

# Summations



Department of Mathematics and Statistics Newsletter

Spring 2000

## Interim Chairs Saluted for Service

Although the department has had only two chairs in the last three decades, we have been fortunate to have two outstanding members willing to serve as interim chairs while national searches were and are being conducted for the successors of **Dr. Fred Toney** and **Dr. Doug Smith**. "Summations" expresses the gratitude of the entire department as the leadership of **Dr. Wei Feng** and **Dr. Dargan Frierson** is recognized.



Dr. Wei Feng

Serving since January 2000 as interim chair, **Professor Feng** came to UNCW in 1988 with a Ph.D. in applied mathematics from North Carolina State University. She earned a B.S.

degree in 1982 from Huazhong University of Science and Technology in China where she met an excellent cook by the name of **Xin Lu** who turned out to be as good a husband, mathematician (Ph.D.

also from NCSU), and colleague to us all in the department. When they are not teaching, writing papers or doing other jobs that mathematicians and administrators must do and which they do well, Wei and Xin enjoy the parenting of three children—Amanda, Frances and Benjamin ages 10, 5, and 1 respectively.



Dr. Dargan Frierson

**Professor Frierson** was interim chair during the 1982-83 academic year. He earned a Ph.D. in 1977 from the University of Arizona in mathematical statistics. His previous degrees were a B.A. (1968) and an M.A. (1971) from UNC

Greensboro. There he met **Ginny Wright-Frierson**, currently one of Wilmington's more artistic residents on the canvas and in print. For a while the department kept losing Dr. Frierson to administrative roles outside the department, first in academic computing and then in the Arts and Sciences Dean's

office. In general the department and its statistical program in particular have benefited greatly by his return to full-time service within the department. Dargan and Ginny have two children: 15-year-old New Hanover sophomore **Amy** and 21 year old NCSU math/physics senior **Dargan Michael** who will be attending graduate school at Princeton in the Fall.

Besides the NCSU connection their two families share, Professor Frierson reminded "Summations" of another connection he and Professor Feng share. The year he was interim chair the department hired three of our current faculty members: **Dr. Jeff Brown**, **Dr. Ken Spackman**, and **Dr. Doug Smith** as chair. Three months into her term as interim chair, Professor Feng and the department are working hard to match that record by conducting searches for another statistician, mathematician and chair.

With the help of our interim chair and interim chair emeritus, the Department of Mathematics and Statistics will continue to build for the future. "Summations" salutes Wei Feng and Dargan Frierson for their abiding service to the department and University.

## MACS Club Promotes Student Participation

The UNCW Mathematics and Computer Science Club is a nonprofit-organization, open to all UNCW students, but geared specifically towards the interests of mathematics and computer science majors.

The current leadership of the club is **Lisa Soberano** (president), **Rosa Fuller** (vice president), **Emily Johnson** (secretary), **Paul Delano** (social chair) and **David Sutherland** (treasurer). Elections for next year's officers will take place later this semester.

The goals of the club include increased fellowship among math and computer

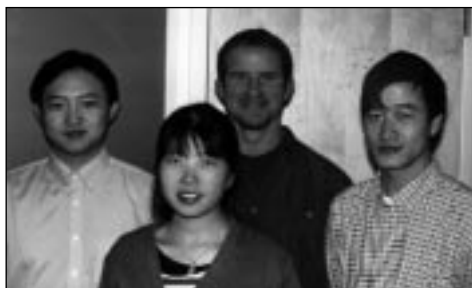
science students, opportunities for faculty and student interaction, increased awareness and interest in areas of mathematics and computer science and their applications.

We achieve these goals through a variety of activities. We invite UNCW faculty and students to give talks, presentations, and panel discussions. Other speakers are from companies such as IBM, SAS, GE, PPD and Pharma Research, which employ people with backgrounds in math or computer science. Among our most enjoyable group activities are math and computer science conferences and trips to businesses and university facilities.

So far this year, three MACS Club members traveled to Washington, D.C., to attend the Joint Mathematics Meetings. A group of MACS Club members visited and toured the computer software company SAS Institute, and several MACS Club members have volunteered their tutoring services to Noble Middle School's after school tutoring program.

MACS Club events that will take place during the remainder of this semester include panel discussions on departmental honors. **Dr. Russell Herman**, our mathematics faculty advisor, will give a joint MACS Club and  
*continued on page 2...*

## Master's Students to Receive Degrees



(left to right): Jin Wen, Hai Yan Bao,  
Eric Pittenger, Hongtao Xu

Graduation is quickly approaching for several graduate students. After two years of hard work in mathematics, **Hai Yan Bao**, **Eric Pittenger**, **Jin Wen** and **Hongtao Xu** will complete their master's in mathematics this spring or summer. Graduate coordinator **Dr. Sandra McLaurin** asked them why they decided to pursue a master's degree in mathematics, what their plans are after graduation, and how this degree will help them to succeed after leaving UNCW. Here are some of their comments.

**Hai Yan Bao** decided to pursue a master's in mathematics because she likes math, and because she wanted to gain knowledge in mathematics, a fundamental subject that will enable her to excel in an engineering field. She feels that with the knowledge she has learned here, she is able see concepts deeper and better and that the mathematical way of thinking has opened her eyes wider to science. She is writing a thesis titled "Improvement of Numerical Solutions of R. D. E." under **Dr. Xin Lu**.

**Eric Pittenger**, after 12 years in the Navy, decided to go to graduate school in mathematics with no particular career goals in mind simply because he has the ability to do advanced mathematics and loves to do mathematics. However, after two years in the master's program

he has decided that he will pursue a Ph.D. in mathematics and then teach at the university level. Eric chose the non-thesis option of the master's. In this option he must write a paper and take a written comprehensive exam. He is writing his paper under to direction of **Dr. Karin Deck**. The title of his paper is "Comparing Invariant Factors and Elementary Divisors in Matrix Theory and Group Theory".

**Jin Wen** decided to pursue a master's degree in mathematics because it is the perfect background for pursuing a Ph.D. in many fields of study. He plans to start a Ph.D. Program this fall or work in a related field to get some experience before starting his Ph.D. Jin is writing a thesis in the area of statistics. His thesis title is "Classification Trees" and he is writing under the direction of **Dr. Dargan Frierson**.

**Hongtao Xu** chose mathematics because math is the foundation of all engineering disciplines. To obtain complete understanding of any engineering branch requires mathematics. He is studying math as preparation for his future in some field of engineering. He plans to study computer science when he completes his masters degree. His interest in engineering is already reflected in his thesis. He is completing his thesis this semester under the direction of **Dr. John Karlof**. The title of his thesis is "An Integer Programming Algorithm for Optimally Choosing Nuclear Waste Dump Sites."

The department is extremely proud of these students and expects them to be very successful in their future endeavors.

### *Congratulations Students!*

*continued from page 1...*

Society of Physics Students talk on Quantum Computation. **Dr. Gabriel Lugo** and **Dr. Herman** will be giving a series of workshops on the mathematics software packages Mathcad, Maple and Matlab. At the end of the semester we will publish our first club newsletter. Alumni who wish to receive a copy of this newsletter are asked to make their requests by e-mail to [macs@uncwil.edu](mailto:macs@uncwil.edu). New ideas for the fall semester include a university-wide

mathematical puzzle display, a series of workshops on the mathematics editor LaTeX, and a series of video presentations.

All mathematics and computer science faculty and students are welcome to join us and contribute to MACS Club activities.

**For more information about the MACS Club, please send e-mail to [macs@uncwil.edu](mailto:macs@uncwil.edu).**

## MATH FUN

A bug crawls around the outside of a rectangle that measures  $6.5 \times 8.5$  cm. If the bug remains exactly 3.5 cm. from the rectangle at all times, find the area of the region bounded by the bug's path.

*The first correct response will be recognized in the next edition.*

Send solutions to  
[summations@uncwil.edu](mailto:summations@uncwil.edu)

## Solution to fall 1999 Math Fun!

A bag contains some marbles of different colors: red, green, and blue. If one marble is randomly selected, it is known the probability it is red is  $2/3$  and the probability it is green is  $5/18$ . How many red marbles are in the bag?

Congratulations to **Linda Corns Smith** for submitting the first correct solution to the Math Fun. Linda has been teaching mathematics at Berea College in Berea, Kentucky for  $3 \frac{1}{2}$  years. In addition to teaching, Linda was hired in December of 1999 by the college's computer center as a software trainer for faculty, staff and students. Her outside interests include hiking, wild-flowers, travel, apologetics, and international church cooperation.

## LINDA'S SOLUTION

This problem does not have a unique solution. If there are only three colors; red, green and blue and  $P(\text{red}) = 2/3$  and  $P(\text{green}) = 5/18$ , then...

$$P(\text{red}) + P(\text{green}) + P(\text{blue}) = 2/3 + 5/18 + x = 1$$

**The solution to this equation is  $x = 1/18$ .**

The total number of marbles in the bag could be any multiple of 18, with  $1/18$  of them blue,  $5/18$  green, and  $2/3$  red. Thus, if there are 18 marbles in the bag, one is blue, 5 are green, and 12 are red. However, if there are 36 in the bag, 2 are blue, 10 green, and 24 red, etc. Therefore, the number of red marbles in the bag is  $12n$  for some  $n$  in  $N$ .

### *Great Job, Linda!*

## Full-Time Faculty

Dr. Jeffrey Brown  
 Ms. Sandra Carlson  
*(Math Lab Director)*  
 Dr. Yaw O. Chang  
 Dr. Thaddeus Dankel  
 Dr. Karin Deck  
 Dr. William Etheridge  
 Dr. Jean-Claude Evard  
 Dr. Wei Feng  
*(Interim Chair)*  
 Mrs. Terry Fleck  
 Dr. Michael Freeze  
 Dr. Dargan Frierson  
 Dr. Daniel Guo  
 Dr. Kenneth R. Gurganus  
*(Undergraduate Coordinator)*  
 Dr. Russell Herman  
 Dr. John Karlof  
 Dr. Subramanyam Kasala  
 Dr. Xin Lu  
 Dr. Gabriel Lugo  
 Dr. Sandra McLaurin  
*(Graduate Coordinator)*  
 Dr. Shiva K. Saksena  
 Dr. Paul Shotsberger  
 Dr. Douglas D. Smith  
 Dr. Karan Smith  
 Dr. Kenneth Spackman  
 Mrs. Karen Spike  
 Dr. Matthew TenHuisen  
*(Assistant Chair)*  
 Dr. Ram Vedantham

## News Briefs

- **The College of Arts and Sciences awarded Summer Research or Curriculum Development Initiatives for 2000.** Three of the recipients were from the Mathematics and Statistics Department. These research award recipients and their research topics are: **John Karlof**, the application of mathematical programming/operations research to radioactive waste facility policy, **Xin Lu**, numerical solutions of reaction diffusion equations and Karan Smith for effective teaching of discrete mathematics in the public schools.
- **Dr. Xin Lu** will be participating in the special program on "Superconvergence in Finite Element Methods" held at the Mathematical Sciences Research Institute of the University of California, Berkeley.
- **Congratulations to Paul Shotsberger.** His joint grant proposal with **Ann Crawford** and **Karen Shafer** "Meeting Diverse Needs in High School Algebra and Geometry" has been funded by the Eisenhower Program – UNC Math & Science Education Network.

## Math Online

In the fall of 2000 our department will be offering one section of Mat 101 on the internet for the first time. The online version of Mat 101, General College Mathematics I, was developed by Yaw Chang. You can view some of the course materials at <http://colleis.com/courses/mat101chay.nsf>. Other online course materials can be viewed at the following locations.

### Algebra Online:

<http://uncw.collegis.com/courses/mat111broc.nsf>

### Calculus Online:

<http://uncw.collegis.com/courses/mat151broc.nsf>

## Summations

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## Alumni! We want to hear from you!

Name: \_\_\_\_\_  
 Dr./Mr./Mrs./Ms.                      First                      Middle                      Maiden                      Last                      Suffix

Address: \_\_\_\_\_  
 Street/PO Box                      City                      State                      Zip Code+4

Phone: Home (    ) \_\_\_\_\_ Work (    ) \_\_\_\_\_ E-Mail \_\_\_\_\_

Employer: \_\_\_\_\_ Position \_\_\_\_\_ Gift Matching Co.?  YES  NO

Street                      City                      State                      Zip code + 4

Grad. Date: \_\_\_\_\_ Degree/Major: \_\_\_\_\_ Is spouse UNCW alumnus?  YES  NO

**Alumni News!** Send your update to: [alumnews@uncwil.edu](mailto:alumnews@uncwil.edu) or complete our form on the web at [www.uncwil.edu/alumni](http://www.uncwil.edu/alumni)

Yes, I want to support the UNCW Mathematics and Statistics Department!

Enclosed is my gift of \$ \_\_\_\_\_ made payable to UNCW

Please direct my gift to:

- Mathematics and Statistics Trust Fund**       **Crews Scholarship Fund**  
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# *Greetings* from the mathematics education faculty of the department.

For those of you who haven't met one or both of us, please allow us to introduce ourselves.



**Dr. Karan B. Smith**, associate professor, joined the Department of Mathematics and Statistics in 1991. In addition to supervising interns during their practicum experience, she teaches the Mathematics Methods courses and a variety of undergraduate courses, many of which are designed for education majors. Her research interests include the study of technology use in the mathematics classroom, pedagogy related to the K-12 mathematics curriculum, and the role that the affective domain plays in student learning.



**Dr. Paul G. Shotsberger**, associate professor, joined the faculty in 1993. He alternates teaching the secondary methods class with Dr. Smith, as well as supervising interns, and teaching Historical Development of Mathematics and various introductory mathematics courses. His professional interests include inservice teacher training, especially using the World Wide Web, and educational measurement. He is currently conducting statistical analyses for a study of the effects of a Logic/Proof course on subsequent upper level mathematics performance, with **Drs. Ken Gurganus, Douglas Smith, and Ken Spackman.**

**These are interesting and exciting times in math education nationally and locally.** There is keen interest in math education at many levels, as witnessed by the recent publication in August of a new K-12 mathematics framework for North Carolina students, and the soon-to-be published Standards 2000 document coming from the National Council of Teachers of Mathematics (NCTM). At the same time, UNCW math majors with secondary certification are being heavily recruited by public schools across the state. The only problem is there aren't enough majors to go around! At the same time that demand has been increasing due to higher enrollments and increasing retirement rates of current math teachers, the number of students entering the program has been dwindling across the state.

**Why do we mention this?** Because you can help — especially those of you who are currently teaching. Since we can no longer count on large numbers of students entering UNCW knowing they want to teach math, we need to begin recruiting students into the program as soon as possible, even while they are still in high school. As you may be aware, there is an ongoing effort in this state and around the country to enhance both the compensation and the conditions of teaching in high schools. The North Carolina legislature has begun increasing starting salaries so that they will be competitive with the national average, while local districts have taken measures to increase the supplements they offer to attract more teachers. In addition, because of the shortage of teachers, beginning high school math instructors are in a better position to influence the types of courses they teach during their first year. All of this is adding up to a more attractive work environment for new teachers.

**To help us get the word out, we'd like to offer our services to come and teach a lesson to your classes.** This is a good way for students to come into contact with university faculty in a more natural setting for them. As an example, this spring **Dr. Shotsberger** will be teaching a lesson on ellipses to **Greg Plow's** Algebra 2 classes. The lesson will include a discussion of Kepler's work on elliptical orbits and Cavalieri's efforts at determining areas under curves before the invention of calculus. At the end of the lesson **Dr. Shotsberger** will ask students to consider a major in mathematics and a career in education.

**Please feel free to contact us about how we might tailor a presentation to your students. (Call the Mathematics Department at 962-3290 or e-mail either of us: [shotsbergerp@uncwil.edu](mailto:shotsbergerp@uncwil.edu) or [smithk@uncwil.edu](mailto:smithk@uncwil.edu) )**

## *Thanks for all of your help!*



**Teresa Williamson Carroll** graduated from UNCW in 1992 with a B.A. in mathematics with teacher certification. She has worked since that time as a math teacher at South Brunswick High School. Fortunately for UNCW, she has maintained close contacts with the university and has been extensively involved in a number of UNCW programs. For the past three years, she has been a Professional Development School (PDS) teacher responsible for supervision of interns who are preparing to teach high school mathematics. In this role, she guides prospective teachers through the process of preparing and carrying out lessons, giving them consistent and detailed feedback concerning their performance. As the opportunity arises, she will also team-teach with an intern, especially classes such as AP Calculus. Teresa draws rave reviews from her interns. Her present intern, **Laura Taylor '00**, has commented that “Mrs. Carroll is the ideal partnership teacher. She gives me room to grow on my own yet lends a lot of support. She is also open to my ideas and shares her own with me. I wish every intern could have someone as knowledgeable and patient for their partnership teacher.”

In addition to her work as a PDS teacher, Teresa has actively participated in and facilitated Web-based professional development. The department has a Web site called INSTRUCT, located at <http://instruct.cms.uncwil.edu>, where middle and high school teachers can learn about the NCTM Professional Standards and how to implement the standards in their classrooms. Teresa successfully completed the program in the fall of 1997, and subsequently joined **Dr. Paul Shotsberger** in facilitating training for 1998 and 1999. As a facilitator, Teresa oversees weekly online, real-time chats with five to 10 teachers across the southeast region of North Carolina. This is an especially challenging type of training to conduct. Participants teach at varying levels of the curriculum, from grades five through 12, at various size schools and school districts, using a wide spectrum of methods. Teresa has displayed an exceptional skill in moderating discussions, sharing her own experiences and encouraging participants to try out new methods in their classes. We are very fortunate to have Teresa as a resource in the public schools!

## Student News

- **Rosa Fuller** has been accepted to George Washington University's Summer Program for Women in Mathematics.
- **Rosa Fuller** and **Lisa Soberano**, senior math majors, obtained a UNCW Undergraduate Student Award to attend the Joint Mathematics meetings in Washington, D.C., in January. **Emily Johnson**, senior math major, also attended the meetings.
- **Congratulations** to **Lisa Albert Soberano** and **Robby Soberano** who were married July 31, 1999. Lisa is a senior math major at UNCW and has accepted a job working for SAS Institution as a technical training specialist in Chicago. She was awarded the Adrian D. Hurst Mathematics Award in 1999. She has worked for UNCW Summer Ventures as a teaching assistant for the Computer Applications in Physics course. Lisa is currently the president of the Math and Computer Science Club. Robby graduated from UNCW in 1998 with a criminal justice degree. He is currently working as a residential counselor at the Yahweh Center in Wilmington.

- **Thank you!** The following members of the MACS Club volunteered to grade the results of the Science Olympiad 2000 Practical Data Gathering competition. **Dave Sutherland, Emily Johnson, Clark Pierce, Valery Kepley, Lisa Soberano, and David Gin.** The event took place on the UNCW campus and 12 high school teams participated in the mathematics event. John T. Hoggard High School took first place so they will be advancing to the state finals.
- **Congratulations!** The following students have been accepted to graduate school.  
**Emily Johnson** – UNCW  
**Shannon Tom Koons** – University of Missouri  
**Scott Watson** – Brown University

### *We want to hear from you!*

Please provide us with information about yourself. Where are you and what are you doing? Do you know of other alumni? If so, please include information about them as well.

## Alumni News

- **Robin Blankenship '94** graduated with the M.A. in Mathematics. Robin received a four-year fellowship to LSU. She completed her M.S. from LSU in 1996 and is completing her Ph.D. After only one semester of teaching at LSU, Robin received the David Oxley Memorial Teaching Award for outstanding teaching demonstrated by her enthusiasm in the classroom and creative teaching style.
- **Ron E. Olsen '94** graduated with a B.A. in mathematics and a B.S. in chemistry. He is a system support specialist at AAI. His wife Elizabeth is also a graduate of UNCW and is also employed at AAI. She is clinical biostatistician.
- **Susan Chimiak Surina '87** graduated with a B.S. in mathematics and a B.A. in physics. Susan is currently residing in Palmyra, N.J. with her husband Stephen Surina and their three children.
- **April Stephenson Totten '99** got married in November and is teaching mathematics at South Brunswick High School in Southport.

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