors! Best wishes...

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## Symmetry in nature



Photography by David Crystal