

Message From the Chair

by Peter Trapa



We're once again off to a great start to a new academic year. It's a pleasure to welcome our new regular faculty members, Jon Chaika and Dongbin Xiu. Meanwhile, 30 graduate students and 9 postdocs -- an unusually large number -- joined our ranks this Fall. We look forward to our most recent

recent hires, Tom Alberts and Srikanth Iyengar, joining us next year.

It is a special pleasure to welcome back Herb Clemens, our friend and former colleague. In addition to proving theorems and advising students, he will serve as Associate Director of the Center for Science and Math Education, where he will be concentrating on the preparation and professional development of teachers of mathematics.

Ken Bromberg takes the reigns from Andrejs Treibergs as our new Director of Graduate Studies. We thank Andrejs for his years of dedicated service, and look forward to Ken propelling the graduate program to new heights.

Our enrollments remain near all-time highs. Thanks to the efforts of Associate Chair Nick Korevaar, we continue to raise the bar on the quality of instruction in all of our classes. The heavily utilized Rushing Tutoring Center, under the leadership of Aryn DeJulis, serves as a campus-wide model for fostering student-to-student interactions among our undergraduates. Our Director of Undergraduate Studies, Fernando Guevara Vasquez, has worked hard to secure new resources to expand our Research Experience for Undergraduates (REU) program and enhance the experience of our majors.

All in all, 2013-2014 promises many great opportunities for the Department on both research and educational fronts!

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Colloquia Schedule

All members of the department are welcome (even encouraged) to attend any of the colloquia series offered within mathematics. A detailed schedule can be found on the webpage:
www.math.utah.edu/seminars/

Departmental Colloquium

Thursdays at 4:00 in LCB 219

(Please note the new time and place)

Graduate Colloquium

Tuesdays at 4:35 in JWB 335

Undergraduate Colloquium

Wednesdays at 12:55 in LCB 225

New Members of the Department

The start of the new school year has provided us with a host of new faces: grad students, postdocs, and faculty. It is interesting to meet all the new people and learn a little about them. We welcome the depth they add to the Mathematics Department—it makes for an interesting place to work.



Dongbin Xiu - Professor
Ph.D. Brown University
Interested in numerical analysis



Jonathan Chaika - Assistant Professor
Warnock Chair
Ph.D. Rice University
Interested in dynamical systems and ergodic theory

Assistant Professor (Lecturer)



Evelyn Lamb, (Scott)
Ph.D. Rice University
Interested in functions of complex variables



Baiying Liu, (Wylie)
Ph.D. University of Minnesota
Interested in number theory



Michael Medvinsky, (Scott)
Ph.D. Tel Aviv University
Interested in numerical methods

NSF Postdoctoral Fellows



Grigori Avramidi
Ph.D. University of Chicago
Interested in geometry



Daniel Hernandez
Ph.D. University of Michigan
Interested in commutative algebra



Davit Harutyunyan
Ph.D. University of Bonn
Interested in calculus of variations



Mark Shoemaker
Ph.D. University of Michigan
Interested in algebraic geometry



Nicola Tarasca
Ph.D. Humboldt University, Berlin
Interested in algebraic geometry



Sofia Tirabassi
Ph.D. Università degli studi Roma TRE in Italy
Interested in algebraic geometry

We'd also like to extend a welcome to our visiting faculty:

Yair Glasner
Alex Ramos
Tamara Sukacheva
Pedro Teixeira

Welcome to Our New Graduate Students by Peter Alfeld

The graduate admissions committee this year consisted of Alla Borisyyuk, Dan Ciubotaru, Andrejs Treibergs, Kevin Wortman, and Peter Alfeld. We received 209 applications and offered 88 teaching assistantships, of which 30 were accepted. The number of offers this year was unusually high, but the acceptance rate was about the same as last year. The percentages of international students among those who applied, were offered, and accepted, were 50, 51, and 31 respectively. The corresponding numbers for women were 25, 22, and 10, respectively. Thus this year we had an unusually low acceptance rate from women. We believe and hope that this is a statistical fluke.

Please welcome our new TAs (listed with their previous affiliation): Stephen Bagley (U Of Wyoming), Adam Brown, (U Of Maryland), Nicholas Cahill (U Of Illinois At Chicago), Samuel Carroll (U Of Houston), Javier Carvajal-Rojas (Universidade De Costa Rica), Wei Chuanhao (Shanghai Jiao Tong U), Chris Craft (U Of U), Hallie Elich (U of Minnesota), Jeremy Fehr (Wesleyan U), Noah Ford (Hamilton College, U of U), Erjuan Fu (Tsinghua U), James Gossell (U Of Central Missouri), Gregory Handy (U Of Maryland and U of Michigan), Keith Hooper (Eastern Washington U and Washington State U), Tyler Johnson (U Of Georgia), Andrew Kassen (U Of California-Davis), Jennifer Kenkel (Washington U), Christopher Miles (Lafayette College), Dapeng Mu (Nankai U), Tho Nguyen Xuan (Arizona State U), Yeonjong Shin (Yonsei U), Daniel Smolkin (U Of Michigan), Weicong Su (New York U), Kurt Vanness (Illinois Wesleyan U), Edward Vernarsky (Montana State U and U Of Oregon), Ryan Viertel (BYU), Dawei Wang (Shandong U), Stephen Whipple (U Of U), Qing Xia (Central U Of Finance, Beijing), Kyle Zortman (U Of U).

Algebraic Geometry and Topology Receive Research Training Grant by Tommaso de Fernex

Our groups in Algebraic Geometry and Topology have been jointly awarded a Research Training Group grant from the NSF. The grant will be directed by Ken Bromberg and Tommaso de Fernex, and Aaron Bertram will act as in-house consultant. The grant provides support for a number of new training activities in Algebraic Geometry and Topology, ranging from undergraduate and advanced summer schools to various seminars and REU's. The funding will be used to support undergraduate students, graduate students, and postdoctoral fellows.

More information on the grant can be found on the webpage: www.math.utah.edu/agtrtg/

Gail Howick: Now Here Full Time



With the award of the new Algebraic Geometry and Topology RTG Grant, Gail Howick has moved from working part-time in the front office to full time. She is providing administrative support for both the Math Biology RTG grant and the Algebraic Topology and Geometry RTG grant as well as assisting other staff members in the department as needed (and as her time permits).

Department Renovations

A Note from the Pigeonhole Principal by Nick Korevaar, Associate Chair

If you've been around the Math Department much this fall, you may have noticed that there seem to be a lot of people working here. It's more than usual. With about thirty new supported graduate students displacing the about twenty second-year students from the LCB Loft, and with about a dozen incoming regular, postdoctoral, and visiting faculty, it's been a challenge to find places for everyone to work.

The fortuitous (from the Associate Chair's point of view) move of the Math Library up to Marriott means that we have been able to increase the number of available pigeon holes this year, making the person-to-desk assignment problem solvable. Once the dust clears, there should be twelve roomy workstations in the old library space, with hopefully happy graduate student occupants. As well, a number of our emeritus faculty kindly agreed to double up, vacate their offices, or move to smaller offices. And after all of this office shuffling, four of our larger available offices were reconfigured to hold two post-docs or visitors each. Della Rae has been working hard to organize the logistics for all of this, trying to ensure that everyone has comfortable desks, chairs, workstations, etc. And our custodial staff has also worked very hard to make the reconfigured and vacated office space clean and welcoming.

Two of the drivers of our increased size this year are the two NSF Research Training Grants, in Biology and in Geometry/Topology, that are in their initial years. As well, the new Engineering Math teaching project has brought some extra need for hiring. Some careful planning will be needed for next year and the years after, as we continue to refine our size and space requirements.



Ongoing Renovations in the Math Department Main Office

Our office is in a state of siege at the moment as we undergo some welcome, much-needed renovation. Paint, new carpet, some new furniture, updated window treatments, and new ceiling tiles are on the menu. It should be completed by the end of October and we're all excited with the new upgrades. In addition, the entire interior of JWB will receive a new coat of paint.



Summer Events

ACCESS Cryptography

by Fernando Guevara Vasquez and Christel Hohenegger

Every Summer, the College of Science organizes the ACCESS program to bring talented entering women in Science on campus for seven weeks of fun and intriguing classes in Mathematics, Physics, Chemistry and Biology. Over the last few years, Kevin Wortman has been teaching one of the math weeks on The Shape of Things, while we have been teaching the second week on Cryptography. The students are split in morning (Fernando) and afternoon (Christel) sessions and we had about 40 students total this year. The Cryptography class was designed by Nick Korevaar and has two main parts. The first part is to cover the Number Theory necessary for understanding the RSA public key exchange algorithm. The Math department graciously gives each ACCESS student a copy of “The Code Book” (Singh), as supporting material for the class. The second part is exploratory and asks the students to reproduce the logic behind the Nobel price winning finding of the DNA code (i.e. how DNA bases are translated into proteins). This is done in collaboration with Professor Jon Seger (Biology) who also gives a presentation on the topic.

Our TAs were Morgan Cesa and Cheryl Zapata-Allegro who were essential in helping the students navigate through the subtleties of the Math and Biology involved. The final project for the class is to implement the RSA public key exchange (with signature) in Maple. The students use it to send secret messages to each other. We made the project smoother for the students by setting up a web form that checks the validity of public/private key pairs (it always took long to check this in the past). We also made the project easier on us, by being able to decode the messages and verify the signatures as they were being sent.

Every year, we have had fun interacting and learning from the new ACCESS cohort and we hope to keep making the course interesting for the future generation of both ACCESS students and instructors. As our ACCESS students go on with their majors, we see them again in our various calculus classes and all have shared fond memories of their first semester on campus.

Summer Math Program

by Steffen Marcus

Each year in June approximately twenty high school juniors descend on the department for our Summer Mathematics Program. The program has built a history of being very popular and attracting a variety of extremely bright students with expressed interest in mathematics. This year was no exception. Our pool of applicants consisted of about forty self-selecting students from all parts of Utah and many other western states. Together with Aryn DeJulis, Leonard Carapezza, Emma Chandler, Lance Miller and I, they spent three weeks studying topics in elementary number theory and cryptography through a series of lectures, group-based problem sessions, and computer labs.



Morning were spent working together to understand how number theory is used to construct cryptographic cyphers and algorithms. In the afternoons, the students learned how to code in Python through daily laboratory projects designed by Sarah Cobb. These afternoon sessions led them through the implementation of private and public key cryptographic algorithms for use in a series of “crypto-games” during the final two days, a particular highlight. We had the students competing in teams to pass encrypted messages back and forth over a public internet forum for cake, prizes... and glory.

Perhaps the most popular hour of the day was the after-lunch colloquium, when a distinguished guest speaker exposed the group to exciting ideas in mathematics. Our list of speakers included professors, postdocs, and graduate students representing a broad spectrum of disciplines within the department: Fred Adler, Peter Alfeld, Sarah Cobb, Marina Gresham, Brendan Kelly, Davar Khoshnevisan, Nicos Georgiou, Ken Golden, Peter Trapa, Kevin Wortman, and Aaron Wood. These guest lecturers brought an exciting diversity to the daily curriculum that was appreciated by all participants.

This program exposes outstanding high-school students not just to new mathematical ideas, but also to a microcosm of the active life in our department. Several alumni of this program have come back as undergraduates. The hope is that, as the summer high school program continues to succeed, this return will continue as well.

MathFest 2013

by Boya Li



I was the winner of Undergraduate Problem Solving Competition in the Math Department at the University of Utah so I was honored to have a chance to take a trip to MAA's 2013 MathFest held in Hartford, Connecticut where I became one of the winners in National Problem Solving Competition.

I wasn't there until the third day of Mathfest because of finals for my summer courses so I missed almost half of the talks, but I was glad to attend the rest of talks. Most of the talks that I attended were invited addresses. Professors from different universities talk about their recent research or some career information about certain fields in math. Also I went to a banquet hosted by the Pi Mu Epsilon honor society. Members were awarded for their various achievements.

The main mission there for me was the problem solving contest, which was really fun. I placed 6th overall. Problems there were not as difficult as we did in the contest held by our department. The boy who sat next to me only took half of the time that I used to finish all problems. That's really a surprise. Obviously, he got the first. I wished I had done some refresh before I went to the contest. It might have helped me get a better grade. But anyway, it's a great opportunity to be there to talk to different awesome people. The result of the contest does not really matter a lot compared with being involved in this excellent event.

Aftermath is published about every semester during the academic year. If you have an idea or article to submit contact one of the editors:

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