



Mathematics Department

Alumni Newsletter



December 2010

Greetings from the Chair

It has been a while since our last newsletter and much has happened in our department and at the university. At that time, we were just beginning to pick up the pieces after Katrina. Though I was optimistic, I have to admit I felt a good deal of uncertainty. I think I can safely say now that the recovery from Katrina, both in the department and in the larger university, is complete (I wish the same were true of the city, but that will take more time). At the undergraduate level we have entering classes that are as large any that we had before the storm.

Things continue to go well in the department. At the time of Katrina a large percentage of our Ph.D. students left and we had the task of rebuilding our graduate program. The department takes great pride in the fact that within 5 years our graduate program is larger than it has been during my 30 years at Tulane. In the next two years we will probably graduate more PhDs than in any comparable two-year period in my memory. At the undergraduate level we never experienced the dramatic attrition that we saw at the graduate level, but the number of math majors continues to grow.

There have been changes in the faculty as well. Steve Rosencrans retired in 2008 and Jim Rogers is retiring at the end of the fall 2010 semester. Sadly, I have to report to those of you who haven't yet heard that John Dauns died of liver cancer in early June 2009. We held a memorial service at the beginning of the Fall 2008 semester where John was remembered as a dedicated teacher, colleague and mathematician. He is sorely missed.

While colleagues like John Dauns, Jim Rogers and Steve Rosencrans cannot be replaced, positions can be filled. As such there are a number of young faculty members whom we have hired in the past few years. In addition we have made an important senior hire. We are proud to announce that Mac Hyman, a Tulane alumnus, has assumed the John and Evelyn Phillips Distinguished Chair in Mathematics in January 2010 (please see p.2).

I hope that you enjoy reading, in this newsletter, about some of the goings on in the department. A better way to learn about Tulane, of course, is to visit. A great opportunity for some of you to visit will be the upcoming Joint Mathematics Meetings to be held at the beginning of January (see pp.3-4 for more information about Tulane participation at the meetings). For those who

do come for the meetings, please seek me, or one of my colleagues, out. Otherwise, the next time you are in New Orleans, please stop by for a visit. We'd like to get acquainted. ~ *Morris Kalka*

Graduate Student Seminar Covers Research and More

In addition to the regular departmental colloquium, in any given week students and faculty might be invited to attend more specialized talks on topics in Algebra, Applied and Computational Mathematics, Geometry and Topology, Probability and Statistics, or Theoretical Computer Science. And now the graduate students have a new seminar to call their own.

Started in 2009 at the suggestion of Professor Alex Kurganov, the Graduate Student Colloquium was created to give students an occasion to present their research, but with one catch: no professors may attend unless specifically invited. This created an opportunity for students to improve their presentation skills in a congenial atmosphere without fear of being judged by faculty, and many upper-year students took advantage of the chance to prepare job talks and gain constructive criticism from their peers.

For the 2010-2011 academic year, the seminar coordinators are Anthony Pollizi and Charles Maggio. Recognizing that graduate students face many challenges in addition to their dissertation research, Charles and Anthony have expanded the seminar's scope to feature talks related to successfully navigating graduate school and preparing for a career in mathematics. Complementing research presentations by graduate students Cody Pond and Tina O'Keefe, topics this semester have included "Building a Homepage at Tulane," "How to Apply for Jobs," and "Good Choices for Great Careers in the Mathematical Sciences." Anthony and Charles have also created a series of lectures entitled "Get to Know a Faculty Member" to help beginning graduate students begin the process of choosing a dissertation adviser. In these seminars, a presentation is given by an invited faculty member. Faculty speakers this semester included Mike Mislove, Victor Moll, Alex Kurganov, and Mahir Can, representing four distinct research areas within the department.

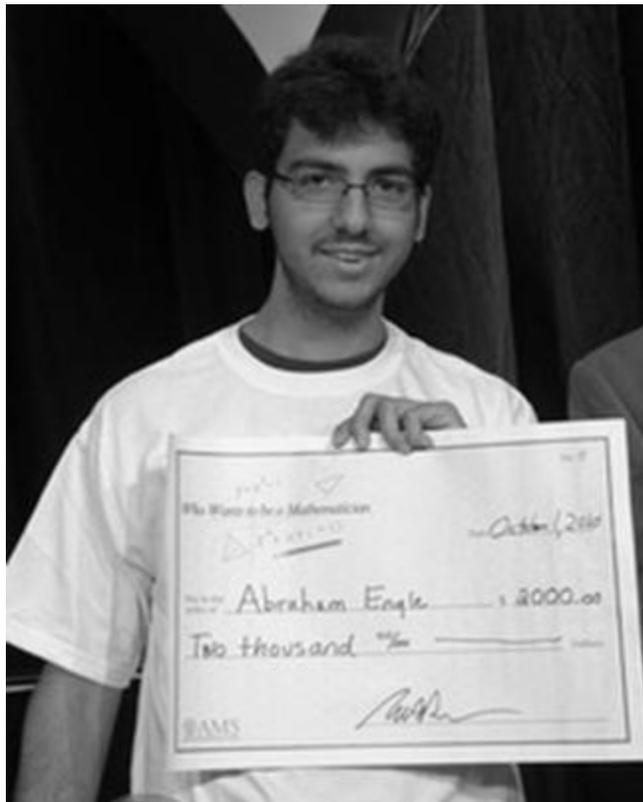
Following the seminar each week the students enjoy a reception, typically with pizza instead of the wine and cheese served at departmental colloquia. But with or

without refreshments, the Graduate Student Colloquium is very well attended. Numbers of participants often rival those of even the regular Thursday afternoon mathematics colloquium, and it appears that this welcome addition to departmental activities is likely to continue for many years to come.

Math Major Wins Contest

It may not have had the high-stakes drama of *Slumdog Millionaire*, but participants at the 2010 SACNAS (Society Advancing Hispanics/Chicanos and Native Americans in Science) national conference in Anaheim, California still gathered to watch Tulane undergraduate Abraham Engle break a tie to win *Who Wants to be a Mathematician* and take home the grand prize. Professor Ricardo Cortez, who was presented the 2010 SACNAS Distinguished Undergraduate Institution Mentor Award at the conference, worked with the AMS to organize the game. Participants who attended Prof. Cortez's session at the conference were invited to take a qualifying test, and the top six scorers advanced to the game. *Who Wants to be a Mathematician* was held during a conference breakfast, and Abraham took to the stage to face off against students from UC Merced, University of Kansas, University of Texas at Arlington, MIT, and Bowdoin College. Questions ranged from mathematical news ("What Russian mathematician recently refused a \$1,000,000 prize for his proof of the Poincaré Conjecture?") to algebra ("Suppose a population is such that its growth is always directly proportional to the population itself. If the population grows from two billion individuals to four billion in 50 years, how long will it take to grow from four billion to six billion?") to trigonometry ("Define a sequence in which the first term is x and each subsequent term is obtained by taking the tangent of the previous term for those values in the domain of the tangent function. For how many x , $0 < x < \pi$, does the sequence become constant?"), and the winner at the end of the 10-question round was given the chance to win \$2000 by correctly answering a bonus question. Abraham was tied with Brian Wu of Bowdoin College at the end of the game, but he correctly answered a tie-breaker and went on to win it all. In addition to his prize money, Abraham was also awarded a TI-Nspire scientific calculator.

When asked for his thoughts on winning the game, Abraham wrote, "I don't think I really deserved it, and I think I got pretty lucky... I messed up some of the pretty easy beginning problems, and I'm pretty embarrassed to mention the contest in fear someone goes looking at the questions asked, although I took the money (and a TI calculator) happily!" As we might expect, most of the prize money will go to help pay for his Tulane tuition, but he'll always be able to keep his bragging rights.



Graduate Students Cross the Globe

Tina O'Keefe, Jeremy Dewar, and Charles Maggio were each awarded NSF grants through the East Asia and Pacific Summer Institutes (EAPSI) program last summer to participate in research at host math departments in Australia, China, Japan, Korea, New Zealand, Singapore, or Taiwan. Each student received a \$5000 stipend, round-trip airfare to the host location, and support for living expenses through foreign co-sponsoring organizations. Tina chose to work in Osaka, Jeremy visited Shanghai, and Charles spent his summer in Auckland, New Zealand.

Mac Hyman Joins Faculty

After a prolonged search, the Evelyn and John G. Phillips Distinguished Chair in Mathematics has been filled by Tulane alumnus James "Mac" Hyman. Prof. Hyman graduated from Tulane in 1972 with honors in math and physics, receiving the Glendy Burke mathematics medal for undergraduate studies. He continued his studies at the Courant Institute under the guidance of Peter Lax and joined Los Alamos National Laboratory in 1976, where he remained and rose to become the leader of the Mathematical Modeling and Analysis Group.

But he always remained connected to his alma mater and the city of New Orleans, and when the time was right he bid farewell to New Mexico and returned to the

Crescent City. At his investiture ceremony last April, Hyman said, "You can come back home.... This is the right place for me, a place where I can give back what people gave me. I got an education at Tulane that most people can only dream of getting."

Hyman's approach to mathematics is highly interdisciplinary, and he encourages graduate students to follow this path. In another excerpt from his investiture ceremony, Hyman stated, "The problems facing the world today have never been bigger. They've never needed mathematicians and scientists more than they do today. As mathematicians, we have to be proactive because this is really our role in society. It's not to sit behind a desk and count numbers." To help foster interdisciplinary research, Hyman initiated his return to teaching by offering a project-based seminar in which mathematics graduate students joined forces with their peers in engineering and the sciences to tackle problems of mutual interest. He is also very committed to helping students with career development, recently circulating an email entitled "Now is the time to start looking and apply for summer internships and summer schools" with copious information about available graduate research opportunities.



Although math remains his passion, Hyman makes time to pursue a variety of other interests. He enjoys playing piano and sculpting, and although he's very happy to be living in New Orleans he hasn't yet found a way to pursue one of his favorite activities from his former life in New Mexico: being a Can-Can dancer. But considering Hyman's seemingly boundless energy and enthusiasm, it'll probably only be a matter of time before he pulls a troupe together and we're all invited to Dixon Hall for their debut performance. We'll keep you posted.

Tulane Mathematicians to Play a Big Part at JMM

New Orleans is preparing to host the 2011 Joint Mathematics Meetings (JMM), the largest annual gathering of mathematicians in the world. Nearly 5800

attendees were present at last year's meetings in San Francisco, and attendance is expected to be even higher this year. Organizations participating in JMM 2011 include the Mathematical Association of America (MAA), the American Mathematical Society (AMS), the Association for Symbolic Logic (ASL), the Association for Women in Mathematics, the National Association for Mathematicians, and the Society for Industrial and Applied Mathematics (SIAM). Needless to say, the department is very excited about the meetings and many of our faculty members, postdoctoral fellows, and graduate students are participating as session organizers and speakers. To find your favorite faculty member (or to meet some newer arrivals), please see the schedule on p.4.

Karl Hofmann Presents Artwork in JMM Exhibit

In addition to the many talks and sessions, JMM attendees will enjoy viewing a collection of Professor Karl Hofmann's colloquium posters at the 2011 Exhibition of Mathematical Art. Prof. Hofmann divides his time between Tulane and the Technische Universität Darmstadt, where he has applied his artistic talents to the creation of colorful and often humorous advertisements for departmental colloquia. Describing his work, Hofmann writes, "The creation of these posters, in my view has much in common with the task of the political cartoonists: the subject matter is mercilessly prescribed every week and has to be translated into a pictorial story. This is still a challenge even after I have supplied my department with the posters for more than 25 years."

11. TAGUNG ALLGEMEINE MATHEMATIK

MATHEMATIK VERSTEHEN PHILOSOPHISCHE UND DIDAKTISCHE PERSPEKTIVEN

UNIVERSITÄT SIEGEN, ARTUR-WOLL-HAUS
3.-5. DEZEMBER 2009

VERANSTALTER:
PROF. DR. KATJA LENGNINK, UNIV. SIEGEN
PROF. DR. GREGOR NICKEL, UNIV. SIEGEN
PROF. DR. RUDOLF WILLE, TECHNISCHE U. DARMSTADT

<http://www.uni-siegen.de/fb6/didaktik/veranstaltungen/allgmath09/>

Schedule of Sessions and Events at JMM Featuring Tulane Mathematics Department Faculty & Researchers

Thursday, January 6th

Speaker/Title	Session	Time
James M Hyman, "Modeling Vertical Transmission in Mosquito-Transmitted Diseases"	SIAM Minisymposium on Applications of Difference and Differential Equations in Ecology and Epidemiology, I	8:00 AM
Tewodros Amdeberhan & Victor Moll, Session Organizers	MAA Invited Paper Session on The Rebirth of Special Functions	8:00 AM

Friday, January 7th

Gustavo Didier, "Self-similarity and long range dependence: some recent developments for the multivariate setting"	AMS Special Session on Stochastic Analysis and Random Phenomena, I	9:30 AM
Rafal Komendarczyk, Co-organizer	AMS Special Session on Knots, Links, 3-Manifolds, and Physics	1:00 PM
Sarah D Olson, "An Integrative Model of Hyperactivated Sperm Motility"	AMS Session on Fluid Mechanics, II and Geophysics	1:30 PM
Michelle Lacey, "Statistical Modeling of Methylation Patterns in Ovarian Carcinomas"	AMS Special Session on Stochastic Analysis and Random Phenomena, II	3:30 PM
Lisa Fauci, "The biofluidynamics of swimming and pumping: Recent insights"	SIGMAA on Mathematical and Computational Biology Guest Lecture	7:00 PM

Saturday, January 8th

Eric Rowland, "Toward a language theoretic proof of the four color theorem"	AMS Special Session on New Topics in Graph Theory, I	8:30 AM
James M. Hyman, "The role of mathematics and modeling in cleaning up the BP oil spill"	SIGMAA on Environmental Mathematics Session on the BP Oil Discharge, Energy, and the Environment	2:40 PM
Tai Ha, "Asymptotic linearity of regularity and a^* -invariant of powers of ideals"	AMS Special Session on Local Commutative Algebra	5:00 PM

Sunday, January 9th

Victor H. Moll, Co-Organizer	AMS Special Session on Mathematics Related to Feynman Diagrams, II	8:00 AM
Armin Straub, "On the method of brackets"	AMS Special Session on Mathematics Related to Feynman Diagrams, II	9:00 AM
Cody Pond, "Lifespans for Effective Boundary Conditions"	AMS Special Session on Analysis of Reaction-Diffusion Models, II	3:30 PM
Xuefeng Wang, "Spiky steady states of chemotaxis systems via global bifurcation and Helly's compactness theorem"	AMS Special Session on Analysis of Reaction-Diffusion Models, II (Prof. Wang is also co-organizer for sessions I & II)	4:30 PM

Ongoing: Prof. Michael Mislove is the Program Committee chair for the Association of Symbolic Logic meeting (Jan 7th-9th), and Prof. Karl Hoffman's artwork will be on display at the JMM Exhibition of Mathematical Art (Jan 6th-9th)

REQUESTS FOR ALUMNI NEWS AND UPDATED CONTACT INFORMATION

If you have something that you'd like to share about your mathematical experiences since graduating from Tulane, we'd love to hear from you and we'll include your news in our next issue. And if you're in touch with someone who should have received this newsletter but didn't, we'd like to know that, too, since we're aware of some gaps in our alumni records. Please write, call, or visit our website.

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