

# math&stats

Department of Mathematics and Statistics Texas Tech University Winter 2002

notes

## Ruymgaart honored with Horn Professorship



During the spring 2001 semester, Professor Frits Ruymgaart was named a Paul Whitfield Horn Professor, the highest honor Texas Tech University bestows upon its faculty. Professor Ruymgaart was honored with this award in recognition of his scientific achievements and for his contributions to the Department of Mathematics and Statistics and to Texas Tech University. Professor Ruymgaart, a scholar of international reputation, is a Fellow of the Institute of Mathematical Statistics and a member of the International Statistics Institute.

Professor Ruymgaart's broad research interests include: asymptotic theory of rank and order statistics, projection pursuit and robust statistics, large deviations and statistical applications, quantum probability,

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*P.S. Krishnaprasad, Bijoy Ghosh, Roger Brockett, Art Krener*

## Prominent scholars VISIT TEXAS TECH

The inaugural edition of the Mathematics & Statistics Red Raider Mini-symposium series was held November 8-9, 2001. This series was initiated in order to bring outstanding scholars with expertise in selected areas of mathematics or statistics to Texas Tech University. The mini-symposia, made possible by the support of Paul Whitfield Horn Professor Frits Ruymgaart, provided our faculty and students with the opportunity to meet and interact with four distinguished experts in a relaxed atmosphere. There was excellent attendance at each of the four talks and at a reception in honor of the speakers.

The Mini-symposium will be an annual event, with a different mathematical or statistical emphasis each year. The fall 2001 event was entitled, "Control Theory in the Twenty-First Century" and the program consisted of:

### **Roger Brockett, "Nuclear Magnetic Resonance as a Hypothesis Testing Problem"**

Professor Brockett, the An Wang Professor of Electrical Engineering and Computer Science at Harvard University, is a Fellow of the Institute of Electrical and Electronics Engineering (IEEE) and a member of the National Academy of Engineering.

### **P. S. Krishnaprasad, "Control of Pattern Formation"**

Dr. Krishnaprasad, Professor of Electrical Engineering and a member of the Applied Mathematics faculty at the University of Maryland, also holds the position of Distinguished Faculty

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## Gelca plays important part in the US Mathematical Olympiad

In the world of mathematical competitions, Professor Razvan Gelca, an assistant professor in the department of Mathematics and Statistics, has always been in the 'big leagues.' When he was a student in 1985, Razvan competed for Romania in the Balkan Mathematical Olympiad at Sofia and the International Mathematical Olympiad in Helsinki, and was awarded first prize in both! In 1997 and 1998 he served as Coach of the USA International Mathematical Olympiad Team. Professor Gelca, who is a co-author of the book "Mathematical

Olympiad Challenges," (Birkhauser, 2000) is now a member of the Advisory Panel of the US Mathematical Olympiad. When the 42nd International Mathematical Olympiad (IMO) was held this year in Washington D.C., he was one of the coordinators of grading.

The Olympiad environment offers insight into the world of mathematics that students do not usually find in the classroom. It is an intense competition that demands incredible ingenuity. Although elementary, the problems can be difficult even for the advanced mathematics

expert. Countries from around the world are represented by teams consisting of six high school students. This year the US team tied with Russia for second place, while China placed first and Bulgaria and Korea placed third.

Although students from TTU have not participated in the IMO, under Dr. Gelca's leadership and coaching, their performance in the William Lowell Putnam Mathematical Competition has never been better. This collegiate competition is probably the most well known of mathematics contests in the US.

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## DEPARTMENT OF MATHEMATICS AND STATISTICS

### mission statement

The faculty, graduate students, and staff in the Department of Mathematics and Statistics are committed to excellence in teaching, research and service. We provide a foundation of mathematics for all undergraduate students as well as specialized programs for mathematics majors and graduate students. We discover, develop, apply and disseminate mathematics and statistics.

### vision statement

The Department of Mathematics and Statistics aspires to the highest standards of excellence in all aspects of teaching, research and service. The department will build and maintain nationally and internationally recognized expertise in core, as well as emerging, areas of mathematics and statistics. We will set the standard within the university, the state, and the region in the promotion of multidisciplinary scientific activity as we maintain our national and international reputation as a leader in interdisciplinary research.

### department of mathematics and statistics core values

#### Excellence in Mathematical and Statistical Skills

Basic competency in core areas  
Enthusiasm for creative thinking

#### Application Skills

Professional and scientific breadth  
Modeling ability  
Computational competency

#### Communication Skills

Oral  
Written  
Interpersonal

#### Excellent Work Place Environment

Collegiality  
Mutual respect  
Appreciation of diversity  
High ethical standards

## Professor Martin honored in Sweden



Clyde Martin, Paul Whitfield Horn professor, was awarded an Honorary Doctor of Technology at the Royal Institute of Technology (KTH), in Stockholm on November 16, 2001. Internationally, four individuals are awarded for their achievements by the institute. According to Dr. Martin, "I was chosen for this award for my contribution to the study of control theory."

Professor Martin has been affiliated with KTH for 10 years. Every year he spends one month in Sweden as a guest researcher and professor. Dr. Martin joked, "I am known as a permanent visitor at the institute."

Dr. Martin's affiliation with KTH has facilitated several research collaborations between TTU faculty and graduate students and scientists at KTH. In addition, a grant from the National Science Foundation was awarded to the department for the specific purpose of supporting extended visits of our graduate students and faculty at KTH.

## Ruymgaart

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empirical processes and statistical applications, nonparametric classification, time series, random censoring, statistics in manifolds, and ill-posed problems. Since he has been at Texas Tech University, Professor Ruymgaart's research has been funded by the National Science Foundation, NATO, the Texas Higher Education Coordinating Advanced Research Program, the Department of Transportation, and the National Security Agency.

In spring 2000, Professor Ruymgaart was awarded the *Barnie E. Rushing, Jr. Faculty Distinguished Research Award* in honor of his many and varied contributions to research. During that same year he was also chosen by the graduate students in the Department of Mathematics and Statistics as the Graduate Professor of the Year and was selected by the Kappa Mu Epsilon undergraduate student organization as the Kappa Mu Epsilon Professor of the Year. In August 2000, in honor of Professor Ruymgaart's 60th birthday, a conference *Frontier Research in Theoretical Statistics 2000* was held in the Netherlands.

In spite of all his distinctions, Professor Ruymgaart is probably best known for his humble and collegial nature.

# ALUMNI NEWS AND NOTES

**Samuel Womack** (BA '29) died December 15, 2001 in Columbia, SC.

**Blanche Cook** (BA '30) died December 3, 2000 in Abilene, TX.

**Rowena Grantham Jones** (BA '31) died October 12, 2000.

**Raymond W. Mires** (BS '55, MS '60) retired as an Emeritus Professor of Physics at Texas Tech in 1991. He currently works as a forensic physicist at Raymond Wm. Mires, Ph.D.

**John Ekelund** (BS '57, MS '59) is semi-retired, but still doing math modeling in spacecraft navigation for Jet Propulsion Lab. in Pasadena, CA, where he has worked for 30 years.

**Harvey E. Mallory** (BS '59) retired and has resettled in Texas after 40 years on the "right coast".

**Judy Stewart Ducate** (BA '63) of Richardson, TX has been elected national treasurer of Kappa Kappa Gamma Fraternity.

**Richard Morrow** (BS '63, MS '65) works as a project director at the University of Texas at Dallas.

**Geary Callan** (BS '68) currently works as a computer programmer with the U.S. Department of Commerce, National Oceanic & Atmospheric Administration, at the University of Wisconsin at Madison.

**Dr. Mary Arthur Hannigan** (BA '87, MA '91) and her husband, Kevin, announce the birth of Sean William on November 26, 2001.

**Kelly Beasley** (BA '90) is pursuing a Master's Degree in Mathematics.

She and her husband Steve have a daughter, Erin, age 4, and a son, Cole, born in August 2000.

**Dr. Mark Stamp** (Ph.D. '92) recently began work at a small startup company in Silicon Valley as Chief Cryptologic Scientist. He lives in Cupertino, CA.

**Mark Damron** (BS '93, MS '95) is currently teaching at South Plains College in Levelland, TX.

**Sheri Chamberlain-Cooper** (BA '94) and her husband Roy announce the birth of their son, Logan Rhett Cooper on September 12, 2000. They reside in Andrews, TX.

**Jon and Amy Blackstock Burgin** (BS '95, MS '98) announce the birth of their daughter, Glory Dawn, on November 28, 2000.

**Christopher and Lori Brough Robinson** (BS '97) announce the birth of Emily Grace, on January 9, 2001. They reside in Grapevine, TX.

**Kesheng Yu** (Ph.D. '97) is a curricular design specialist at Union College in NY.

**Marcus O'Con** (BS '98) works as a technical manager at Datum Engineers in Dallas, TX.

**Jason Cole** (BA '99) and **Leah Butler** (MS '00) were married September, 2001.

**Penelope Misquitta** (MS '99, MS '00) currently works as a statistician for IMS Health in Plymouth Meeting, PA.

**Brian Roberson** (BS '99, MS '01) is pursuing a Ph.D. in finance at Purdue.

**Richard Campos** (MS '00) works for Raytheon and resides in Dallas, TX.

**Alan Miller** (MS '00) and **Angela Menke** (MS '01) were married October 27, 2001. They are instructors at South Plains College.

**Doug Meador** (MS '00) and Natalie Torok were married in Houston, TX on May 26, 2001.

**John Baird** (BS '01) is a graduate student at the University of Texas at Austin.

**Marisela Abundis** (MS '01) and Jeffrey Martinez were married September 15, 2001. She is an Evaluation Specialist II at the Dallas Independent School District.

**Donna D'Ambrosio** (MS '01) is a statistical analyst for Trilegiant Corporation in Norfolk, CT.

**Jessica Bonow** (MS '01) is a statistician for the Arkansas Foundation for Medical Care in Little Rock, AR.

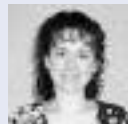
**Carrie Mahood** (MS '01) is a Computational Scientist at the Engineer Research and Development Center, Major Shared Resource Center in Vicksburg, MS.

**David Martin** (MS '01) is an instructor at the University of Southern California at Stanilaus.

**Ruby Martinez** (MS '01) is an instructor at San Antonio Community College.

**Casey Hume, Joshua Nelson, and Brian Tate** received their bachelor degrees in 2001 and are currently graduate students at Texas Tech.

## alumni interviews



### Monika Shepherd (BS '99)

what is your current position?  
what are your responsibilities?

Software Engineer, Raytheon -

Strategic Imaging Systems Division. Support software development activities pertaining to data processing algorithms for programs in the SIS product line. The majority of this support falls in the code, test, integration and verification stages of such programs; however, it also includes costing and design work for modifications to these software systems.

how did your mathematics degree prepare you for the job you assumed upon graduation?

Having a mathematical background prepared me quite well for the technical aspects of my career in software development. Most importantly, it provided me with the problem solving skills that I believe are required to excel as an engineer not only at Raytheon, but in the workforce in general.

how did you perceive your undergraduate training and job preparation relative to that of your peers?

The training and job preparation I gained in my undergraduate work at Texas Tech have enabled my transition to the work environment to be relatively smooth. I feel fortunate to have had instructors who understood the mathematical concepts/skills necessary to excel in both academics and industry.

### Marisela Abundis-Martinez (MS '01)

what is your current position?  
what are your responsibilities?

Evaluation Specialist II for the Dallas Independent School District. Write interim and final reports about DISD educational programs funded by the State. As an evaluator, I have to do research, read grants, design an experiment, do observations, and provide analysis for our findings.

what are some of the most vivid memories of your time at TTU?

My thesis defense. I was nervous the days prior to the big date. I practiced my presentation, reviewed my material, and thought about questions that



Marisela Abundis-Martinez, Heather Jordan, Tim Orsak,  
Theresa Urrabazo, Dash Weerasinghe

could be asked. When the day came, I cleared my mind, had confidence, and relaxed. I defended my thesis and by the time I knew it, I was done. I passed!

what advice would you give to students?

Work Hard! If you struggle, don't look back, just do your best and work harder. Eventually you'll be climbing towards the finish - the best feeling ever!

### Tim Orsak (BS '91, MS '93)

what is your current position?  
what are your responsibilities?

Operations Executive of the Dallas Independent School District's Evaluation and Accountability Division. I assist the Special Assistant to the Superintendent, providing data retrieval & analysis; process School Board member & Superintendent's requests; process the Division's Human Resource paperwork; and coordinate budgets for the Division.

how did your graduate work prepare you for the job you assumed at graduation?

My initial work with DISD involved statistical modeling of student, teacher, and school level data, and to define the best method of determining student achievement. My background in statistics was crucial to succeeding in my initial employment.

what are some of the most vivid memories of your time at TTU?

Todd Lee and Roger Barnard using cardboard boxes to slide down the hill at Tarwater's cabin. Hal Bennett rappelling down the side of the English building during a football game.

what advice would you give to students?

Work with data and know how to operate many different statistical/mathematical pro-

grams! Employers need people who cannot only process data, but know when the answers generated are invalid due to errors entered at various parts of the process.

### Theresa Urrabazo (MS '97)

what is your current position?  
what are your responsibilities?

Evaluation Specialist III. I evaluate the bilingual/ESL program that assists limited English proficient students in elementary school. I determine the extent of program implementation and its effectiveness in improving students' academic and linguistic achievement.

how did your graduate work prepare you for the job you assumed upon graduation?

My master's in statistics gave me the tools necessary to determine program effectiveness. My graduate advisor, Dr. Frits Ruymgaart, in addition to strengthening my background in statistics, helped me focus my writing so I would be clear and concise in the presentation of my results.

what are your most vivid memories of Texas Tech?

Dr. Allen giving me confidence in my ability to prove theorems and explain my proofs; Dr. Mansour challenging and improving my ability to do Statistics at the chalk board; and Dr. Barnard taking time out to listen and talk to me about problems in Baby Reals, even though he was not my instructor. Last but not least, I fondly remember my classmates at Tech; they eased my fear when I taught my first class. I love teaching now and I continue to teach at Richland Junior College as an adjunct faculty.

what advice would you give to students?

Graduate school is filled with new challenges. Ask for help. The faculty really want you to succeed; don't let yourself ever think

otherwise. You're not alone. Even though they may not admit it, others share your feelings of insecurity. Have no doubt, you will succeed! With my Master's degree in my pocket, I was able to get a great job where my skills are valued and respected.



### Murat Guven (BS '96, MS '98)

what is your current position?  
what are your responsibilities?

Software Engineer III at Raytheon. I design, implement, and test object oriented software using UML (unified modeling language) and C++.

how did your graduate work prepare you for the job you assumed after graduation?

Learning how to read and write math proofs (mine and others) helped me to be a better software engineer. It taught me to think abstractly and to develop logical solutions. Finally, it taught me to locate hidden logical errors that I find useful when reviewing software code.

what are your most vivid memories of your time at Texas Tech?

My vivid memories are those of working homework problems with former students Garry Block and Chad Marlow. Additionally, my interactions with my instructors Allen, Barnard, Bennett, Byerly, and Schovanec helped me to improve myself. Other memories include the odd neckties that Dr. Schovanec wears and the "humor" of Dr. Victory.

what advice would you give to students?

Be open to the idea that there is more than one solution to a problem and that sometimes your solution may not be the best. Always be willing to learn new ideas and skill sets. Learn to think abstractly.

# faculty notes

**Azmy Ackleh** gave an invited talk at the AMS National meeting, New Orleans. **Ed Allen** was appointed to serve on the Planning and Advisory Committee for the National Science Foundation Center for System Science Research, Nashville, TN. **Linda Allen** was on a faculty development leave during spring 2001 working on a book entitled *Deterministic and Stochastic Models in Biology* to be published by Prentice Hall. **Roger Barnard** and **Brock Williams** gave invited talks at the International Conference on Computational Methods and Function Theory '01 held in Averio, Portugal. **Kamal Chanda** was an invited speaker at the IISAJSM 2000 Conference in Dehli, India. **Ruth Gornet** taught an introductory course at the Institute for Advanced Study, Park City. **David Gilliam** was awarded a faculty development leave for fall 2001 to work on a monograph on nonlinear control and output regulation. **Gary Harris** gave a presentation at the Third Southern Hemisphere Symposium on Undergraduate Mathematics Teaching at Kruger National Park, South Africa. **Lourdes Juan** gave an invited talk in the Kolchin Seminar in Differential Algebra in the City College of the City University, New York. **Anatoly Korchagin** presented a talk at the 972th AMS Meeting, Special Section "Topology of algebraic varieties," University of California at Irvine. **Wayne**

**Lewis** gave an invited talk in the special session on continuum theory at the Spring Topology and Dynamical Systems Conference in Morelia, Michoacan, Mexico. **Padmanabhan Seshaiyer** was an invited speaker at the Domain Decomposition Workshop at ETH, Zurich. **W.P. Dayawansa** and **Victor Shubov** presented invited talks at the SIAM Annual Control Conference in San Diego. **Lawrence Schovanec** gave an invited talk in a special session on Neural and Biomechanical Modeling in the Life Sciences at the 2001 American Control Conference, Arlington, VA. **Marianna Shubov** was a plenary speaker at the 2nd International Workshop on Semi Group Theory and Applications held in Rio de Janeiro. **Monty Strauss** is the lead author in the revision of a popular calculus book written by Bradley and Smith, due for publication in January 2002. **James Surles** was an invited speaker at the International Conference on Jet Fuels in San Antonio. **Magdalena Toda** is a Project NExT Fellowship Recipient for 2000-2001. **Dean Victory** was an invited speaker at a workshop on Asymptotic Methods in Kinetic Theory at the University of Saarland, Saarbruecken, Germany. **Alex Wang** is an associate editor for the IEEE Control Society Conference Editorial Board. **Song Yang** gave a colloquium on Semiparametrics Regression in the Proportional Odds Model at Michigan State University, October 2001.

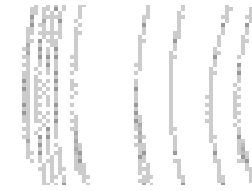
## in memoriam

**Professor Emeritus Wayne T. Ford** passed away on November 28, 2001 at the age of 70. He retired in 1999 after 32 years as a faculty member in the department. Professor Ford received a B.A. in mathematics from Oklahoma City University, an M.A. in mathematics from the University of Oklahoma, and a Ph.D. in mathematics from Rice University under the direction of Professor Jim Douglas, Jr. He began his career in industrial research with Texaco where he worked from 1957 to 1963. He served as an assistant professor at Houston Baptist University from 1963 to 1965, and at the University of Houston from 1965 to 1967. He joined the Mathematics Department at Texas Tech in 1967.

Professor Ford served as the Director of the Center for Petroleum Mathematics at Texas Tech University. He was the recipient of numerous grants for his research in porous media, with funding from the Department of Energy, the Texas Higher Education Coordinating Board Advanced Research Program, the High Plains Conservation Water District, Conoco and Texaco. He directed five doctoral students, E. Don Williams, Margaret Waid, Maria Fuentes, Alan Lair, and Hsing Wang. Twenty-six students received a master's of science degree under Professor Ford's tutelage.

Professor Ford was an icon in the department. He played a fundamental role in transforming the department's mission to include both teaching and research.

Professor Ford is survived by his wife, Dorothy, and his children, Mary, Rebecca, Tom and Phillip, and three grandchildren. The family requests memorials to Texas Tech University, Mathematics and Statistics, P.O. Box 41042, Lubbock, Texas 79404 or to Hospice of Lubbock, 1102 Slide Road, Lubbock, Texas 79416.



**Azmy Ackleh** joined the faculty as an associate professor, having held that rank at the University of Louisiana at Lafayette. He received his Ph.D. in Mathematics from the University of Tennessee and then accepted a postdoctoral position at the Center for Research in Scientific Computation at North Carolina State University.

Professor Ackleh's research involves modeling population and community dynamics, numerical methods for partial differential equations, identification problems for distributed parameter systems and long time behavior of solutions to ordinary/partial differential equations. He has established a record of research collaborations that bridge mathematical biology and numerical analysis. His work on modeling the impact of nutria population on marsh loss is currently supported by the US Geological Survey-National Wetlands Research Center.

When asked why he decided to come to TTU, Azmy pointed out the "departmental structure, its friendly faculty, and the large interest in the area of mathematical biology." He also came to Tech "because of the strategic TTU goal to become a top 75 university in the nation. I

# new faculty

thought this was a challenge to which I could positively contribute.”



**Petros Hadjicostas**, an assistant professor, received his Ph.D. in statistics from Carnegie Mellon in 1995. Prior to joining the department he was an assistant professor at SUNY Brockport. His research has primarily addressed Bayesian statistics, Simpson’s paradox and parametric inference with discrete response variables. However, according to Petros, “Any interesting mathematical problem can be part of my research. For example, I am also working on the analysis of sorting algorithms and on the theory of elasticities and production in economics.” Dr. Hadjicostas said that he was attracted to TTU because “I wanted to have more time and resources to do research.”



**Lourdes Juan** joined the department as an assistant professor. Last year she was a postdoctoral fellow at the Mathematical Sciences Research Institute at Berkeley, California. She received

her Ph.D. from the University of Oklahoma and her research deals with algebraic groups, differential algebra and computer algebra. “I came to TTU in order to pursue my research and teaching in a well-known, established department with good prospects for future development.”

Lourdes looks forward to continuing to develop her research program and her teaching skills. “Since I work in pure mathematics, my interests provide balance and support to the applied interests of many of the faculty, and broaden the educational options for our graduate students.”



**Rob Paige** is another statistician who joined the department this fall. Dr. Paige received his Ph.D. from Colorado State University in 1999 at which time he was offered a position at TTU, but instead joined the faculty at the University of Northern Iowa in order to be closer to family. Two years later he decided to accept a position at Texas Tech. According to Professor Paige, “I came to TTU for a better research environment.” He described his research as being at the interface between classical statistics and neural network models. As for his long-term goals, Dr. Paige said, “I plan to pur-

sue my own research interests as well as doing collaborative research with other TTU faculty.”



**Magdalena Toda** was an assistant professor at Ball State before she accepted a similar position at Texas Tech. She received her Ph.D. from the University of Kansas where she developed her research interests in differential and computational geometry. From Magdalena’s viewpoint, “the Mathematics Department at Texas Tech University is the ideal place for a recent Ph.D. recipient with interests in both theoretical and applied mathematics. I feel the balance between these two areas is almost perfect. This department is a strong and interactive team of outstanding scholars and I consider myself lucky to be here. I am learning a lot from my colleagues and I love working with them.” She plans to “write papers of significant scientific interest and quality.” She added, “I also enjoy teaching and I am very pleased to see that my students’ academic performance this semester was remarkable.”



## Ram Venkataraman

accepted a position in the department in fall 2000, but spent last year on leave while conducting research at the USAF Research Laboratory, Wright-Patterson. He received his Ph.D. from the University of Maryland and his research interests are primarily in the area of control theory. “I derive inspiration from problems in the areas of smart structures and aerospace. The areas of mathematics that overlap my research are functional analysis and differential geometry. Being an engineer by training, I also worry about implementation issues when one transitions the mathematical results to the engineering community.”

His aspirations include establishing a well-funded research program, producing good research and innovative applications that can be realized by technology, while also communicating these ideas effectively to the outside world. According to Venkat, as he is known, his plans also “involve training excellent students that can be ambassadors of Texas Tech when they take up important jobs later. I would like to develop the Robotics, Smart Structures and Biomechanics laboratory in the department into a vibrant and reputed center for

research that attracts the best and brightest students in Texas and elsewhere. It might take awhile to get there, but the ride sure will be fun!”



**Brock Williams** had been a visiting assistant professor in the department for two years before accepting a tenure track position as an assistant professor. As a visitor, he developed a reputation as a productive researcher and superb teacher. Brock received his Ph.D. from the University of Tennessee where he began to do research in the applications of circle packings, a new area at the interface of geometry and complex analysis. He also works on ideas from classical complex analysis and Teichmüller theory. He has applied his research in these fields to problems from physics and biology, most notably the construction of “brain maps.”

In describing why he accepted a position in the department, Brock said, “I was struck by both the quality of research conducted here and by the friendliness of the department. I hope to continue to expand my research program as well as contribute to the educational mission of the university through my teaching and my work with the University Interscholastic League and Learnstar.”

# 2001 happenings

## a busy year for *SIAM*

In 2001, the Texas Tech chapter of the Society for Industrial and Applied Mathematics, a mathematics graduate student organization, maintained a high level of activity. SIAM helped get the spring semester off to a great start by hosting a welcome luncheon for faculty, staff and students. The SIAM Spring Colloquium featured Professor Clint Dawson as guest speaker. Dr. Dawson is a professor at the University of Texas and is affiliated with the Texas Institute of Computational and Applied Mathematics. Dr. Dawson presented a talk titled "What does water know about mathematics?" At the spring awards banquet, Dr. Roger Barnard was presented the 2001 SIAM Professor of the Year

award and Shelly Davenport was the recipient of the 2001 SIAM Scholarship. In addition to these activities, and in spite of all the studying and teaching associated with being a graduate student, time was still found to participate in SIAM extra-curricular activities such as bowling, Putt-Putt golfing and the annual Spring Fling.

In the fall, SIAM elected a new board of officers. The new officers are: **President** Shelly Davenport, **Vice-President** Ed Swim, **Secretary** Jennifer Cravens, **Treasurer** Heather Henkel, **Social Officer** Zachary Kemp, and **Development Officer** Robert Plant. In October, the Fall Symposium featured twelve professors who presented their research interests to the graduate students.

Following the presentations a luncheon was held in appreciation for their time and support. SIAM also hosted the annual Thanksgiving luncheon.

The students of SIAM look forward to the activities being planned for the 2002 spring semester. In addition to the annual functions, SIAM is planning several service and community outreach projects. Members are planning to volunteer at the South Plains Food Bank and are also exploring the possibility of hosting a workshop for area high school students. They are looking for an opportunity to share the excitement of mathematics and the research conducted at the Texas Tech Department of Mathematics with future mathematicians and scientists.

## 28th annual mathematics & statistics awards banquet

The 28th Annual Mathematics and Statistics Awards Banquet was held at the McInturff Center on April 9, 2001. Presentations were made by various faculty members and student organizations. Over 175 students, faculty, retired faculty, family members, and friends attended the event.

The scholarship and award recipients for the 2001-02 academic year were:

**Gordon Fuller Scholars:**

Channa Navaratna, Matthew Shirley.

**E. Richard Heineman Scholars:**

Kyle Artho, Leah Johnson, Heather McMahan.

**Tarwater Family Scholars:**

Christina Anaya, Kasia Binam, Lauren Ferguson, Matthew Gamel.

**Morrison-Broughton Scholar:**

Christopher Wreh II.

**Mildred and Lonnie Langston Scholar:** Sherri Wilson.

**Robert A. Moreland Scholar:**

Samantha Bouquin.

**The 'dub' Rushing Family Scholars:**

Amanda Hinojosa, Marie Salas.

**Derald Walling Scholars:**

Laurie Brock, Steven Prater.

**Paul Thompson Scholar:**

Jill Brockriede

**Emmett Hazlewood Scholars:**

Benjamin Bailey, Jeremy Bellah, Christopher Carr, Penina Crofts, Erin Deaton, David Dennis, Mark Ford, Jarrod Shepherd.

**Amir-Moez Undergraduate Research Scholars:** Jeremy Sain, Sherri Wilson.

**Herman Reynolds Graduate Scholar:** Cheryl Peterson.

**SIAM Scholar:** Shelly Davenport.

**Outstanding Undergraduate Student:** John Baird.

**Outstanding Graduate Student:** Pantaleon Perera.

The various stipend awards varied from \$200 to \$1,500 and a total of more than \$25,000 was presented to mathematics and statistics majors, many of whom also receive other stipends from Texas Tech.

The three student organizations made presentations to faculty. Dr. David Gilliam was named the Kappa Mu Epsilon Distinguished Professor. Texas Tech Student's Chapter of the Mathematical Association of America named Dr. Carl Seaquist as its Outstanding Professor. The Student Chapter of the Society for Industrial and Applied Mathematics recognized Dr. Roger Barnard as the Outstanding Graduate Professor.

## mathematics association of *america*

The TTU Chapter of the Mathematics Association of America (MAA) promotes the involvement of undergraduates in mathematics. Last March eleven members went to the 2001 meeting of Texas Section of the MAA at the University of Houston, Clear Lake. Grant Parker and Jeffrey Hood presented talks. In addition to attending the meeting they visited NASA's Johnson Space Center. New officers for the 2001-2002 academic year are Christopher Wreh, President; Jason Froman, Vice President; and Matt Gamel, Treasurer.

The noon meetings on the first Wednesday of every month have included presentations on taking the GRE and plenty of pizza. Every Friday, the MAA sponsors a tea where interested students visit and listen to faculty talks. Topics have included *Minimal Surfaces* by Professor Magdalena Toda, *Vedic Mathematics* by Professor Padmanabhan Seshaiyer, and *Scoring with Erroneous Comparisons* by Professor Petros Hadjicostas.



## graduate students in the spotlight

The graduate students who received the Ph.D. in 2001 were **Eric Barefield**, **Jake Kesinger**, and **Samanmalee Sugathadasa**.

**Soad Abuhawas**, **Cindy Martin**, and **Ed Swim** were invited participants at the Industrial Mathematics Modeling Workshop, North Carolina State University, July 23-August 1, 2001. For the second consecutive year, **Cheryl Peterson** was selected as a NASA/Texas Space Grant Consortium Fellow. The Lubbock Chapter of Achievement Rewards for College Scientists also honored Cheryl with a scholarship in support of her doctoral dissertation research in flutter suppression in aircraft. **Shabnam Beheshti** was an invited participant of the Clay Mathematics Institute's Summer School on *The Global Theory of Minimal Surfaces* held at the Mathematical Sciences Research Institute in Berkeley, June 24-July 24. Shabnam was also the recipient of the Ali Amir-Moez Research Award presented by the Texas Academy of Sciences.

## McLaughlin retires

Professor Tom McLaughlin retired from the department at the end of spring 2001 semester. Tom was a logician with specific interests in isol theory and the model theory of fragments of arithmetic. He was highly regarded in the department, known for his collegial and professional demeanor and his steady production of quality research.

Tom received his Ph.D. from UCLA in 1963 and then joined the faculty at the University of Illinois. He came to Texas Tech in 1973 and was promoted to full professor in 1975.

Professor McLaughlin provided significant service to the department and university, having served as graduate advisor, associate chair and as Associate Dean for Research in the College of Arts and Science. Professor Roger Barnard expressed the opinion of many when he described Tom as "a man of principles, and one who could continue doing quality research even while fulfilling his administrative duties." Though retired, Tom is still often in the department and as Professor Wayne Lewis added, "continues to be a valued and active participant and contributor to the Logic-Topology seminar, which he has played an important role in for more than two decades."

## texPREP-lubbock

Under the direction of Dr. Jo Temple, TexPREP-Lubbock, completed its sixteenth year this past summer. Organized through the Department of Mathematics and Statistics, this eight-week summer program provided 89 students with an academically intense, mathematics-based experience. In addition to a rigorous curriculum, students were exposed to ongoing research activities at TTU and learned of career opportunities in mathe-

tics and engineering. During a field trip to San Antonio students participated in the third annual MAES Science Extravaganza and heard speakers from Texaco, CIA, NASA, TexDOT, Dupont, Heart & Vascular Institute of Texas, and the Institute of Electrical and Electronics Engineers, Inc. A field trip to Dallas provided the opportunity for an exclusive tour of Bell Helicopter Textron and Paragon Innovations.

## mathematics & science extravaganza

Supported by a grant from the Texas Workforce Commission and the Texas Science Careers Consortium, the Department of Mathematics and Statistics hosted the First Mathematics and Science Extravaganza on October 27, 2001. More than 200 students, from kindergarten through the 6th grade, and their parents were treated to demonstrations of mathematics and science prepared by seven TTU professors and one graduate student. This grant also enabled the department to send several individuals to the conference, *Shaping the Future of Science and Math Education*, which was held at University of Texas, Arlington on October 18 and 19. These individuals included sixteen area teachers, a representative of local business and industry, Associate Dean Bruce Whittlesby, Arts and Sciences, Dr. Bob Blake, Chemistry and Dr. Jo Temple, Mathematics and Statistics. Dr. Temple serves as the director for the Texas Workforce Commission and the Texas Science Careers Consortium project.

## esa distinguished visiting mathematician program

During the past year, the Ex-Student Association Distinguished Visiting Mathematician Program sponsored the visits of Professor Peter Kim, Department of Mathematics and Statistics, University of Guelph, Ontario, Canada and Professor David Luenberger, Department of Engineering-Economic Systems, Stanford University.

Professor Kim is well known for combining very abstract concepts of differential geometry to achieve applied statistical results. He presented two talks, "The Distribution of Long-Period Cometary Orbits" and "Optimal Statistical Inverse Problems on Riemannian Manifolds."

Professor Luenberger is a Fellow of the Institute of Electrical and Electronic Engineers and was the original founder of the Department of Engineering-Economic Systems at Stanford. He is famous for work in several areas of mathematics. Early in his career he did seminal work in the areas of optimization and control and is credited for creating the "Luenberger observer," a concept that is fundamental to control theory. More recently, his work has focused on the mathematics of finance. He is the author of the book, *Investment Science*. He lectured on "Real Options and Beyond" and "Methods for Asset Pricing."

# MATHEMATICS & STATISTICS ENDOWMENTS

When we in the Department of Mathematics and Statistics count our blessings, we are forever thankful that so many friends, alumni, faculty and students continue to honor the various endowments with their hard-earned dollars. Your confidence in our programs, faculty, and students is an asset few other academic departments possess and it is one of our cherished blessings. **Thank you very much!** The list below records contributions received between December 2000 and December 2001.

### Ali Amir Research Award

Dr. Glenn Johnston  
Dr. Hossein Mansouri  
Dr. Lawrence Schovanec  
Dr. Keith Williams

### George L. Baldwin Scholarship Endowment

Dr. & Mrs. Ronald Anderson  
Marilyn Armstrong  
James A. Bain, Jr.  
Catherine Baldwin Bengé  
Kelly Damron Beasley  
Marian L. Griffin  
Mary J. Hildebrand  
Kay A. Kunka  
Dr. & Mrs. Rodney Plunket  
Dr. Lawrence Schovanec  
Leslie D. Smith  
Dr. Jo Anne Temple  
Elizabeth Walling  
Dr. & Mrs. John T. White

### Gordon Fuller Scholarship Endowment

Sam Donaldson  
Gerald Holm  
Dr. Robert Kinney  
Robert Lockwood  
Richard Morrow  
Dr. Kendall C. Richards

### Fund for Excellence

Dr. & Mrs. Ronald Anderson  
Dr. Roger W. Barnard  
Albert P. Brown, Jr.  
Dr. Robert Byerly  
Dr. Clint Dawson  
Michael DeSha  
David Donar  
Jack P. Driskill  
Gilbert Galloway  
Deanna Myers Gibson  
Dr. Xiaoning L. Gilliam  
Dr. Ruth Gornet  
Kristopher Gutierrez  
Ramona Hicks  
Norma Hines  
Powell Hinson  
Michiel F. Hunt  
Dr. & Mrs. Charles Kellogg  
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Dr. Anatoly Korchagin  
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Harvey Mallory  
Dr. Clyde Martin  
B. Jerald McClendon  
Doug Meador, Jr.

Wilma S. Nowell  
Marcus O'Con  
David L. Olson  
Randy A. Parrish  
Dennis Pugh  
Chris Riggins  
Ruth Radack Ryker  
Dr. Lawrence Schovanec  
A.C. Sharbutt  
Dr. Mohammed Shayib  
Drs. Victor & Marianna Shubov  
Judith Smith  
William Sterrett  
Dr. Monty J. Strauss  
Dr. Shan Sun  
Sarah S. Vance  
William J. Wade  
Dr. John T. White  
Miriam Womack  
Terry Wynn

### Emmett Hazlewood Scholarship Endowment

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John E. Ekelund  
Elizabeth B. Foley  
Carol C. Hartwell  
Joe D. Hill  
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Gaynelle McWilliams  
Richard Morrow  
Madolyn Crow Noble  
Paul Pierce  
James P. Prichard  
Dr. Monty Strauss & Dr. Jane Winer  
Dr. & Mrs. Dalton Tarwater  
Dr. & Mrs. John T. White

### E. Richard Heineman Scholarship Endowment

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Lana J. Stormont  
Dr. Horton Struve  
Lorrie Woods Sullivan  
E. Carolyn Thomas  
Sally Smith Whittington

### Robert A. Moreland Scholarship Endowment

Drs. Edward & Linda Allen  
Dr. & Mrs. Ronald M. Anderson

Dr. Roger W. Barnard  
Rhonda Hickman Briley  
Stephen & Carolyn George  
Drs. David & Xiaoning Gilliam  
Richard L. Hervey  
Dr. Lourdes Juan  
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Casey Brier Kindla  
Dr. Anatoly Korchagin  
Dr. Thomas G. McLaughlin  
Mr. & Mrs. Clarence Malernee  
Dr. Raymond W. Mires  
Penelope Misquitta  
Sue-Ellen & Ted Naugler  
Cathy A. Noakes  
Wes & Marsha Pabst  
Dr. & Mrs. Rodney Plunket  
Dr. & Mrs. Frits Rumbaart  
Dr. Lawrence Schovanec  
John & Louise Smith  
Dr. Mark Stamp  
Dr. & Mrs. Patrick Tarwater  
Dr. Jo Anne Temple  
Dr. Harold D. Victory, Jr.

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Dr. John Drummond  
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Dr. Richard Kulp  
David P. Noga  
Dr. Wallace Pye  
Donald & Beverly Signor  
Dr. Thomas C. Smith  
State Farm Companies Foundation  
Dr. James Ward  
Dr. Gary Wiggins  
Dr. E. Don Williams  
Dr. Keshung Yu

### Outstanding Public School Mathematics Teacher

Dr. Roger W. Barnard  
Marvin Crossnoe

### Herman Reynolds Graduate Mathematics Scholarship Endowment

Amy Blackstock Burgin  
Traci L. Crawford  
Dr. Richard T. Denman  
Eli Lily Corp.

Heather Jordan  
Sally Blue Kaneshiro  
Waco & Linda Reynolds  
Ray L. Robbins, Jr.  
Robert A. Robledo, Jr.  
Michael & Tara Williams

### SIAM Graduate Mathematics Scholarship Endowment

Tim & Traci Orsak  
Dr. & Mrs. Dalton Tarwater

### Tarwater Family Scholarship Endowment

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Marla Bullock  
Amy Daniell  
Richard L. Hervey  
Gena Vee Ellingson John  
Dr. Anatoly Korchagin  
Phoebe Samuels Tinney  
Patrick & Julie Tarwater  
Paul & Terri Tarwater  
Pricewaterhouse Coopers

### Derald Walling Scholarship Endowment

Geary Callan  
Betty Ford  
Linda Gleason Gilbreath  
Christina Johnson  
Laura Kirkpatrick  
Alice Price  
Lori Brough Robinson

Sally Harlan Robinson  
Donna Scarborough  
Kathleen Sartain  
Elizabeth Walling  
David White

### John T. White Graduate Mathematics Endowment

Drs. Edward & Linda Allen  
Dr. & Mrs. Ronald Anderson  
Don & Victoria Duncan  
Dr. Benjamin S. Duran  
Benjamin S. Duran, Jr.  
Jeffrey Garza  
Douglas K. Hallam  
Mary J. Hildebrand  
Anatoly Korchagin  
Roger Jay  
Dr. Thomas G. McLaughlin  
Cathy Norwood Noakes  
Dr. Mandri Obeyesekere  
John T. Pearson  
Dr. Gabriela Pinter & Dr. Istvan Lauko  
Dr. Carol Shreffler  
Dr. Jo Anne Temple  
Dr. Harold D. Victory, Jr.  
Dr. David Watson  
Jo White

### Monty J. Strauss Honors Scholarship Endowment

Dr. Lawrence Schovanec  
Dr. Monty J. Strauss  
Dr. Jane L. Winer

## Student Phone-a-thon

The Eighth Mathematics Student Phone-a-thon will be conducted from February 25 to March 6 on Monday, Tuesday, and Thursday evenings.

The callers are student volunteers majoring in mathematics or statistics.

Remember, if you are called program at Texas Tech, you may have a gift designated for the MATH & STAT department.





## DOUG KELLUM OF LUBBOCK COOPER HIGH SCHOOL IS TACS TEACHER OF THE YEAR

**D**oug Kellum (BA '76, MA '90), a high school math teacher in the Lubbock-Cooper ISD, was selected as the Texas Association of Community Schools 2000-2001 Teacher of the Year. Doug received a \$1000 stipend at the first general session of the TACS-TREA summer session in San Antonio on Sunday, June 10, 2001. He began his teaching career in 1977 and spent the bulk of his career in small, community school districts.

According to Doug, "I hope my greatest contribution to students is to be able to move them to the point where they have become wise enough that they do not need me; to be able to think for themselves and to solve problems either in the classroom or in life on their own".

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## Gelca

*continued from p1*

In the 2000 contest, the TTU mathematics team placed 69 among 322 competing institutions from the U.S. and Canada. One of our undergraduate mathematics majors, Jeremy Sain, placed 86 among a total of 2818 students. This year's contest was held on December 1, and Professor Gelca is hoping that Jeremy and the team place in the top 50.

## Prominent scholars

*continued from p1*



*W.P. Dayawansa, Bijoy Ghosh*

Research Fellow and is a Fellow of the IEEE.

### **Arthur Krener, "Stable Reconstruction by Observers"**

Dr. Krener is a Professor of Mathematics at the University of California, Davis. Professor Krener is Guggenheim Fellow and a Fellow of the IEEE.

### **Bijoy Ghosh, "What Do Cortical Waves Encode in the Turtle Visual Cortex?"**

Professor Ghosh is a member of the Department of Systems Science and Mathematics, Washington University, St. Louis. He is also the Director of the Center for BioCybernetics and Intelligent Systems at Washington University, St. Louis and a Fellow of the IEEE.

### **alumni update**

Last Name: \_\_\_\_\_ First: \_\_\_\_\_ Middle Initial: \_\_\_\_\_

Street or Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Home Telephone: \_\_\_\_\_

Year Graduated/Degree: \_\_\_\_\_ Spouse's Name: \_\_\_\_\_

#### **Business**

Position: \_\_\_\_\_ Company Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Work Telephone: \_\_\_\_\_ E-mail: \_\_\_\_\_

News for "Alumni Notes": \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

We ask you to join a group of determined and talented mathematicians who, by supporting the Department, add to its resources and esteem. Your contribution, payable to the TT Foundation, Inc., will be directed as you choose:

\$ \_\_\_\_\_ for the \_\_\_\_\_ Scholarship Endowment

\$ \_\_\_\_\_ Contribution for the Fund for Excellence

**Please mail to** Lawrence Schovanec, Chair, Department of Mathematics and Statistics,  
Texas Tech University, Lubbock, TX 79409-1042

# department *will host* texas geometry and topology conference

For the third time in six years, the TTU geometry group will host a research conference at Texas Tech University. On April 5-7, 2002, speakers and participants from numerous locations, ranging from College Station, Texas to Switzerland will arrive in Lubbock for the Texas Geometry and Topology Conference (TGTC).

The TGTC is an NSF-supported semi-annual geometry and differential topology conference that is held at different universities in the state of Texas. Information on the conference, including a list of confirmed speakers, can be found at <http://www.math.ttu.edu/tgtc/> or by contacting Dr. Ruth Gornet.

## RON ANDERSON APPOINTED AS DEAN OF THE GRADUATE SCHOOL

**R**onald Anderson, former chair of the Department of Mathematics and Statistics, was named as Dean of the Graduate School on September 1, 2001. He had served as Senior Associate Dean of the Graduate School since June 1999.

Dr. Anderson joined the faculty at TTU in 1965 as an assistant professor in the Department of Mathematics. He directed fifteen masters theses and five Ph.D. dissertations and did research in the areas of flow in porous media, solar-thermal electric power and numerical methods. His work was supported by several agencies, including the National Science Foundation and the U.S. Departments of Energy and Agriculture. He was chair of the department from 1988 to 1999 and served as president of the Texas-Oklahoma Section of the Society for Industrial and Applied Mathematics and chairman of the Texas Association of Academic Administrators in the Mathematical Sciences. He currently serves as a member of the Executive Committee of The Texas Section of The Mathematical Association of America.

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