FROM THE CHAIR

One of the exciting things about fall semesters is getting to know the people who are new to our department.

In fall 2007, Ryan Gregg, Justin Groce, Spencer Le Doux, Marie Murray, Patrick Sewell, Nikeyia Smith, and Logan Disney enrolled as freshmen while Curtis Gagne, Jake Miller, Daniel Wilkerson, Kelly Dorris, and Peter Woerner transferred to TTU as mathematics majors. In addition, three new faculty members, Tommy Elliott, Kristin Gooch, and Rebeca Lufi, joined the department as instructors. The departmental faculty and staff are thrilled to have each of you here—Welcome to the department!

With our new students, the department now boasts 40 undergraduate majors. As you can read in this issue of Radical Times, half of our majors earned Dean's list honors for the spring 2007 semester. This issue of Radical Times also contains descriptions of recent activities in the department and an interview with Dr. Sabine Le Borne about her year at the Max-Planck-Institute.

I encourage all mathematics majors to take full advantage of the opportunities (Math Club, mathematical contests, undergraduate research, etc.) to be found in the department. I hope to read about your accomplishments in future issues of Radical Times.

NEW FACULTY

Mr. Tommy Elliott is in his second year as an instructor with the mathematics department (first year of a tenure-track position). He comes to us from Dover, TN, where he taught at the high school level for four and a half years. He earned his bachelor's degree from UT-Martin in December 1999, where he also taught math courses for two and a half years. After his stint at the high school, he returned to college here at TTU, where he earned an M.S. in mathematics in May 2006.

Ms. Kristin Gooch is originally from Clintwood, Virginia. She attended the University of Virginia's College at Wise and earned a B.S. in Mathematics. After a short internship at NASA Langley Research Center, she enrolled at the University of Tennessee, Knoxville where she earned a M.S. degree in Mathematics in December of 2005.

She has spent the past two years in Nashville teaching at Miller-Motte Technical College. She is a fan of UT football and in her spare time enjoys reading and playing tennis. Currently, she is involved in reading the Alex Cross novels by James Patterson.

Mrs. Rebeca Lufi (aka: Beca Lewis) is originally from Kingsport, TN. She received her B.S. degree in 2006 and her M.S. degree in 2007—both in mathematics from Tennessee Tech. She taught as adjunct faculty at Northeast State Technical Community College during the summer of 2007 while looking for a full-time teaching position. Beca married Sam Lufi in July of 2007, and they moved to Cookeville in August. The couple enjoys many outdoor activities, especially camping with family and friends.

INTERVIEW OF SABINE LE BORNE

conducted by Richard Savage on October 10, 2007

Dr. Sabine Le Borne is an Associate Professor of Mathematics at TTU. She received her Ph.D. in 1999 at the Christian-Albrechts-Universität in Kiel, Germany, and came to Tennessee Tech in the Fall of 2001. Her research areas are numerical analysis and scientific computation. She spent the 2006–07 academic year at the Max-Planck-Institute for Mathematics and the Sciences in Leipzig, Germany. After returning for this year, she was invited to attend a week-long workship on "Fast solvers for partial differential equations" at the prestigious Mathematical Research Institute Oberwolfach. During her tenure at TTU, she has received grants totaling more than $400,000 from the National Science Foundation and the Department of Energy. In this interview, she spoke to Professor Richard Savage about her time at the Max-Planck-Institute.

R. Savage You spent the year at the Max-Planck-Institute?

S. Le Borne Yes.

R.S. Then a good first question would be to tell us about the Max-Planck-Institute.

S.L. Well, there are several Max-Planck-Institutes, for several subjects, and I spent it at the Max-Planck-Institute for Mathematics and the Sciences in Leipzig. It is the one focusing on math, especially applied math. There are four different groups at that Max-Planck-Institute, and I was in the Scientific Computing group that is directed by Professor Hackbusch. The structure of the Max-Planck-Institute is that they have hardly any permanent employees. They have the four directors, which are permanent positions, and the staff—secretaries, technical support and so on—but all the

other scientific personnel are on temporary positions. They have some Ph.D. students, but mostly post-docs and visitors. So the philosophy is that it lives from the exchange—people come and go for one week up to one year visits.

R.S. And you were there for the whole academic year?

S.L. I was there for a year. There were Ph.D. students and post-docs that I still knew from my time as a Ph.D. student. The post-docs are now working on their habilitation that you do in Germany, which takes up to five years after your Ph.D. and is a qualification to apply for a professorship in Germany. So, they were on their last year there, and there were also some new Ph.D. students and quite a few visitors. The visitors are invited by the director, but the Ph.D. students or postdocs may suggest whom they would like to meet and talk to. Those guests are typically invited to stay a few days, a week or a month; usually they give at least one talk. There were actually quite a few American guests, and I started a new collaboration with an American mathematician that I hadn't met before.

R.S. How many people would you have there at a time?

S.L. In our group, there was the director, three or four post-docs at a time, maybe the same number of Ph.D. students, and some undergraduate or graduate students. The MPI is not part of the university—there is a university in Leipzig as well—but they collaborate with it in a way that undergraduates get the opportunity to do research with the Max-Planck researchers. So there were some undergraduate students around, and then usually two or three guests.

R.S. So what were your typical days and weeks like?

S.L. I had a lot of interaction with two of the post-docs that I worked most closely with. I have known both post-docs from Kiel. One of them was actually a diploma student while I was a Ph.D. student and I co-supervised his diploma thesis. While I was already here at Tennessee Tech he finished his Ph.D. and is now a post-doc at the Max-Planck. He is an extremely good programmer and computer wizard, so we did some collaboration where I did some theory and he did the implementation and numerical tests. Then there is another post-doc I am working with, and I also know him from the time back in Kiel. We would both work in our separate offices, and when we'd have questions or wanted to discuss something, we would meet at the coffee corner and get a coffee or tea—they have nice coffee corners at the Max-Planck, really nice. It frequently happens that someone else walks by and joins into the discussion—it's a very good exchange. They are all in a somewhat similar topic. They all know what an H-matrix is since they have all worked on different aspects of H-matrices. The best thing that could happen, of course, is if the director walks by. He's really a genius. So, if he listens to your question or problem, he usually, just off the top of his head, can tell you if you're on the right track, or if you need to look in a different direction, or he would point out, "Have you read this paper? Just look at that paper. There is some useful idea there that looks like it applies to your problem."

R.S. It sounds like it a very helpful set-up.

S.L. Yes. They also have an excellent library. There was never any paper I could not get. If I worked on something and needed a paper it was just a matter of minutes that you had it. So that was very helpful.

R.S. So did you find it turned out to be a productive year?

S.L. I think it was very productive. I have submitted a total of six papers, two already accepted, some under review where I haven't heard anything yet, and for some I am now working on the reviewers' requests for changes. Overall I think it was extremely productive. I think if I had stayed here at TTU—not doing any teaching—I would not have been as productive. Over there, I had interaction with so many H-matrix experts and such a positive research environment. Even, as I said, with people just visiting for a week or two, which started new collaborations.

R.S. How did this come about that you got to go there?

S.L. The director [was] my Ph.D. advisor. So ever since I got my Ph.D. and shortly after I came here to Tennessee Tech, he invited me every summer to do a one-week visit at the Max-Planck-Institute, which I did. So, eventually he said, "Would you like to come for a longer term, not just one week. Could you come for a semester or two?" So that's how the idea started. This was sort of a perfect year for it—a year I had release time through my grants anyway. And also this was the last year that those post-docs I had close collaborations with were still there. They are now applying for jobs. As soon as they get a job they are gone. But last year they were still there. That was very good.

R.S. So when you are in Germany in the summer in the future will you be spending additional weeks there?

S.L. Yes. I'll probably return a week per summer.

R.S. Is there something we've left out that we should mention?

S.L. I can't think of anything. If you can think of anything else you can come back and I'll answer it.

R.S. OK. Thank you.

RANDOM NEWS

This past July, Dr. Rafal Ablamowicz was visited for three weeks by an engineering undergraduate student, Mr. Rafael Gloria Soria, from Ingenieria de Procesos e Hidraulica, Universidad Autonoma Metropolitana—Iztapalapa. Mr. Gloria has been working on a research problem with Professor Leonardo Traversoni from the same university. The problem involves modeling damage done to inner walls of pipes due to cavitation bubbles occurring in a liquid that is pumped under pressure. Later, Mr. Gloria presented a 20-minute paper at the SES 2007 symposium in which he described his results. He was quite pleased with his stay on TTU campus as well as with support he received from several TTU offices, including housing and the International Student Office.

Dr. Rafal Ablamowicz, together with Dr. Jane Liu of the TTU Department of Civil and Environmental Engineering, organized a symposium "Advanced Mathematical Tools: A

Frontier Between Mathematics and Engineering" during the 44th Annual Meeting of the Society of the Engineering Science (SES 2007) held at Texas A&M University in October. They presented two joint papers at the meeting. They also organized a similar symposium last year, and are planning to have another one at SES 2008 at the University of Illinois on October 12–15, 2008. They are working now on putting together an edited volume through Birkhauser with papers from the 2006 and 2007 symposia.

Dr. David Smith was honored at the Spring 2007 Commencement as one of the winners of the Outstanding Faculty Award in Teaching. The other Outstanding Faculty Award winners for 2007 were Dr. Donald Visco of the Chemical Engineering Department (Teaching) and Dr. Paula Hinton of the History Department (Professional Service). They each received a $1500 honorarium. In addition, these three faculty were the first recipients of Distinguished Faculty Fellowships, a new annual program to honor three selected past winners of the Outstanding Faculty Awards and Caplenor Research Award. The Distinguished Faculty Fellows receive a $10,000 one-time salary bonus and a one-time operating bonus.

This past Spring, our student helper, Jere Bowen, was selected as the Most Valuable Student on a University Academic Scholarship (UAS) for the 2006–07 academic year. Math Department secretaries Patsy Peavyhouse and Vickie Mayberry nominated Jere for the award. Jere is a senior math major and has worked as a student helper in the Math Department for two years. Jere received a certificate signed by President Bell along with a $40 gift certificate from the University Grill.

CONGRATULATIONS!

Congratulations to our **Dean's List** students for Spring 2007: *Anna Ablamowicz, Matthew Bedford, Stephenie Brown, Staci Daniel, Clay Dickerson, Molly Dittmer, Amy Forgey, David Foster, Matthew Gibbs, Kyle Guillot, Cheryl Hayes, Aaron Hogancamp, Nick Huskey, Joe Schutte, Kyle Smith, Jason Smotherman, Brandy Spears, James Sunkes, Kimberly Tidman,* and *Quinton Westrich.*

Congratulations to our **Spring 2007** B.S. Graduates: *David Cook, Clay Dickerson, Cheryl Hayes,* and *Matt Houston.*

* * *

MATH CLUB NEWS

The Math Club at TTU kicked off the Fall 2007 semester in September with a round of Laser Tag. This was a fun outing, and we all got to meet some new people. We followed up later that week with an organizational meeting to eat pizza, get to know each other, and elect officers. The officers for the 2007–2008 academic year are: Anna Ablamowicz (President), Mark VanBuren (Vice President), Staci Daniel (Secretary), and Stephenie Brown (Treasurer). Our officers then planned and hosted our annual fall picnic on Thursday, October 4 for the Math Club and Math faculty. The picnic was at Cane Creek Park, a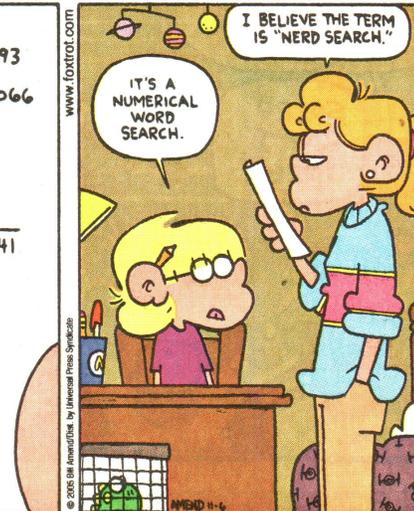nd we had lots of good picnic food and fun. Many thanks to Tommy Elliott and Dawn Mills for grilling hamburgers, hot dogs, brats, and Italian sausages for us! On October 29, we met at Amazin' Acres for a bonfire to roast hot dogs and marshmallows. We also had a hayride and walked through a corn maze in the dark. Some of us got horribly lost, by the way! To end the semester, the Math Club hosted a Movie Night on November 27 with free popcorn, pizza, and drinks. We showed the movie "About a Boy." What a great opportunity for us all to relax a bit before the rush of the end of classes!

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