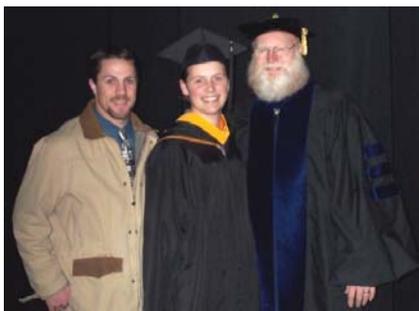# Mathematics News
University of Idaho

December Graduation

Some of our December graduates: Kari Anderson (M.A.T.), Travis Bemrose (B.S.), Sarah Waller (B.S.), Lynne Tower (B.S.), Ruth Patching (B.S.), and Sean Haler (B.S.), with Monte Boisen.

Congratulations to all of our December graduates!

Kari Anderson and her husband Josh with Monte Boisen.

UI at National Math Meeting

Seven UI graduates attended the Joint Meeting of the Mathematical Association of America and the American Mathematical Society in Phoenix in January. They were:

- **TOM MCMILLAN**, University of Arkansas at Little Rock
- **MARK LOTSPEICH**, Albertson College of Idaho
  ROBIN CRUZ, Albertson College of Idaho
- **KIM VINCENT**, Washington State University
- **DAN SCHAAL**, South Dakota State University
  SCOTT DAUGHERTY, Tusculum College
- **ALLEN BAILEY**, University of Maine at Farmington

Most were able to attend a lunch for Idaho alumni at the meeting.

An Interview with Willy Brandal

When did you first become interested in Mathematics?

My recollection is that I've always been interested in math and science. From junior high on up, I don't remember ever not being interested.

What led you to decide to major in Mathematics?

I went to the University of Washington for two years, majoring in Chemistry. After my sophomore year I had an internship working as a Lab Technician at a pharmaceutical company doing chemical lab work. While working there I realized that I was not good at lab work and I didn't like working in a lab. Mathematics had all of the good things from Chemistry but it didn't have the lab work, so that was a deciding factor for why Mathematics was better than Chemistry.

Were your parents or siblings mathematical?

None of them are mathematical; I'm the only one in the whole family. There's no math background anywhere. My dad was a medical doctor and even he didn't like mathematics!

Where did you go to college?

After graduating from West Seattle High School I began college at the University of Washington in Seattle where I earned my Bachelor's degree in Mathematics and my Master's degree in Mathematics. After I received my Master's degree I decided to go to Northwestern University in Evanston, Illinois.

BECOMING AN ACTUARY

To become an actuary you need to pass a series of exams. The first two exams are on calculus, probability, economics, finance, and the theory of interest. At UI the course requirements for the Applied Mathematics major, Actuarial Science option cover this material. However, the problems are challenging and many questions have a risk setting. To help prepare you for these exams the department has review seminars. Ralph Neuhaus, in Brink 302, can provide you with information on the actuarial profession, the review seminars, and on the exams.

Spring Actuarial Exam Dates

The exam for Course 1 will be given:
Wednesday, May 19, 2004, 8:30 am—12:30 pm

The exam for Course 2 will be given:
Thursday, May 20, 2004, 8:30 am—12:30 pm

Both exams can be taken at UI. The deadline for applications to reach the Society of Actuaries for the May exams is: April 1, 2004.

Application forms can be obtained from Ralph Neuhaus, Room 302, Brink Hall.

Review for Exam 1 can be arranged by contacting Ralph Neuhaus or Frank Gao.

Internet Math Challenge

Looking for a mathematical challenge to stimulate the interest of a pre-college student? Try out the *Internet Math Challenge.* The IMC is a web-based problem-solving contest featuring prizes for solving weekly math puzzles. Students can email their solutions and receive feedback from the IMC staff. The puzzles are designed to be fun, and to require few prerequisites beyond cleverness, so students of all ages can participate. Prizes include two specially designed IMC T-shirts given each week, plus monthly prizes of a graphing calculator.

The UI Math Dept. has sponsored the Internet Math Challenge each school year since 1996, with supervision by Professor Mark Nielsen. You can find IMC at

http:/www.uidaho.edu/imc

Correction

Oops! Math Puzzler #2 in the Fall 2003 issue of the Mathematics News was misstated. It should have said "Choose a 3 digit integer, N, with distinct digits. Let S_1 be the sum of all 2 digit numbers formed from the digits of N and let S_2 be the sum of the digits of N. Find S_1/S_2. Your answer should always be 22. We are sorry for the confusion this caused you.

How did you decide to specialize in Algebra?

While I was working toward my master's degree at the University of Washington I really liked one class, a graduate course in Logic and Set Theory, taught by Professor Ritchie. I really enjoyed the class and the professor and so, when I went to Northwestern I made up my mind I was going to study Logic and Set Theory. When I got to Northwestern I discovered that nobody studied Logic and Set Theory at Northwestern so I had to find something else to focus on. The first year I was there I had a graduate sequence in Commutative and Homological Algebra from the professor that ended up being my thesis advisor, Professor Eben Matlis. I liked him. I liked the way he handled a class. I liked the way he lectured. I basically liked almost everything about him, so I changed my focus to Algebra.

Can you describe the research that you do?

I do research in Ring Theory and Commutative Rings. I especially enjoy theorems that relate to decomposition results, where you break up algebraic structures into smaller bits, and prime ideals of commutative rings. There is a great deal of interrelationship between those two problems and I maintain that they are the same.

When did Chinese Remainder Theorem first become interesting to you?

Shortly after I graduated with my Ph.D. and got in the real world I wrote a small paper that was basically on the Chinese Remainder Theorem. The pa-

per was pretty trivial, it proved some converses. As I wrote the paper I realized it was something of interest. Of course, the Chinese Remainder Theorem was already well known so my paper never got published.

Has there been a particular teacher or professor who has motivated you or that you have especially enjoyed?

The main person that motivated me was Eben Matlis, my thesis advisor. I liked the way he taught. He was very logical and organized. I was impressed by the entire structure of how he behaved and worked. For many years I tried to emulate just about everything about him, but of course, eventually I realized I couldn't do it anymore and I gave up. Since then I've developed my own traits, but he was a good role model. I had several other faculty members, from various mathematical areas, at the University of Washington and Northwestern that impressed me.

What made you decide to come to the University of Idaho?

I needed a job, badly. The job market was incredibly tight. I'd been at the University of Tennessee and was not given tenure so I had to find another job. I received a phone call from Professor Bobisud and he offered me a job over the phone. Even though I grew up in Seattle I had no idea where the University of Idaho was located, but the job offer sounded good to me and I said yes. I like the University of Idaho and am happy that I came here.

What courses do you enjoy teaching?

I like to teach a variety of courses. I like to teach a little bit of everything, some graduate courses, some freshmen level courses, some upper division courses. I have taught a large variety of courses. You name it and I've probably taught it, and I enjoy teaching just about everything. I don't want to be bogged down with teaching the same thing every semester.

What achievements at the University are you most proud of?

I take pleasure in the whole job as a professor of Mathematics. I like doing research, teaching, providing service, everything involved in helping to keep the department running, and pretty much everything else. I enjoy working with PhD students. A few years ago I worked with Allen Bailey and I am currently working with Tim Sprano. Being a major professor for a PhD student is an exciting experience. Being a Mathematics professor is just an all-around great job. There is a lot of variety. Over the years I've written a few books that I'm pretty proud

of, I've written some papers, I've worked with colleagues…Erol Barbut and I wrote a series of papers and a book together. Those are the things that make me happy.

You were not born in the US. What was your first experience in the US like?

I was born in Denmark and in 1950, at the age of 8, we immigrated to the United States. Our first experiences, obviously, were on a boat, sailing into New York City harbor. Seeing the Statue of Liberty and the big sky scrapers, that was a real eye opener, there's nothing like that where I came from. We lived outside New York City for a couple of years; I went to public school and didn't know a word of English. I had the usual foreign "what's going on here?" feelings, but I think I adapted pretty well, pretty fast. Eventually we moved to Seattle and I consider that as the place where I mostly grew up.

You play chess at times. When did you get started?

During my sophomore year of high school I met a guy who ran a chess club. He became a real good friend and he encouraged me to play. We had a city chess league and I ended up starting to play tournament chess and it was a lot of fun. I enjoyed the competitiveness and I won a few things. I was Washington State Junior Champion for two years. Playing tournament chess was a way of getting out, experiencing things, and learning about what life was like. After about my sophomore year in college I realized that to be much better at chess I would have to devote a huge amount of time. I also realized that going to college and studying chess couldn't both be done, so I gave up chess during that year.

Did you play a tournament that was in a prison?

Yes, I did play there once. We had a league in the greater Seattle area and there was a prison just outside of Tacoma, McNeil Island Federal Penitentiary. That prison had a team in our chess league and because they couldn't leave to come play us in our town, we had to go there. That penitentiary held some pretty famous people. It was kind of exciting going there.

What are your goals for the next few years?

Currently I am expecting to retire in June of 2007, but that could change. If I do retire then that gives me about three and a half years to go. I would like to see Tim Sprano finish his thesis and receive his doctorate before I retire. Overall, I like the students here, I enjoy teaching, I would like to do more research, I want to try to get the book that I'm working on right now published. Basically, I want to do more of what I've been doing.

Several scholarships are available to mathematics majors; all are based on merit. The Taylor, Botsford, Wang and Hower scholarships are awarded to mathematics majors entering their junior or senior year. Total awards for these scholarships are $500, $1500, and $2500. The Mathematics Department Scholarship has no class restrictions. All mathematics majors are automatically considered for a scholarship. Non-mathematics majors are eligible if they change their major to Mathematics or add mathematics as a second major. The selection is made by the faculty of the department in March.

Mathematics Department Scholarship

This scholarship is supported by annual contributions of friends of the department and is awarded primarily to freshman and sophomore mathematics majors.

Melissa Curd, Tyler Messervy, Terren Musselwhite, Jakob Renz, and Angela Windley are this year's recipients.

Ya Yen Wang Memorial Scholarship

A long-time member of the Mathematics faculty, Ya Yen Wang died in January of 1995. Acting on her wishes, her family established the Ya Yen Wang Memorial Scholarship. This scholarship is intended for a junior or senior in Mathematics, preferably to be awarded to a woman.

Angela Windley is this year's recipient.

J. Lawrence Botsford Scholarship

This scholarship was established by the family of J. Lawrence Botsford who was a member of the department from 1949 until his retirement in 1970. He also served as head of the department from 1950 to 1954. This scholarship is based on merit and is awarded to mathematics majors entering their junior or senior year.

Matthew Petersen is this year's recipient.

Linn Hower Honor Scholarship

This scholarship was established in 1991 by Mildred and Loyal L. Hower, parents of Linn Hower, who graduated from the University of Idaho in 1979 with a B.S. In Mathematics. This scholarship is awarded to junior and senior applied mathematics majors, preferably from rural Idaho, with a high potential for success in a mathematics or scientific field.

Toney Jacobson is this year's recipient.

Eugene and Osa Taylor Mathematics Scholarship

This scholarship was established in 1979 by the family and friends of the first head of the department, Eugene Taylor and his wife Osa. He directed the department from the time he came to the department in 1920 until he retired in 1950. In 1981, his family donated many of his personal mathematics books to the University of Idaho library. This scholarship is based on merit and is awarded to mathematics majors entering their junior or senior year. The recipients of the Taylor Scholarship this year were:

Justin Boggs
Arash Deghan
Michael Fernald
Jesse Huso
Tyrel Johnson
Peter Marcy
David Nadler
John Rush
Adam Suk
Stacey Wilkins

Jason Canaday
Brian Dorgan
Sean Haler
Toney Jacobson
Curtis King
Erik Mentze
Matthew Petersen
Fauna Samuel
Lynne Tower

Mathematics Graduate Student Assistance Scholarship

This scholarship is based on merit and need and is awarded to graduate students. It is dedicated to achieve our goal of placing our graduate program in the top 4 of Pacific Northwest schools.

Elizabeth Cunningham is this year's recipient.

A wealth of information is just a click away...

www.uidaho.edu/math

The website for the Mathematics Department at the University of Idaho.

Senior News

MAY GRADUATION

A reception will be held for mathematics graduates and their guests following the College of Science commencement ceremony on Saturday, May 15, 2004. Last year, parents and guests of graduates enjoyed visiting with the faculty and other graduates. During this semester we will request the addresses of your guests so that we may send them an invitation. We hope to see all graduates and their guests at the reception.

EMPLOYMENT

One of the bulletin boards outside the department office (300 Brink Hall) is devoted to job opportunities. Career Services' monthly list of campus interviews will be posted there along with other job information the department receives. You can sign up at Career Services to schedule interviews with companies interested in mathematics majors. Your instructors can write letters of recommendation for the Career Services files, and they can also write letters of recommendation to specific employers.

GRADUATE SCHOOLS

Another bulletin board outside the department office is devoted to graduate school posters. Your advisor also has more information that can help you. Your instructors can write letters of recommendation for you that can be sent to each university to which you apply. Several copies of a pamphlet listing assistantships and fellowships in mathematics, statistics, and computer science in the U.S. are available. See Ralph Neuhaus in Brink 302 for a copy.

Past Graduates

GREG SANFORD is working for the U.S. Navy's Board of Inspections and Survey. Their primary task is to assess the material condition of the Navy's ships and submarines. He earned a B.S. in Mathematics from UI in 1972, an M.S. in Mechanical Engineering from the Naval Postgraduate School in Monterey, California in 1983 and retired from the U.S. Navy as a Captain in 2002.

BRAD DIRKS is now the Director of Actuarial Services at Schaller, Anderson, a consulting actuarial firm in Phoenix, Arizona. He graduated from UI with a B.S. in Mathematics in 1992 and became an Associate of the Society of Actuaries in 1994.

NICK HAYES is in graduate school at Western Washington University in Bellingham, Washington as an MAT student. He is student teaching at Bellingham High School. He graduated from UI with a B.S. in Mathematics in 2001.

BRANDY WIEGERS is in graduate school in Applied Mathematics at the University of California at Davis. She is working in a fluids research group modeling plant root growth. She graduated form UI in 2002 with a B.S. in Mathematics.

CHARLES NEWBERG is chair of the Science and Mathematics Department at Western Wyoming Community College in Rock Springs, Wyoming. In addition to his duties in the Math Department, he teaches rafting, backpacking, and snow shoeing. This year he is President-Elect of the Wyoming Mathematical Association of Two Year Colleges. He graduated from UI in 1990 with a M.S. in Mathematics.

PAUL SMITH has returned to teaching Mathematics at South Puget Sound Community College. For many years he had been teaching Computer Science there. He graduated from UI in 1976 with an M.S. in Mathematics.

KEVIN HARRINGTON is managing a hedge fund in San Francisco, California. He graduated from UI in 1994 with a B.S. in Mathematics and Physics.

JOHN HARRINGTON received his M.D. degree from Loma Linda University and is doing a residency in Surgery at Good Samaritan Hospital in Phoenix, Arizona. He graduated from UI in 1996 with a B.S. in Mathematics and Chemistry.

DIANA CORDWELL JOHNS recently became a member of the UI Foundation. She graduated from UI with a B.S. in Mathematics in 1977 and received her M.D. degree from the University of Nevada at Reno in 1994. She resides in Idaho Falls.

KIM VINCENT is now an Assistant Professor of Mathematics at Washington State University. She received her M.S. in Mathematics from UI in 1990.

Idaho Treasure Award

On October 9th former Mathematics professor Elna Grahn received the Idaho Treasure Award in recognition of her service to the University of Idaho. Created in 1995, the Idaho Treasure Award is given to retired faculty and staff to who have made significant achievements in service and leadership to the University of Idaho during their retirement years.

In her career, Elna taught mathematics at the high school, junior college, and university levels. She was a founding member of the UI Retirees Association, is active in the League of Women Voters, and is an honorary life member of the American Association of University Women. Elna retired from UI in 1969.

Congratulations Elna!

Request for Alumni News

We would like to hear from you!

If you have some news or information about yourself that you would like printed in the next math news, please e-mail your information to Jaclyn Gotch at jclark@uidaho.edu or send it to: Department of Mathematics, University of Idaho, PO Box 441103, Moscow, ID 83844-1103.

Please include as much of the following as possible:
- Name
- Year you graduated from UI
- Degree and Major at UI
- Current Occupation
- News about yourself
- Comments, corrections, additions for newsletter

Generations

During this summer retired professor Gail Adele learned that during her teaching career at the University of Idaho she had taught 3 generations of students within one family.

In 1976 Gail taught Dorothy Todd. A few years later Gail taught Dorothy's son, Jerry Todd. And this past Spring semester Aubrey Comstock, Dorothy's granddaughter and Jerry's daughter, was in Gail's Math 302 course.

Math Web Sites

For all kinds of information about mathematics, mathematical careers, and graduate school opportunities, check out these websites:

1. www.maa.org/ (this is the website of the Mathematical Association of America). Click on:

- columns for interesting articles on mathematics.

- Read This for reviews of popular books on mathematics

- Students for links to undergraduate and graduate career opportunities

2. www.ams.org (this is the website of the American Mathematical Society).

- Click on Careers and Education then on Undergraduate Student for information on Graduate schools and Research Experiences for Undergraduates.
- There are also links for careers in Mathematics, Statistics, Actuarial Science, and Business.

STEVE KRONE attended the American Society for Microbiology's Conference on Biofilms at Victoria, British Columbia in November.

ZAID ABDO attended a meeting on Statistical Genetics at the University of Washington in December.

DARREN KEARNEY resigned as Office Specialist for the Math Department and is now working as a Computer Support Technician in the College of Law.

At the Project Kaleidoscope meeting in Boulder, Colorado in November, **MONTE BOISEN**, along with faculty from the University of Alabama, gave a talk about the Polya method of instruction.

TONY SHASKA gave talks on algebraic curves at the American Mathematical Society Sectional Meeting at Chapel Hill, North Carolina in October and at the Research Institution for Symbolic Computation at Linz, Austria in December.

RALPH NEUHAUS attended the Annual Meeting of the American Mathematical Society at Phoenix, Arizona in January.

DAVE THOMAS presented a paper on teaching geometry on the web at the 16th International Conference on Technology in Collegiate Mathematics at Rosemont, Illinois in November.
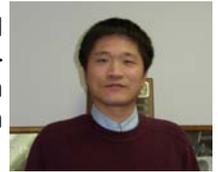
Local 4th through 8th grade students in the Palouse will be introduced to robotics through activities at their school and at the Palouse Discovery Science Center in Pullman. The activities will be exploratory; integrating the science, engineering, and mathematics of robotics. The project is directed by **DAVE THOMAS** with the assistance of faculty and students at UI and WSU and is funded by a grant from the Toyota USA Foundation.

FRANK GAO gave a talk on spherical volumes at the Small Deviation Problems Workshop at the Oberwolfach Mathematical Institute in Germany in October.

ROLAND FLEISSNER is the department's first Postdotoral Fellow. Roland is doing research on stochastic models for evolutionary biology with sequence alignment with Jack Sullivan in Biology and Paul Joyce. He is supported by a grant from the National Institutes of Health as part of the Initiative for Bioinformatics and Evolutionary Studies (IBEST). Roland received his M.S. from the University of Munich in 1997 and his Ph.D. this December from the Bioinformatics Institute in Düsseldorf, Germany.
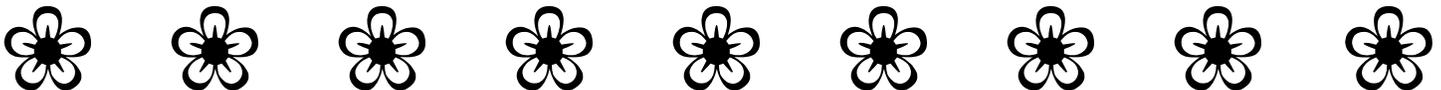
Fall Picnic 2003

This year's Math Department Fall Picnic was a huge success! It was held on campus in the Shattuck Amphitheater and luckily we had wonderful weather for the evening.

Spring 2004

Prize Problems

Solve one of the four Prize Problems and you win a book!!! You can choose a book about mathematics, the history of mathematics, a collection of famous theorems, a collection of problems, specials topics, and so forth. Some problems may appear hard or impossible. But all have a brief solution if you approach them in the right way. Prizes will be awarded while supplies last. Show or send your written solution to Ralph Neuhaus.

Rules for participating:
1. You must be an undergraduate, an alumnus, or an alumna.

2. You must solve one of the problems.

3. One prize per person.

1. A nine digit number $a_1a_2a_3b_1b_2b_3a_1a_2a_3$ is the product of the squares of four distinct primes. It is also known that the three digit number $b_1b_2b_3$ is twice the three digit number $a_1a_2a_3$ and that $a_1 \neq 0$. Find this nine digit number.

2. Find all solutions to $x^3 + 2y^3 = 4z^3$ that are in the integers.

3. Let n be a positive integer greater than 2. Some of the terms of the sequence

$$\frac{1}{n}, \frac{2}{n}, \frac{3}{n}, \ldots, \frac{(n-1)}{n}$$

are fractions in lowest terms. Show that there are always an even number of these fractions.

4. Using the 9 positive digits one can form 9! 3x3 matrices. Find the sum of the determinants of all these matrices.