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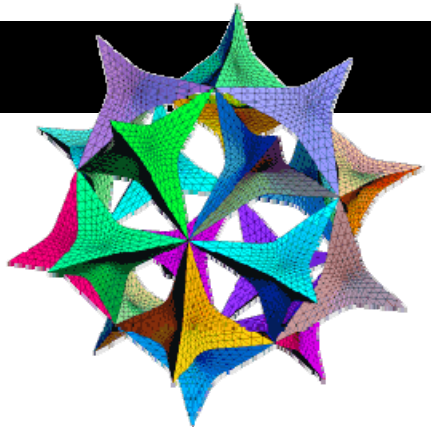
Department of

MATHEMATICS & STATISTICS



NEWSLETTER

Volume 15 Number 1 **November 2000**

DR. DARREN NARAYAN

Dr. Darren Narayan joins us this quarter as an Assistant Professor. He was born and raised in Oswego, and attended the State University of New York at Binghamton, where he received his BS in Mathematical Sciences in 1994. He then attended Lehigh University for his graduate studies in mathematics and received his MS in 1998 and his Ph.D. this past June.

Prof. Narayan is an energetic teacher who strives to keep his students on the cutting edge. He has been effectively using "Virtual Office Hours" where students can get help online. This past summer, he took part in a National Science Foundation workshop focusing on Mathematical Java Applets, and is currently using these applets to help students grasp difficult mathematical concepts.

Prof. Narayan is also an enthusiastic researcher studying graph theory and combinatorics. He recently attained an Erdös Number of 2 with the article entitled "Representations of Graphs Modulo *n*" that appeared in the Journal of Discrete Mathematics, which was a joint project with A. B. Evans and Prof. Darren's Ph.D. advisor Garth Isaak. In addition he has recently had another paper accepted, and more projects are already underway!

DR. SERGE LAWRENCENKO

Dr. Serge Lawrencenko has joined our department as an Assistant Professor. He earned his MS (in 1984) and Ph.D. (in 1990) degrees in Mathematics from Moscow State University. He comes with an exceptionally broad international teaching experience, having taught in the former USSR and China, as well as at Vanderbilt University here in the USA. His primary interests have been teaching, research, and computer programming.

Prof. Lawrencenko's main teaching interests are in discrete mathematics, discrete structures, error correcting codes, and graph theory. He has a broad background in applied computer science courses, making him well equipped to collaborate with colleagues in Computer Science on interdisciplinary projects. Getting undergraduates involved in applied mathematical research is a keen desire of his. At present he is teaching discrete mathematics, offering him a good opportunity of doing this. He is also experienced with incorporating computer technology in the classroom and with computer-aided solutions of graph-theoretic problems.

Prof. Lawrencenko's research involves (1) a combination of graph theory and geometry and (2) discrete mathematics in relation to computer science. He is currently working on triangulations of pseudosurfaces and isoperimetric inequalities. In the near future he plans to be involved in network

theory, computational geometry, and topological graph theory.

DR. CARL LUTZER

Dr. Carl Lutzer joins the faculty as a new Assistant Professor, having just completed his graduate work under the auspices of Peter Hislop at the University of Kentucky. His dissertation addressed an inverse spectral problem for the Dirichlet-to-Neumann operator in which he proved that asymptotic spectral information, alone, was insufficient to determine the genus of a body. Part of his research explains experimental difficulties that are currently being encountered by researchers at RPI as they attempt to recover the conductivity function throughout a body by boundary measurements alone.

While at the University of Kentucky, Prof. Lutzer won both departmental and university wide teaching awards and, though he enjoys research, cites teaching as primary focus. He gave a teaching talk (about a project for college algebra and introductory calculus) at the previous joint meeting and has submitted another for the next (he does not yet know whether his proposal has been accepted). He loves working with students, whether lecturing, answering questions via email or helping a group get through a worksheet. At some time in the near future, he plans to publish a short article about how he's used Dr. Seuss to teach the convergence of infinite series.

When not filling the role of assistant professor, husband or father, Prof. Lutzer likes to write fiction, play frisbee golf, and fence. He began fencing in his sophomore year at Michigan State University, and earned his varsity letter as a senior. While at the University of Kentucky, he acted as the sabre coach and, in light of the excellent fencing in the Rochester area, he hopes to continue his own development as a fencer.

He can be reached via email at CVLSMA@RIT.EDU, and his Homepage (with photos of fencing bouts) can be reached by accessing http://www.rit.edu/~cvlsma/.

DR. PAUL HADAVAS

This past September, Dr. Paul Hadavas joined our department as a Visiting Assistant Professor.

Hailing from Swarthmore, Pa, Paul received his undergraduate degree from Carnegie Mellon University, and both his MS and Ph.D., in mathematics, from Clemson University. He completed his doctoral studies in August, 2000, and his fields of specialization are in Operations Research and Discrete Optimization.

"My initial impressions about RIT have been quite positive" says Dr. Hadavas; and, he continues, "I am impressed with the Institute's national reputation and the substantive support it provides for the hearing-impaired through the National Technical Institute for the Deaf. The Department of Mathematics and Statistics seems to be a tightly knit group of intelligent and friendly professionals." In general, Paul feels quite attracted to Rochester, not only for its geographic location but, also, for its cultural activities in the various sectors of the arts. He participates in 5K runs for charity, he loves music, practically of any type, he is an aficionado of foreign films, and he has begun to "try my hand at karate" as he put it. He adds, "next thing I want to try is ice skating and, maybe, some skiing". Concerning the latter, those of us who are veterans of the Rochester weather can assure Paul that our winters will very likely oblige by providing the necessary "white stuff".

Along with teaching, which occupies most of his time, and his other obligations to the department, Paul intends to continue his research in the field of optimization. He already has two papers ready for publication that resulted from his doctoral dissertation in that field. Of particular interest to him is the relationship between certain linear programming reformulations and network flows, and he also intends to continue his study of *persistency*, which deals with the ability to fix certain variables at known optimal values thereby reducing the size of a problem.

We extend to Paul, as well as to all newcomers to our department, a warm welcome.

JOANNE MULE'S CO-OP

JOANNE MULE'

This past summer I worked at New York Life Insurance Company in Manhattan as an Actuarial Intern. Going into this internship, I knew little about what it is that actuaries do on a typical day. After passing the first actuarial exam, I was anxious to find out more about the field.

In short, very short, actuaries "put price tags on future risks." As an actuary at a life insurance company, common tasks include determining the risks of deaths for different policyholders that will result in future claims, calculating the amount the company should hold in reserves to pay for the projected future claims, and calculating the premium rates that should be charged to each policyholder.

A large portion on my internship was spent in a classroom with the six other actuarial interns. We had a contingencies class that met every Monday to go over many of the important calculations used by actuaries, and we had another weekly presentation by different actuarial employees about their jobs and the different areas at New York Life where actuaries are employed.

The main project I worked on a dealt with reinsurance on policies held by all the top executives at New York Life. I worked with 2000 data on these policies to determine how much New York Life is required to pay the reinsurer based on the premiums received, reserves held, surrenders and death claims made, current asset share interest rates, and the other expenses to be paid. From these calculations I was able to determine that New York Life is losing money on the reinsurance of these policies (mainly because no claims were made) and the exact amount they had lost in 2000. I then used expected mortality rates, projected interest rates, and other past data to make projections for future payments by New York Life to the reinsurer for the years 2002 through 2004.

I also did a lot of work that involved analyzing premium rates offered to New York Life by different insurance/reinsurance companies and determining which companies offered the best rates for different risk classes based on New York Life's mortality tables. I also did a lot of other smaller tasks, each a learning experience of its own.

My interest in the field grew from this summer, and I plan to take the second actuarial exam this November. I have two more years at RIT, so I plan to explore another career next summer (just to see some other options), but there is a good chance that I will return to actuarial work when I start looking for a full time position.

From this internship, I learned an immense amount about the actuaries and their role at New York Life, and I learned a lot about the insurance industry and the organization of New York Life. I also met some wonderful people. It was truly a great experience that I would recommend to anyone interested in the field.

PROFESSOR MAGGELAKIS

DR. SOPHIA MAGGELAKIS

Professor Sophia Maggelakis has just returned from a year of sabbatical leave which she spent working on a number of projects but primarily on her mathematical research.

For the past ten years, she has been actively involved in research in the area of Mathematical Biology and Mathematical Modeling. She has given numerous presentations at national and international meetings and has published several papers in international refereed journals. "The professional leave", she says, " enabled me to continue to build upon my research program by developing vehicles to train myself in new approaches to my field of study, and it provided me with an opportunity to investigate and focus upon some interesting biological problems that can be modeled mathematically". During her leave, she studied the literature and reviewed recent reports and studies on the complex and highly interactive biological mechanisms of the wound healing and tumor growth mechanisms. She collaborated and exchanged ideas with experts in the field through e-mail correspondence and by presenting her work at the national meeting of the Society for Industrial and Applied Mathematics (SIAM)

and the international meeting of the Society for Mathematical Biology (SMB). She has developed several continuous mathematical models of tumor growth and wound healing, which utilize a combination of approaches to describe the biological mechanisms involved. Currently, she is in the process of preparing four manuscripts to be submitted for publication.

A portion of her leave was spent on the Calculus-Physics Project. This is still an ongoing project to which she was assigned, along with Professor Lindberg of the Department of Physics, by the Dean of the College of Science. The goal is to assess our first year calculus and physics courses and to develop approaches to help students succeed in them. A recent recipient of RIT's *Eisenhart Award for Excellence in Teaching*, Professor Maggelakis says: "I must say, I found this to be a more complicated and more challenging problem to solve than any other complex system I had to model so far".

CO-OP PLACEMENTS SUMMER, 2000

Breitenbach, Mark – National Security Agency
Cooney, Darryl - Ortho-Clinical Diagnostics
Crites, Nathan - Warner Lambert Co.
Dwyer, Shawn - Estman Kodak Co.
Gaiser, Melissa – Pharmaceutical Outcomes Research
Grundy, Brian - Longaker Rimkus & Associates
Hall, Lynn - Oak Ridge Insitutute for Science & Education
Ly, Phuongan - Greater Rochester Independent Practice Assoc.
Medlar, Jeffrey - Barnes/Kasson Hospital
Mule, Joanne - New York Life Insurance Co.
Novotny, Amy - Ortho-Clinical Diagnostics
Palumbo, Karen - The Colad Group Inc.
Richter, Jennifer – Bristol Myers Squibb
Wakefield, James - Dielectric Laboratories Inc.

CO-OP PLACEMENTS FALL, 2000

Crites, Nathan - Warner Lambert Co.
Hagen, David - Xerox Corporation
Ly, Phuongan - Greater Rochester Independent Practice Assoc.

FACULTY NEWS

Professor Rebecca Hill, head, Department of Mathematics and Statistics, was an organizer of the special session "Technology Based Modeling in Mathematics Courses" at the annual summer meeting of the Mathematical Association of America in Los Angeles in August.

Dr. James Halavin, Department of Mathematics and Statistics, had his solution to Problem 16 published in the Summer 2000 issue of Chance magazine. His photo and a small biography also appeared there.

Dr. Carl Lutzer, **Dr. Darren Narayan**, and **Dr. Eva Culakova,** all of the Department of Mathematics and Statistics, are among only 60 young mathematicians selected for the Mathematical Association of America's Project NExT (New Experiences in Teaching). NExT Fellows participate in special workshops and national meetings as guests of MAA. As Project NExT Fellows, they attended the annual summer meeting of the Mathematical Association of America in Los Angeles in August.

Dr. David Farnsworth, Department of Mathematics and Statistics, had his paper "The Geometry of Statistics" appear in the May 2000 issue of the College Mathematics Journal. His paper "The Case Against Histograms" was published in the autumn issue of Teaching Statistics, which is a journal of the Royal Statistical Association of Britain.

Dr. Marvin Gruber, Department of Mathematics and Statistics, had his paper "The Efficiency of Shrinkage Estimators for Zellner's Loss Function" published in the proceedings volume for the Physical and Engineering Sciences Section of the American Statistical Association. In August, he pre-sented "The Efficiency of James-Stein Type Estimators for r Linear Models for Zellner's Balanced Loss Function" at the annual meeting of the American Statistical Association in Indianapolis.

Dr. Sophia Maggelakis, Department of Mathematics and Statistics, presented her paper titled "Modeling the Control of Tissue Regeneration During Wound Healing" at the Annual SIAM (Society for Industrial and Applied Mathe-matics) Meeting held in Puerto Rico in July. She also presented her paper titled "A Model of Vascularization and Metastasis of a Solid Tumor" at the International SMB (Society for Mathematical Biology) Meeting held at the University of Utah in August.

Professor Marcia Birken, Department of Mathematics and Statistics, College of Science, and Professor Anne Coon, Department of Language and Literature, College of Liberal Arts, presented their paper titled "The Pedagogical and Epistemological uses of Analogy in Poetry and Mathematics" at the seventh annual conference of the International Society for the Study of European Ideas (ISSEI) in Bergen, Norway, in August. In December or January, the talk will be published as a paper in the proceedings containing selected papers from the conference. The proceedings will be in a CD-ROM format.

This year's new first year students come from all over New York State, from Pennsylvania, Connecticut, New Hampshire, and Wisconsin. Also among this group are students from Canada, Viet Nam and Thailand. The table below shows the numbers for the past seven years.

Year	SMAC	SMAM	SMAS	TOTAL
1994	5	14	7	26
1995	5	21	3	29
1996	2	12	1	15
1997	9	11	6	26
1998	3	10	5	18
1999	7	11	3	21
2000	6	16	3	25

Our students come from both public and private high schools. They include students with outstanding academic accomplishment in high school.

In addition to the first year students, we welcomed a large number of transfer students. These students came from other programs at RIT, from Monroe Community College, SUNY Buffalo and Onandagua Community College. A comparison of the numbers of transfer students is provided below.

Year	SMAC	SMAM	SMAS	TOTAL
1994	2	4	0	6
1995	2	0	2	4
1996	3	1	2	6
1997	3	5	5	13
1998	0	7	2	9
1999	0	5	1	6
2000	2	2	2	6

New first year students include Rebecca Henkiel, Joseph Rhoads, Rachel Robinson, Robert St. Pierre, Benjamin Stabley, Brett Billings, Tonya Campbell, Shana Dangel, Calvin Farmer, Thomas Henthorn, Joshua Latimore, Christine Lennon, Tuyen Luan, Brandon Migdal, Brooke Morley, Gina Nesci, Morgan Ricklefs, Michael Schroeder, Victoria Shults, Tiffany Swasta, Michael Tarantino, Onprapha Boonroong, Fred White, Richard Tandy and John Priestley

New enternal transfer students are Patricia Miller, Michael Miller, Erin Canfield , Thomas Provendoski, David Butler and Leonard Richiuso.

PROBLEM CORNER

1. The sum of an infinite geometric series is 15, and the sum of the squares of the terms of this series is 45. Find the first term of the series.

2. For a triangle, the area is numerically equal to the perimeter. What is the radius of the inscribed circle?

3. Each circle in an infinite sequence with decreasing radii is tangent externally to the one preceding it and to both sides of a given right angle. Find the ratio of the area of the first circle to the sum of areas of all other circles in the sequence.

4. Inscribed in a circle is a quadrilateral having sides of lengths 25, 39, 52, and 60 taken consecutively. Find the diameter of this circle.

5. At his usual rate a man rows 15 miles downstream in five hours less time than it takes him to return. If he doubles his usual rate, the time downstream is only one hour less than the time upstream. Find the rate of the stream's current.

6. A triangle is circumscribed about a circle of radius r inches. If the perimeter of the triangle is P inches and the area is K square inches, find the value of P/K.

PERMANENT JOB PLACEMENT

Briane Bullock (SMAM '991) Inacom
Joseph Mamon (SMAC '991) Xerox
Nathan Meleo (SMAM '991) U.S. Army, Shreuesport, LA
Nam Tran (SMAC '991) Rochester City Schools
Michael Egan (SMAZ '992) Delphi
Bethany Lutz (SMAM '992) Vision Site
Andrew Trapp (SMAM '992) West Group
Nathan Cahill (SMAG '993) Eastman Kodak
Lawrence Danforth (SMAM '993) Corning Community College

William DiGrazio (SMAS '993) Xerox
Craig Driggs (SMAM '993) Unknown
Monica Gladziszewski (SMAS '993) Cigna
Kristin Handzlik (SMAM '993) Harris Interactive
Nicole Krupa (SMAS '993) Unknown
Sara Meyerhoefer (SMAS '993) Harris Interactive
Liza Nirelli (SMAS '993) Mayo Clinic
Matthew Petro (SMAM '993) Graduate School, MBA at RIT
Jennifer Strausser (SMAS '993) Bureau of Labor Statistics
Laurie Switzer (SMAS '993) Xerox
Roderick Van Winkle (SMAM '993) U.S. Army, Stationed at RIT
Emily Viola (SMAS '993) Fidelity Investments

SPRING 2000 DEAN'S LIST

Cory Baitz
Jennifer Baldwin
Mark Breitenbach*
Paul Chwiecko
Lawrence Danforth
Brianna Decker*
Joel Dreibelbis*
Shawn Dwyer*
Melissa Gaiser
Monica Gladziszewski*
Kristin Handzlik
Jason Hills
Natasha Holland
Stacy Krokowski
William Kronholm
Matthew LaPadula*
Kelly Marsh
Sarah McCormick
Jeffrey Medlar
Joanne Mule*
Liza Nirelli
Jennifer Richter
Jin Song*
Jennifer Strausser
Roderick Van Winkle
Christopher Wagner
James Wakefield
Benjamin Zindle*

Congratulations!
(*) Perfect 4.0 GPA

2000 HONOR ROLL

Mark L. Breitenbach
Lawrence M. Danforth
Monica J. Gladziszewski
Matthew J. LaPadula
Joanne Mule*
Jennifer A. Richter
Jin H. Song
Jennifer L. Strausser

Honor Roll Requirements:
Overall Cumulative GPA and Cumulative Mathematics GPA both ≥ 3.75.
Perfect 4.0 GPA

ALUMNI NEWS

Dimitri Beryoza (SMAM '94, ICSG '96) worked as a software developer and sonsultant until entering the Ph.D. program in Computer Science at Florida International University in the fall of 1997. This was also the fall when he and Yulia were married.

Michelle Jarzyniecki (SMAM ''96) has begun a new job with Logisoft Corportation. Logisoft is a web developer and Michelle is currently working on a Japanese web site.

Michael Zawadzki (SMAM '99) is working at Blue Cross and Blue Shield of Western New York. He is working in the actuarial department and managing the government programs through HCFA and the Department of Health.

Mathematics and Statistics Newsletter

Articles written by:
Prof. John Paliouras
Prof. Wanda Szpunar-Lojasiewicz
Prof. Jim Runyon
Prof. Rebecca E. Hill
Joanne Mule'

Print Edition by Dirk P. Wyatt
Internet Edition by Rebecca E. Hill

Send your News item to:
E-mail: mathdept@rit.edu
or mail to:
Rochester Institute of Technology
Department of Mathematics and Statistics
College of Science
85 Lomb Memorial Drive
Rochester, NY 14623