
A f t e r m a t h

Message from the Chair

by Aaron Bertram



This year, unlike the previous two, has begun without dire predictions of budget cuts. This is weak good news, but it does give me hope that we may be returning to a more stable period. And given that we have not had to scale back

our graduate or postdoc programs and that we continue to hire at the tenure-track level, I'd say we've come through this pretty well. Maybe there will even be raises, though I hasten to mention that this is beyond my control.

Meanwhile our undergraduate courses continue to surge in enrollment. From a practical perspective, this means that many of our classes are full to capacity (or a wee bit beyond) and that we've had to find creative ways to make sure that our student needs are being met. It also means that the Department will earn a bit of extra one-time "productivity" money, which will be plowed back into the TA and postdoc programs.

We have three new faculty whom it is my pleasure to welcome: Yekaterina Epshteyn, Fernando Guevara-Vasquez and Christel Hohenegger are spectacular young Applied Mathematicians joining us as Tenure-Track Assistant Professors. In addition, Moshe Adrian, Lance Miller and Tyler Skorczewski are joining us as dynamic young Postdocs in Representation Theory, Number Theory and Math Biology, respectively, and of course we have our wonderful first-year graduate students. Welcome one and all!

Department Social

By Aaron Bertram

It was a dark and stormy night. Fortunately, our Department Social was relocated from the Bandstand to the Officer's Club at Fort Douglas, where we were snug and happy. Only a bedraggled Bill Coles and his lovely wife didn't

get the email in time, for which I apologize to them! Perhaps we would have been even happier if the alcohol regulations didn't prohibit us from serving wine and beer, but such is life in the Beehive State. I'd like to thank Mary Levine for her work setting this up, and as always, we welcome your comments on the quality of food, the location and any recommendations you might have for next year. In the meantime, we can look forward to another entertaining Winter Social in December and GSAC picnic in the Spring.

Prerequisites Update

By Kelly MacArthur

We thought it would be beneficial to give you some nuggets of information regarding prerequisite checking to ensure you know what to expect and have handy answers for your students' questions.

- Spring registration opens on November 1st. The schedule is already online for students to start planning. We will open the permission code request link on www.math.utah.edu (middle of the home page) on that day.
- Students who are currently in a prerequisite math class will be able to register for the next math class without a permission code. For example, students in Math 1210 now will be able to register for a spring Math 1220 class. They will be dropped later (around the first week of spring semester) if they don't meet the solid C grade requirement from Math1210.
- If students are placing into the low-level math classes by a test score, those test scores expire after two years, with regard to using them as prerequisites. However, if a student has met the prerequisites through passing the required classes, then those classes are not being expired automatically by the software. The caveat here is that if a student needs a permission code to get into the next math class and we see that he/she hasn't had a math class for 10 years, it's likely we will force the student to remediate in some way before moving on.

- The only students who will need a permission code to enter a class for spring, at this point, will be those students who have taken the prerequisite course(s) at another institution, since the software does not yet recognize transfer work.

- Once again, if students ask you for a permission code, please refer them to the link in the middle of the math department's home page and Henryk, Angie or I will respond to their request after we verify their prerequisites.

Finally, I wanted to give you some words to consider if students ask why we need to enforce prerequisites. I have frequently had to answer this question or some perturbation of it: "Why can't you just let me into the class without the prerequisites; let me take the class at my own risk and I'll suffer the consequences if I'm unprepared?" My answer usually goes something like this: "We have experimented with that in the past when we weren't enforcing prerequisites, and it failed. I ended up teaching calculus, for example, where literally half the students thought like you do and thus half my class was unprepared. That meant that all the students who were actually prepared couldn't get the instruction they deserved and paid for because I couldn't teach the class properly since I had too many questions regarding material the students should have known." I also try to remind the student that prerequisite enforcement is intended to increase the chances for success in our classes.

Hopefully you'll notice a difference teaching your classes now, compared to the past several years when we had no way to check prerequisites. If you have any further questions, don't hesitate to contact me at advisor@math.utah.edu.

Bob Palais Receives Award



Bob Palais, along with his father Richard, and Stephen Rodi, recently received the Lester R. Ford Award for their expository paper, "A Disorienting Look at Euler's Theorem on the Axis of Rotation" in *The American Mathematical Monthly*. This is a fascinating exposition on Euler's theorem that (stated in modern terms) every orthogonal matrix of determinant one has an axis of rotation. They give a new constructive proof of this (including the case of negative determinant), along with a

survey of other proofs, and a general discussion of the theorem. The Lester R. Ford Award is given annually to authors of outstanding expository papers that appear in *The American Mathematical Monthly*. You can check out the article at http://mathdl.maa.org/images/upload_library/22/Ford/Palais.pdf. Way to go Bob!

Service Awards



Rebecca Burns, our accountant over grants, recently reached 25 years with the University of Utah.

It is rather accidental that she is still with the University after all these years. In the early '80s she was simply looking to take a temporary job after leaving the food brokerage business and accepted a secretary position in Cardiology. When the MD she worked for moved his research group to the University of Colorado she went along. After a few years in Denver she returned to Salt Lake City and the U of U, this time taking a job in the Pulmonary Division. A few years later she transferred to the Center for Controlled Chemical Delivery, and then finally to the Math Department.

Rebecca has a wonderful sense of humor and is an exceptional source of knowledge about University procedures. She is a great asset to the Math Department and has been invaluable in assisting with writing, budgeting, submitting, managing and closing out grants. We're glad that she saved the best for last!



Stephanie Nuttall, our department accountant, recently reached 5 years with the University of Utah.

Stephanie joined the Department of Mathematics in May 2006. She came to the department from Westminster College in Salt Lake City where she was working as an Accounts Receivable Coordinator in their Financial Aid office. She has also worked at the University Hospital as a Health Unit Coordinator. Stephanie is extremely organized and proficient and has superb accounting skills. The department accounts are operating quite efficiently under her tutelage. She resolves all payroll problems and other issues with great ease and skill. She makes the job look easy, but it is quite demanding, difficult and time consuming.

We are extremely fortunate to have Stephanie as a part of our staff and couldn't manage without her expertise and skills. Congratulations Stephanie on five years of service to the University of Utah!

Summer Report



High School Program by Sarah Cobb

This year Peter Trapa directed the Summer Math Program for High School Students, assisted by graduate students Matt Housley and Sarah Cobb. Seventeen students participated in the program, studying a variety of advanced topics, including modular arithmetic, the Fibonacci sequence, and RSA cryptography.

The students also heard colloquium talks in areas as diverse as mathematics of sea ice, different sizes of infinity, and the history of numbers, and participated in a computer lab, where they learned to use the language Python. They wrote programs to speed up a variety of mathematical calculations, from finding the greatest common divisor of a list of integers to taking large powers of numbers in modular arithmetic. Though many of the students had never programmed before, they were sending each other encrypted messages using the RSA algorithm by the end of the three week program.

The program concluded with a game of mathematical Jeopardy, with questions drawn from all the material of the program. At the last minute, one team came from behind to win the competition, surprising everyone!

The enthusiasm and ability of the participants in the program were astonishing. They quickly absorbed ideas that would have challenged college students, and applied creativity and problem solving to challenging exercises.



MathFest by Qiushi Wang

MathFest this year was held in Pittsburgh, City of Steel. I attended with fellow math major Matt Stanford. Neither of us presented research so we attended talks almost the entire time. Still, with typically more than six sessions going concurrently, we were able to see just a small

fraction of the presentations available so we tried to stick with sessions that sounded interesting. Though the titles often proved misleading (a title about social networking ended up being a talk about the 2008 presidential election?), there was a large variety of cool topics ranging from knot theory to bluffing strategies in poker.

We also participated in the problem solving contest with Matt getting third and me taking fifth. There were only five people to complete all the problems so I was the slowest finisher. And while it took me somewhere around half an hour, I later found out that the girl who took first finished all the problems in just a few minutes – wow! Matt was crazy enough to schedule a 7:00 am flight the day after the conference ended so he was unable to see much of the city apart from downtown. I spent the extra day wandering around on foot without a map but was able to find my way to the picturesque University of Pittsburgh/Carnegie Mellon University campus. It did make us wonder why the U doesn't have architecture as imposing as the Cathedral of Learning. I finally made my way to Mount Washington (but not before getting lost in some pretty sketchy neighborhoods) for a view of the beautiful Pittsburgh skyline at sunset.

To sum up: went to some talks, did some math, ate some cheese steak. All in all, a fantastic trip.



REU Summer 2010 by Peter Kim

This past June, Fred Adler, Damon Toth, Victor Camacho, and Peter Kim organized a summer Research Experience for Undergraduates (REU) program in mathematical biology. Seventeen undergraduate students in mathematics and biology from various universities around the country participated in the three-week internship and conducted independent projects in the mathematical and computational modeling of ant colonies, epidemics, and immune dynamics.

During the first week, students conducted group experiments simulating interactions of social insects, the spreading of infectious diseases, and collective decision making in the immune system. During the second and third weeks, the organizers arranged a series of presentations given by local faculty in mathematics, biology, and medicine. Throughout the program, students interacted with each other and with their research advisers to model novel problems in mathematical biology.

At the end of the REU, students presented their results, and the program was rounded off with an elaborate picnic at Sunnyside Park followed by an epic croquet match involving over twenty people.



AG Minicourse by Tommaso de Fernex

This Summer we had a two-week long VIGRE Mini-Course devoted to the interplay between two central subjects in Algebraic Geometry: Birational Geometry and Moduli Spaces.

The school was a great success, with over sixty participants from across the country. The lectures were engaging and I am confident that the participants not only learned a lot from this school, but also left with newly acquired enthusiasm in the subject. The school was followed by an MRC program on the same topics in Snowbird, and those who participated in both programs had the opportunity to form a solid background on the subject in preparation for more advanced readings that were proposed during the Snowbird program.

Aaron Bertram and I, organizers of the school, were lucky to have excellent administrative support from Daniela Ciubotaru as well as precious assistance from Roi Docampo and Rob Easton who ran the afternoon sessions. We are also very grateful to Emanuele Macri, who not only served as one of the main lecturers but also was of great assistance during the program, and to our own students who contributed with their enthusiasm to the school.

Just for Fun...

A mathematician has been invited to speak at a conference. His talk is announced as "Proof of the Riemann Hypothesis."

When the conference actually takes place, he speaks about something completely different. After his talk, a colleague asks him, "Did you find an error in your proof?"

He replies, "No – I never had one."

"But why did you make this announcement?"

"That's my standard precaution – in case I die on my way to the conference..."



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

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