*After*Math

The Newsletter of the Department of Mathematics at Marshall University

From the Chair   by Ralph Oberste-Vorth

This is our second ever issue of *After*Math. I hope that you will enjoy it and give us feedback. All issues of *After*Math are now available online at http://www.marshall.edu/math/alumninews.asp.

As is typical every fall, there have been a few changes in our faculty since last May. John Lancaster retired in August after 34 years at Marshall. (See the Fall 2006 issue of *After*Math.) Judy Silver has returned to the department after one year as interim associate dean.

Laura Stapleton (BS'84, MS'88) continues with us part-time after 6 years of full-time instruction. Frances Martin left Marshall after six years. She is now on the faculty of Ashland Community and Technical College. Diana Fisher (MA'05) left to continue her studies in biostatistics at the University of Washington.

We have added two visiting assistant professors: Joel Better joins us from Madrid, Spain and Andrew Przeworski joins us from Oklahoma State University. Also, Rob-Roy Mace (BS'04, MA'06) and Shannon Miller (BS'04, MA'06) join us as instructors.

Recently, we completed self-studies of our degree programs as part of mandated five-year reviews. The data uncovered shows considerable growth, as the following attest:

- 300 level enrollment increased 169%
- upper level enrollment increased 14%
- graduate level enrollment increased 97%
- undergraduate degrees conferred increased 108%
- graduate degrees conferred increased 21%
- scholarly publications increased 265%

We look forward to the challenges of sustaining and managing further growth.

Faculty Profile: Scott Sarra

The National Science Foundation (NSF) awarded Scott Sarra, associate professor, a three-year research grant that began June 15, 2006. This prestigious award, from the program in computational mathematics, is for $73,172. The title of the project is "Post-processing high-order approximations of discontinuous functions—algorithms and software."

Scott came to MU in August 2002 after earning his Ph.D. from WVU. He is a WV native who lived mostly in Shepherdstown and Morgantown before moving to Huntington. Scott's undergraduate degree is from Shepherd College (now Shepherd University), with majors in business and mathematics and a minor in economics.

Before becoming a mathematician, his previous work experience included: one year teaching at a community college, one and a half years as an accountant, and three and a half years in the computer field. He cites his most interesting non-academic job experience as being a software engineer with the United States Coast Guard (USCG) at the USCG Operations Systems Center in Martinsburg, WV where he was the lead software engineer on the CASP (Computer Assisted Search Planning) project, an ocean search and rescue program. Scott states that his varied non-academic work experience often allows him to have a unique real world perspective that many mathematicians do not have.

Scott's research areas are in numerical analysis: numerical methods for partial differential equations and high order (very accurate) approximation methods. High order approximation methods break down when the underlying data is discontinuous—a situation referred to as the Gibbs phenomenon. During the last year Scott has traveled to the University of Delaware and to Brown University to give talks on his research. Recently Scott received a grant from the National Science Foundation (NSF) to partially fund his research over the next three years. At the heart of the funded research is the task of adapting ideas from image processing to overcome the Gibbs phenomena. An additional product of the funded research will be a Matlab toolbox (http://www.scottsarra.org/signal/signal.html), which implements the best-known methods for reducing or eliminating the Gibbs phenomenon. Scott states that having his research funded

by the NSF has been very gratifying and that he plans to continue to develop projects that will merit external funding—especially those in which students can become actively involved in.

Despite his success in the area of research, Scott's focus is never far from that of his original goal of being a high school mathematics teacher as he states, "getting to know and interact with students is by far the most enjoyable and rewarding part of my job."

Alumni Profile: Charlene (Frazier) Sizemore

Sitting across the table from us on an early October afternoon our luncheon guest was at least as curious about us as we were about her. Through the questions that were going back and forth her long career was being revealed to us and the current state of affairs in the Mathematics Department at Marshall was being revealed to her. The career of a mathematical baccalaureate was unveiled.

Charlene Sizemore's teacher at Vinson High School told Charlene's father that she must study mathematics in college. She enrolled at Marshall University as an education major with emphases in mathematics and social studies. After completing her studies and a brief foray into teaching, Sizemore embarked on a career in engineering. Eventually she moved into a public service role, as a consumer product safety advocate.

Engineering is not an unusual career choice for a mathematics graduate. However, she graduated in 1946 and she would be entering into a profession dominated by men. During her years at Sylvania Electric Products, Inc. she was promoted from technician to engineer. She recalls, with a twinkle in her eye, the ordeal that she endured to receive fair compensation commensurate to her work. A 1956 Sylvania Newsletter highlighting its 18 women engineers employed nationally pointed out that in the previous year 957 women were enrolled nationally in engineering courses as compare with 166,146 men.

While still at Sylvania, she became increasingly interested in quality control during manufacturing and related issues in product safety. A visit from Betty Furness of Westinghouse prompted the creation of the Consumer Association of West Virginia. Sizemore served as the founding president. Governor Arch Moore appointed her to the Consumer Affairs Advisory Council; she chaired the Council from 1978 to 1980. In 1976, she was one of 15 individuals nominated by President Ford and confirmed by the U.S. Senate to the founding Board of Directors of the National Institute of Building Sciences.

Her career as a consumer advocate—as a volunteer—was rewarding. Her personal archives are full of mementos of meetings with politicians from Presidents Nixon, Ford, and Carter as well as Senator Byrd and many others. Her first invitation to the White House came while she was teaching sewing in a chapel in Dunlow, WV. (Clearly, they can find anyone anywhere anytime—except bin Laden.) In 1972, she was quoted in the Huntington Advertiser as saying "We need a better method to educate the consumer." This motto took her across the nation.

During our lunch, she said "Education is the transition of cocksure ignorance to thoughtful uncertainty." Well said!

Faculty News

Alfred Akinsete worked with Charles Lowe in a Summer Undergraduate Research Experience program. He also attended several conferences, giving a talk at the Joint Statistical Meeting of the American Statistical Association in Seattle, WA, in August.

Joel Better, **Rob-Roy Mace**, and **Shannon Miller** attended the October meetings of the Ohio section of the Mathematical Association of America and of Project NExT (New Experiences in Teaching), a professional development program for new faculty in the mathematical sciences, at Muskingum College.

Clayton Brooks (BA'88), **Bonita Lawrence**, and **Judy Silver** were involved in $2 million grant from the Appalachian Math Science Partnership funded through the NSF through the University of Kentucky. The funds are for teacher training in Braxton, Cabell, Mason, Mingo, and Wayne counties.

Matt Carlton attended actuarial conferences in Boston in June and in Washington, DC in October.

David Cusick attended a Chautauqua course entitled in May at the University of Dayton. He learned that mini-lectures followed by group work increase student learning and retention and that joining student study groups is an important predictor of student success in college.

Yulia Dementieva presented a poster at the National American Society of Human Genetics Meeting in October and gave a presentation at the 34th Annual Conference at Miami University.

John Drost finished second in the Vile Puns division of the 24th Bulwer-Lytton Fiction Contest, a national contest for bad writing run by Scott Rice of San Jose State University. His entry can be found at http://www.sjsu.edu/depts/english/2006.htm

Norah Esty, **Bonita Lawrence**, and **Ralph Oberste-Vorth** presented invited talks at the International Conference on Difference Equations and Applications in Kyoto, Japan in July.

Rob-Roy Mace and **Shannon Miller** have been participating in the New Faculty Workshops, learning about syllabus and course design.

Evelyn Pupplo-Cody is currently offering two online courses (MTH 121 on quantitative reasoning and MTH 130 on college algebra). She is working on MTH 127, an expanded version of the college algebra course that can be offered to both college students and high school students next fall.

Scott Sarra was awarded a grant from the National Science Foundation (see article in this issue). He gave a seminar at Brown University in October. He exclaims, "My house is finally finished!"

Peter Saveliev filed a U.S. patent application and launched Pixcavator, an image analysis and simplification program (download at Pixcavator.com). He gave a talk at the Mathematical Sciences Research Institute, Berkeley, CA and a colloquium at Marshall.

Judy Silver was involved with a $1.2 million grant from the NSF to recruit and retain female faculty. She secured a Math Initiatives grant for $7000 from the WV Higher Education Policy Commission. She presented several workshops on geometry and linear programming and is developing an online course for educators.

Publications

- **Esty, Norah**, CL(**R**) is simply connected, *to appear in Appl. Gen. Topol.*, to appear (2007).
- **Sarra, Scott,** Chebyshev Interpolation: an interactive tour, *J. Online Math. Appl.*, **6** (2006). http://joma.org/mathDL/4/?pa=content&sa=viewDocument&nodeId=1297
- **Silver, Judy** and **Stokes, Erik**, A great circle metric, *Proc. WV Acad. Sci.*, to appear.

ΠME News
by Norah Esty

Pi Mu Epsilon has had a very enjoyable Fall semester. New officers were elected, as so many of our students graduated last year. We had one of the largest induction ceremonies in semesters, with seven new members, including a few sophomores as well as our usual juniors and seniors. (This was largely due to the gregarious efforts of our President, Ashley Tucker. Sadly, Ashley had to leave us this year as she is transferring to another school.) This semester we started the Pi Mu Epsilon lecture series. At the induction ceremony, in addition to the usual pizza and sudoku, Jim Denvir gave a fabulous talk on the mathematics of juggling, called "The combinatorics of keeping it all in the air." Afterwards he taught us how to juggle!

At a Pi Mu Epsilon meeting earlier in the semester, Prof. John Drost gave an entertaining talk entitled "Are your marriages stable?" on the mathematics used in matching algorithms. At our upcoming meeting, Bonita Lawrence will be talking about her amazing differential analyzer, a machine that several of our students have been helping her build. We may even get a demonstration!

In September, six students attended the annual conference on Mathematics, Statistics and Biology at Miami University in Oxford, Ohio. Our own Yulia Dementieva gave a talk, and at the student conference that evening, Tue Ngoc Ly gave a talk on Euclid's Fifth Postulate. Afterwards we all enjoyed some schnitzel at one of the local German restaurants. All in all, it's been a very busy and entertaining semester.

Alumni News

John E. Armstrong (BA'97) I am currently working in the shipping industry as a Customer Service Representative in Tucson, AZ. My oldest daughter hopes to study astronomy once she is in college. Suggestion: please also list the graduates whom have completed their degree in Math Education or have a Math Education minor. *[See below.– Ed.]*

Jeffrey Midkiff (BA'87, MA'04) I really enjoyed the newsletter I received in the mail. It was good to hear about what many of my former math teachers are doing. Dr. Lancaster was one of my all time favorite teachers and I wish him all the best with his retirement.

Erik Stokes (BS'03) was awarded the Edgar Enochs fellowship at the University of Kentucky. The fellowship goes to outstanding doctoral students in algebra.

[An anonymous alum asked how much of gifts given to the University Foundation actually comes to the department. The short answer is none, unless the donor specifies his or her intent such as "math department" or "math scholarships."– Ed.]

Send us your news. Where are you now? What have you been doing? How can your fellow alumni

and faculty get in touch with you? We may publish short articles of general interest to students, faculty and, alumni. For example, what is it like working for XYZ Corp., how did you use mathematics in you career, and announcements like graduate school graduations. These are only suggestions.

More 2005–06 Graduates

As suggested by John Armstrong (see the Alumni News section), we want to honor mathematics education graduates. Derek Gresko graduated Summa Cum Laude. Amy Facemyer and Gara Williams graduated Cum Laude.

BA in Secondary Education, Mathematics 5–12
May 2006

Amy Facemyer
Gara Williams

December 2005

Misty Burton
Derek Gresko
Emily Shoemaker

BA in Secondary Education, Mathematics 5–9
May 2006

Bradford Clark (also Social Studies 5–9)

Brian Greathouse (also General Science, 5-12)
BA in Elementary Education, Mathematics 5–9
May 2006

Karmen Collins (also K-6 Comprehensive)
MA in Elementary Ed., Math through Algebra I
May 2006

Tiffany Wade
Gretchen Williams
MA in Secondary Ed., Math through Algebra I
May 2006

Natasha Clay

December 2005

Crystal Mashayekhi

Contact Us

We want to get your suggestions, comments, updated contact information, and contributions.

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