Mathematics News

Spring University of Idaho 2006

An Interview with Dora Bialostocki

The Bialostocki Family: Arie, Taly, Guy, Dora

When did you first become interested in Mathematics?

In grade school; we had a classroom teacher who wasn't very good in mathematics, so the school brought in a special mathematics teacher and she would always choose me and another student to come and help her grade exams and prepare classes. But, I really became interested in mathematics in high school. In Israel high school is a four year program; after two years you choose a field of specialization. There were four fields in our school: the life sciences, literature, language, and the mathematics & natural sciences. The mathematics and science field was the most prestigious of all and, as I was a good student, I was expected to choose this field, which I did. When we started to study chemistry I had a hard time deciding between mathematics and chemistry, however the school more or less decided it for me. In Israel there is a national matriculation exam at the end of high school to qualify for university. Our school offered the physics exam but not the chemistry exam and, as a rule, it was harder to be accepted in chemistry if you didn't take the chemistry matriculation exam.

You went to elementary school, was that in Israel?

Yes, it was in Israel. I was born in Lithuania and we immigrated to Israel when I was 8 years old, at the end of second grade. From third grade on, all my schooling was done in Israel.

Where did you go to college?

I went to Tel Aviv University. After graduation from high

Interview with Dora Bialostocki continued on Page 2

UI Math Club

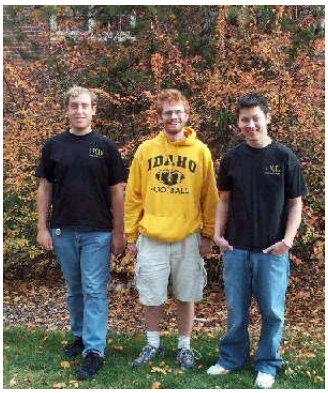
Activities this fall included a "Mathematical Jeopardy" game, instruction on the use of an abacus, and viewing the movie "A Beautiful Mind".

Mathematical Jeopardy contest in September

This year's Math Club Officers are:

JOSIE IMLAY - *President*
NATHAN BIALKE - *Vice President*
FRED HOLE - *Scribe*

The faculty advisor is **MARK NIELSEN.**



Nathan Bialke, Josie Imlay, Fred Hole

Look for announcements of Spring Activities, which will include the annual "Integration Bee" as part of the Pi Day celebration. This year Pi Day will be celebrated on March 9.

Visit the club's web page for more news and photos of some of the club events:

http://stuorgs.uidaho.edu/~mathclub/

school everyone in Israel has to serve in the army. I, however, went to a special program that was sponsored by the army; the people in this program went to the university and got a bachelor's degree before doing their army service, then they usually served in their field of study. The program wasn't easy because every summer we went to army training, so I didn't have summers off. I had basic training one summer and officer training the next.

What rank did you eventually become?
I was discharged from the army as a Captain.

For your undergraduate degree, was it almost all mathematics courses?
There is no core in Israel; therefore all my courses were in mathematics and physics. At the time, Tel-Aviv University was a pretty new university which had to compete against the Hebrew University in Jerusalem that had an excellent program in pure mathematics. Tel Aviv chose to have a program in applied mathematics. In the U.S. it would be called a double major in mathematics and physics. For two years, we studied mathematics and physics and in the third year we had to choose between the two, that's when I chose mathematics. I had a lot of mathematics courses and a lot of physics courses. In the first year we had three year long courses: advanced calculus, linear and abstract algebra and intro to modern mathematics.

Was this difficult for you?
Yes, mainly because the system was so different from the high school system. The Israeli high school system is very much like in the U.S., you have a textbook, and there are homework, quizzes and exams. In the university there were year-long courses with no textbooks (about twenty books were recommended for each course); the only grade that counted was the grade on the final exam. I had to learn how to study from books, how to push myself and how to budget my time. In the first year I started to study seriously two months before the exams and happily passed them all. That's when I realized that I would be okay. After that I didn't have any problems and graduated Magna Cum Laude. We started as a class of 300-400 students and only about 15% graduated after three years. About half the class graduated eventually.

Were your parents or siblings mathematical?
First, I'm an only child. Second, my parents both had degrees in Economics and both worked as Accountants. Even though there was arithmetic in the house, there was no abstract mathematical thinking. However, there was a scholarly atmosphere.

Where did you go to graduate school and why?
During my army service I went to Tel-Aviv University for a Master's degree in mathematics. It was not common in my time to study far from home. I thought about two schools, the Weitzman Institute, where I was accepted for a Master's degree in Computer Science and Tel Aviv University where I was accepted for a Master's in mathematics. However, since I started my Master's at Tel-Aviv University while I was in the Army it was very inconvenient to go to the Weitzman Institute, so I gave up on that. Otherwise, I would have been in Computer Science.

Has there been a particular teacher or professor who has motivated you or that you have especially enjoyed?
When I started my studies, most of the professors seemed larger than life, especially when they stood on the podium in a huge classroom. There is a story that at orientation a student asked how much time the average student should study at home, per one class hour. The professor walked back and forth on the podium for five minutes then he replied that an average student shouldn't be here! Among the professors that I remember most was one professor, Professor Ammon Yakimowsky that was a very good teacher. He was very organized, spoke very slowly and in the end covered twice as much material as everybody else. Another professor, whom I admired as a mathematician, was Dan Amir. He taught me a couple courses and would construct proofs while he taught the class.

How did you decide to specialize in Analysis?
I didn't exactly specialize in Analysis. Tel-Aviv tended to be applied at the time. I specialized in Numerical Analysis of Partial Equations, especially of Non-Linear Partial Equations. However the consensus in Tel Aviv was that you cannot be a good applied mathematician if you didn't have a wide background in mathematics; so I took many courses from Functional Analysis and Numerical Analysis of Partial Equations. I got my master's degree under Professor Saul Abarbanel. My thesis title is *Super Sonic Flows Past Blunt Bodies*. I proceeded to study for a Ph. D. under Professor David Gottlieb, who is now the head of applied mathematics at Brown University. I have done all of the course work, wrote a research proposal and passed the exam on the proposal. I started research, and then Arie graduated, and we decided to go for a postdoc for two years. I planned to finish my thesis when we returned, however we didn't return so somehow I didn't graduate.

How did you meet Arie?
I heard his name when I was an undergraduate because I studied with some of his friends from high school, however I didn't meet him until graduate school. There weren't many students in graduate school so everybody knew everybody else, that's how I met Arie. What attracted me to him was his sense of humor and the fact that he's not like everybody else, as you very well know! I didn't actually have a class with him until the PhD program and by then we were married. We had one class together. Arie had registered for a course where he was the only student and asked me and another friend to register as well, so the course wouldn't be canceled. In the middle of the course, Arie got called into the Army for reserve service and we both were stuck in the course without him.

What made you decide to come to the University of Idaho?
After Arie graduated in 1983 we went to a postdoc at the University of Calgary in Canada. While in Canada Arie applied for a lot of visiting positions but he applied only for two tenure track positions that were exactly in his field and one of them was at the University of Idaho. He got the position here and we thought it would be for a year or two, but we're still here!

What courses do you enjoy teaching?
I really enjoy all of the high level analysis courses, complex variables, partial differential equations, and numerical analysis.

What achievements at the University are you most proud of?
I am proud of my teaching record. I think that it's not only that the students like me, but it's more that I think they really learn a lot from my courses. It is nice when students remember me and my courses after they leave the University. Some years ago I got a wedding invitation from a pair of students that were in my course maybe five years earlier. It's nice to be remembered a long time after you've taught them!

What are your goals for the next few years?
When I read all of the questions, I really thought about this one. I'd like to develop a new course in Nonlinear Analysis and I've actually thought about it for some time. I know that the department is now very tight with people and money, but maybe in a year I can start this course.

What are your interests outside of Mathematics?
I like reading, cooking, and traveling a little bit, but I also like to spend time at home. One hobby I have in the field of mathematics is problem solving. Arie and I have two children. Guy is now 27 and works for Amazon in Seattle. He graduated from Carnegie Melon University with a degree in Mathematics and Computer Science. He's been at Amazon for about a year. He likes Seattle very much. He lives in a very nice place in Belltown and is happy with his life. Taly is now 22, she graduated in May from Yale where she majored in History. She didn't want to compete with her parents and brother, so she went into a completely different field! What she would like to do in a year or two is to go to law school. Right now she found a job that is perfect for her in a non-profit organization, called Connecticut Voices for Children. It's an advocacy group for children in the state. She is very happy with her job and her life.

Actuarial News

The Society of Actuaries Exam P on Probability will be given in Moscow May 16-19, 2006. The exam will be given on computers for the first time. The registration deadline is March 15, 2006. Clancy Potratz will conduct the course Math 455 to help prepare you for the exam.

Go to www.beanactuary.org to get more information on the exam and other information, or see Ralph Neuhaus in 302 Brink Hall.

Recent Graduates

WILLIE BRYANT graduated in December 2005 with a Master of Arts in Teaching Mathematics degree.

BRIAN DORGAN graduated in December 2005 with a Bachelor of Science degree in Applied Mathematics and Chemistry. He also earned a B.S. in Chemical Engineering. He will begin graduate school in Chemical Engineering at UI in January.

ERIC EDWARDS graduated magna cum laude in December 2005 with a Bachelor of Science degree in Mathematics. He plans to attend the University of Rochester as an MBA candidate.

MISTI DAWN FOWLER graduated in December 2005 with a Master of Science degree in Mathematics. She will be a graduate student in Statistics at UI in January.

DAVID HERVEY graduated in August 2005 with a Master of Arts in Teaching Mathematics degree.

SERGIY KRASNOZHON graduated in December 2005 with a Master of Science degree in Mathematics. He will be working in the Ukraine.

TRESA LULOFF-ZARAGOZA graduated in August 2005 with a Master of Arts in Teaching Mathematics degree.

PAUL PARDI graduated in December 2005 with a Master of Arts in Teaching Mathematics degree.

KRISTY RITTER graduated in December 2005 with a Master of Arts in Teaching Mathematics degree.

ALISON SHELTON graduated in August 2005 with a Master of Arts in Teaching Mathematics degree.

Scholarships

Several scholarships are available to mathematics majors. 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.

Eugene and Osa Taylor Mathematics Scholarship

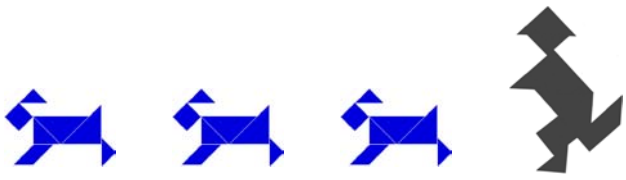
This scholarship was established in 1979 by the family and friends of the first head of the department, Eugene Taylor and his wife Osa. He directed the department from the time he came to the department in 1920 until he retired in 1950. In 1981, his family donated many of his personal mathematics books 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:

Nathan Bialke
Melissa Curd
Eric Edwards
Jonathan Gaffney
John Hamilton
Dmitriy Myedvyedyev
Niu Yang
Blake Brackin
Brian Dorgan
Michael Fernald
Shannon Grant
Peter Marcy
Kathryn Tomaszewski

NSF Scholarships

UI has received a grant from the National Science Foundation to award scholarships to students majoring in Mathematics or Computer Science. Each Scholar will receive $3000 per academic year, for up to 3 years. The Scholars are selected on the basis of high academic achievement and financial need. NSF seeks to increase the number of specialists in the mathematical and computational sciences. The program at UI is directed by James Foster in Biological Sciences, Paul Joyce in Mathematics, and Dan Davenport, the Director of Financial Aid. Math majors chosen this year are:

Melissa Curd
Brian Dorgan
Jonathan Gaffney
Frederick Hole
Fabian Librado
Dmitriy Myedvyedyev
Michael Shaw
Brianna Tweedy
Katie Daves
Michael Fernald
Kyle Harbacheck
Michelle Kalman
Jesse Maclure
Claudia Riegel
Kathryn Tomaszewski
Jesse Walson



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. It is based on merit.

***Timothy Karr, Jonathan Olson, Richard Pendegraft, Abigail Sobczyk,* and *Bryan Wilson* are this year's recipients.**

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.

***Peter Marcy* is this year's recipient.**

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. It is based on merit.

***Brianna Tweedy* 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. It is based on merit.

***Brian Dorgan* is this year's recipient.**

Elna Grahn Polya Scholar Award

This scholarship is given to a student who has demonstrated excellence in and commitment to the application of technology in the teaching of Mathematics. It is based on merit.

***Stacey Patchett* is this year's recipient.**

Past Graduates

MATT BENKE is working for the National Security Agency in the Department of Defense. He graduated from UI in 2003 with a B.S. in Mathematics and completed his M.S. in Computer Science this summer.

RYAN BUSCHERT teaches part time at the Winnemucca Campus of Great Basin College. He graduated from UI in 1996 with a B.S. in Mathematics.

BILL CORDWELL and his son Bob attended the Mathematical Association of America's MathFest in Albuquerque in July. Bill graduated from UI in 1975 with a B.S. and M.S. in Mathematics. Bob was on the 2005 USA Mathematical Olympiad Team. The USA Team placed second in the 46th competition held in Merida, Mexico in July. Bob won a gold medal.

WILLIAM FLETCHER with Judy Parrish, Dean of the College of Science, in July 2005. William graduated from UI in 1966 with a Ph.D. in Mathematics.

BILL KERR is a computer network specialist for the UI Library. He graduated from UI in 1992 with a B.S. in Mathematics.

ERIC MACK returned to UI in January as a Ph.D. candidate in Mathematics and a Teaching Assistant in Mathematics. He earned his B.S. in Mathematics, M.S. in Mathematics, and B.S. in Music Theory from UI in 2002, 2004, and 2005, respectively.

WES OSTERTAG is teaching Mathematics at Dutchess Community College in Poughkeepsie, New York. He was recently awarded the SUNY Chancellor's Award for Excellence in Teaching for 2005. He graduated from UI in 1978 with a B.A. in Mathematics. He received his M.S. in Mathematics from the University of Wisconsin in 1982.

Great Math Websites

Go to the Mathematical Association of America's website to read several online columns on Mathematics.

http://www.maa.org/news/columns.html

The current *Card Colm* reveals several card tricks; Ivars Peterson's *Math Trek* discusses Spreadsheet errors. There are 5 other columns with interesting topics. Check them out!

DAVID PANKEY is the director of underwriting at Regence Blue Shield of Idaho in Lewiston. He earned his bachelor's in mathematics from UI in 1989.

RANDY PATTERSON is teaching mathematics at North Idaho College. He graduated from UI in 1995 with a B.S. in Mathematics.

BOB PRESTEL is a retired Deputy Director of the National Security Agency. He graduated from UI in 1959 with a B.S. in Education and in 1960 with a M.S. in Mathematics. He was inducted into the UI Alumni Association Hall of Fame in 1993.

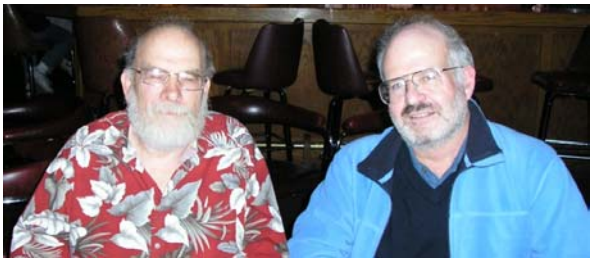
RANDY ROSS is working as a consulting actuary for Taylor-Walker and Associates in Utah. He became an associate of the Casualty Actuarial Society. He graduated from UI with a B.S. in Mathematics in 1990.

PAUL RUMELHART is an IT programmer for Human Resources. He graduated from UI in 1989 with a B.S. in Mathematics.

MARILYN STEIN is the Senior Quality Control person at CCI/Spear in Lewiston. He earned a M.S. in Mathematics from UI in 1994.

BRIAN WATSON is working for Microsoft in Seattle. He graduated from UI in 1990 with a B.S. in Mathematics.

JON WELLNER, Professor of Statistics at the University of Washington, gave a Math Colloquium at UI on September 15. He graduated in 1968 from UI with a B.S. degree in Mathematics. He is shown below with one of his UI professors, Charles Christenson.



Charles Christenson and Jon Wellner

May Graduation

A reception will be held for mathematics graduates and their guests on Saturday, May 13, 2006. 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!

All-Time Mathematics Ph.D. Recipients

The first Ph.D. in mathematics from the University of Idaho was awarded in 1963 to Newman Fisher. The most recent was in May to Zaid Abdo. Here is the list!

1. (1963) **NEWMAN FISHER** wrote his thesis on Differential Equations under Professor Hans Sagan.
2. (1965) **YA-YEN WANG** wrote her thesis on Differential Geometry under Professors Maximilian Pinl and Howard Campbell. Her first position was at UI in Mathematics.
3. (1966) **WILLIAM FLETCHER** wrote his thesis on Theory of Algebras under Professor Howard Campbell. His first position was at LeMoyne-Owen College in Memphis. Pictured, are Howard Campbell (left) and William Fletcher (right) at the 1966 graduation.

4. (1968) **JAMES STERN** wrote his thesis on Manifold Topology under Professor Richard Osborne. His first position was at University of Hawaii.
5. (1970) **FLOYD SPRAKTES** wrote his thesis on Approximation Theory under Professor Howard Campbell.
6. (1970) **WESLEY STONE** wrote his thesis on Knot Theory under Professor Charles Christenson. His first position was at Eastern Washington University.
7. (1970) **YOZO TAKEDA** wrote his thesis on Non-Associative Algebras under Professor Howard Campbell. His first position was at Boise State University.
8. (1971) **DAVID FERGUSON** wrote his thesis on Non-Associative Algebras under Professor Howard Campbell. His first position was at Boise State University.
9. (1971) **TONY HAWORTH** wrote his thesis on Measure Theory under Professor Clancy Potratz. His first position was at California State University, Bakersfield.
10. (1972) **RICHARD BARNHART** wrote his thesis on Combinatorial Topology under Professor Paul Dierker. His first position was at Bryant College, Tennessee.
11. (1972) **LAWRENCE WEILL** wrote his thesis on Manifold Topology under Professor Paul Dierker. His first position was at California State University, Fullerton.
12. (1974) **PHILIP ENGSTROM** wrote his thesis on Differential Equations under Professor Larry Bobisud. His first position was at University of Regina, Canada.
13. (1975) **PAUL PERDEW** wrote his thesis on Ring Theory under Professor Erol Barbut. His first position was at University of Guam.

14. (1975) **CRAIG ZEMKE** wrote his thesis on Topology under Professor William Voxman. His first position was at Coe College, Iowa.
15. (1976) **ROBERT MATTHEWS** wrote his thesis on Shape Theory under Professor Charles Christenson. His first position was at University of Puget Sound.

16. (1981) **JESSE TURNER** wrote his thesis on Formal Languages under Professor Jim Calvert. His first position was at American University, Beirut.

17. (1982) **KATHLEEN (AYERS) ROHRIG** wrote her thesis on Formal Languages under Professor Jim Calvert. Her first position was at Boise State University.
18. (1983) **BRYAN SMITH** wrote his thesis on Knot Theory under Professor Charles Christenson. His first position was at University of Puget Sound.
19. (1989) **MOHAMMAD AZRAM** wrote his thesis on Knot Theory under Professor Charles Christenson. His first position was at University of Peshawar, Pakistan.
20. (1989) **TAE SUG DO** wrote his thesis on Differential Equations under Professor Larry Bobisud. His first position was at Yeunguan Institute of Technology, Korea.
21. (1989) **YOUNG DO (LEE)** wrote her thesis on Differential Equations under Professor Larry Bobisud.

22. (1989) **CRAIG STEENBERG** wrote his thesis on Group Theory under Professor Arie Bialostocki. His first position was at Lewis Clark State College.
23. (1989) **KAZIMIERZ WIESAK** wrote his thesis on Differential Equations under Professor Larry Bobisud.
24. (1990) **MARK LOTSPEICH** wrote his thesis on Additive Number Theory under Professor Arie Bialostocki. His first position was at Albertson College of Idaho.
25. (1994) **WILLIAM CRAINE** wrote his thesis on Fuzzy Graphs under Professor Roy Goetschel. His first position was at US Air Force Academy.
26. (1995) **MICHAEL BRENNAN** wrote his thesis on Differential Equations under Professor Larry Bobisud.
27. (1995) **DANIEL SCHAAL** wrote his thesis on Ramsey Theory under Professor Arie Bialostocki. His first position was at Clarion University, Pennsylvania.

List of Ph.D. recipients continues on Page 7

Faculty and Staff News

BROOKS ROBERTS was an invited speaker at the Midwest Representation Theory Conference at the University of Michigan in early October.

STEVE KRONE and Eva Top, Associate Professor of Biology, will study how antibiotic resistance spreads in bacteria. They have a 5 year grant from the National Institutes of Health to do the study. Top and her students will gather data on the patterns and rates of spread of antibiotic resistance plasmids in a biofilm. Krone and his students will translate the biologists' data into a mathematical model.

HONG WANG described his proof of the Erdos-Faudree conjecture at the Annual Conference on Combinatorics, Cryptography, and Computing in Rochester, New York in October.

In August, **STEVE KRONE** gave an invited talk on Coalescent Theory at the Oberwolfach Workshop on Mathematical Population Genetics.

ARIE BIALOSTOCKI gave a talk at the Integer Conference 2005 in Carrollton, Georgia in October.

STEVE KRONE gave an invited talk on the effect of spatial structure on the evolution of pathogens at the NIH symposium of the Evolution of Infectious Diseases in Bethesda, Maryland in July.

GATEWAY TO CALCULUS is a new project of the department which will enable Math 170 Calculus I to be taught using state of the art technology to students across the nation. This distance learning course will be especially attractive to students from rural high schools where Calculus is not offered. The project is led by **DAVE THOMAS** and **MONTE BOISEN.** Also assisting with the project are **CYNTHIA THOMAS** from WSU as the Partnership Director, **ZHONGXIAO LI**, Research Assistant, and **ANGELA WINDLEY,** Course Development Assistant. The project is funded by a grant from the U.S. Department of Education.





Dave *Monte* *Cynthia* *Zhongxiao* *Angela*

DAVE THOMAS held several workshops in Sandpoint and Coeur d'Alene for the North Idaho Mathematics Projects.

All-Time Mathematics PhD Recipients, Continued

28. (1995) **UNDUPITIYA WIJESIRI** wrote his thesis on Statistical Genetics under Professor Chris Williams. His first position was at Monmouth College, Illinois.
29. (1996) **PETER BLOOMSBURG** wrote his thesis on Combinatorics under Professor Arie Bialostocki. His first position was at Bellevue Community College.
30. (1996) **KENNETH MEERDINK** wrote his thesis on Knot Theory under Professor Charles Christenson. His first position was at Boeing, Seattle.
31. (1996) **DUSTY SABO** wrote his thesis on Combinatorial Geometry under Professor Mark Nielsen. His first position was at Southern Oregon University.

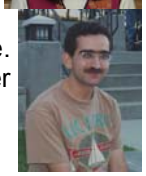
32. (1997) **TERESE MEERDINK** wrote her thesis on Ramsey Theory under Professor Arie Bialostocki. Her first position was at Highline Community College, Washington.
33. (1997) **SAMUEL STOCKETT** wrote his thesis on Fuzzy Sets under Professor Roy Goetschel. His first position was at Luna Community College, New Mexico.
34. (1998) **KATHRINE JOHNSON** wrote her thesis on Probability and Mathematical Statistics under Professor Paul Joyce. Her first position was at Boise State University.
35. (1999) **ALLEN BAILEY** wrote his thesis on Ring Theory under Professor Willy Brandal. His first position was at Univeristy of Maine, Farmington.

36. (1999) **HARRY STEVE MILLS** wrote his thesis on Differential Equations under Professor Larry Bobisud. His first position was at Western State College, Colorado.

37. (2000) **LIXIN HUANG** wrote his thesis on Group Theory under Professor Arie Bialostocki. His first position was at Cylant Technology Company.
38. (2004) **KOFFI SAMPSON** wrote his thesis on Coalescent Theory under Professor Steve Krone. His first position was at Florida State University.

39. (2004) **DANHONG ZHANG** wrote her thesis on Graph Theory under Professor Hong Wang. Her first position was at Utica College, New York.

40. (2005) **ZAID ABDO** wrote his thesis on Bioinformatics under Professor Paul Joyce. His first position was at McMaster University in Ontario.



University of Idaho
College of Science

Department of Mathematics
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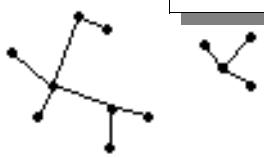
Spring
2006

Prize Problems



1. Let S be a collection of points in the plane such that no two distances between pairs of points are equal. Connect with a line segment each point in S to the point in S nearest it. Show that no point in S is connected to more than 5 others.

2. Select n positive integers $a_1, a_2, \ldots, a_n$. Show that no matter what the order they are arranged, there is an unbroken string of these integers whose sum is divisible by n.

3. Let $S = \sum_{n=1}^{10^9} n^{-2/3}$

   Using integrals, find the integer k such that $k \le S < k+1$.

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, giving a full explanation.
3. One prize per person.

4. Show that any positive solution to

   $x\,(x+1)\,(x+2)\,(x+3)\ldots(x+2006) = 1$

   is less than $\dfrac{1}{(2006)!}$