# Math News

## Research Collaboration in Mathematics Education with WSU

In the summer of 2011, mathematics educators at WSU and UI were awarded a 5-year $5 million grant through the National Science Foundation's MSP program for a project entitled "Making Mathematical Reasoning Explicit (MMRE)." The PIs are Libby Knott and Jo Olson from WSU, and Rob Ely, Anne Adams, and Jennifer Johnson Leung from UI. The MMRE project focuses on building math teacher leaders in small rural districts throughout northern Idaho and eastern Washington. These participants will developing teaching practices that foster mathematical justification and generalization in their classrooms, and then lead the other math teachers in their districts in these practices as well. The participants will be taking classes at the MMRE summer institutes in three cohorts over the next four summers. For more information, please contact Rob Ely at ely@uidaho.edu.
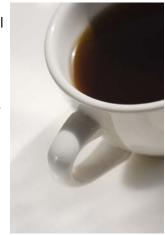
## Letter from the chair

The 2011-2012 academic year was a very eventful one. We said goodbye to Arie Bialostocki as he retired after over a quarter of a century as a Professor in the Mathematics Department and to a Professor emeritus Roy Goetschel who passed away this year. Frank Gao was given a well deserved promotion to full Professor. Also, we welcomed David Yopp to our faculty as a Math Education specialist. His position is half time in the Mathematics Department and half time in the Curriculum and Instruction Department in the College of Education. His position was made possible by a generous donation from Larry (Pre-Med degree, 1956) and Kaye (B.S. in education,1955) Knight. Larry has served the college well for many years as an important member of the College of Science Advisory Board. This is a pivotal time for math education in Idaho and the impact of this gift will be enormous. David will join Rob Ely and Cynthia Piez as we reach out to K-12 students and teachers across the state to make the future of Idaho's children brighter. Other efforts in this area include providing leadership to the Idaho Science Mathematics and Technology Coalition as well as participating in a variety of statewide initiatives to enhance the

quality of K-12 mathematics instruction including developing and delivering professional development courses. Rob Ely is a leader of an important grant that he shares with our Jennifer Johnson-Leung, and with College of Education faculty at UI and at WSU. This grant's purpose is to help elementary school teachers develop the knowledge and skills necessary for them to provide their students with the ability to reason in a careful, mathematical way. Empowering the next generation with both strong computational skills and reasoning skills is essential to the success of our society. Our Polya Math Learning Center is featured statewide and nationally as one of the few successful approaches to supporting student success in entry level mathematics courses and as a means of providing remediation for students needing that level of support. UI continues to be a leader in teacher preparation. Thanks to Barbara and Clancy Potratz, we have been able to provide scholarship support to out-

David Yopp will join the faculty in the fall of 2012 filling our joint Mathematics Education position with the Department of Curriculum and Instruction. He joins us from Montana State University where he was an associate professor of Mathematics Education. Dr. Yopp's interests include proof and reasoning teaching and learning and the knowledge needed for effective mathematics instructional coaching in elementary and middle grades. He is the principal investigator on the 3.5 million dollar NSF-funded DRK-12 Grant *Examining Mathematics Coaching*, EMC http://www.math.montana.edu/~emc/. He has published in the *Journal for Mathematical Behavior*, *Investigation in Mathematics Learning*, *Mathematics Teaching in the Middle School*, *Teaching Children Mathematics*, the *MAA Focus*, and *Linear Algebra and Its Applications*, among others.

**READ MORE ABOUT DAVID YOPP ON PAGE 10**

# An Active Colloquium in 2011-2012

The math department offers regular colloquia every academic year, where the speaker presents specific topics related to his/her research interests in mathematics aimed at a variety of audiences. Organizing the colloquium is one of the most important departmental activities, because each colloquium talk provides a bird's eye view of new developments in the speaker's research field and makes an opportunity to keep us up-to-date with recent progress and future directions in Mathematics.

The colloquium committee consisting of five people, Zaid Abdo, Lyudmyla Barannyk (Chair), Frank Gao, Rob Ely, and Alexander Woo, made a considerable amount of effort to keep this year's departmental colloquia very active. There were altogether twenty-four colloquium talks during 2011-2012. Ten of them were given by outside speakers, which include Konstantin Matveev, Bala Krishnamoorthy, Alex Khapalov, Robert Dillon, David Watkins, and Catherine Cooper (WSU), Enrico Au-Yeung (UBC), Jodi Mead (BSU), Yulia Hristova (University of Minnesota), Fernando Guevara Vasquez (University of Utah).

The 2011/12 colloquium series was very special. It had more interdisciplinary flavor than ever! We invited six speakers from five different departments besides for Mathematics; namely Gabriel Potirniche and Tao Xing (Mechanical Enginnering), Jerry Fairley (Geological Sciences), Marty Ytreberg (Physics), Paul Hohenlohe (Biology/Statistics), and Bahman Shafii (Plant, Soil and Entomological Sciences & Statistics).

Six colloquium talks out of twenty-four were presented by our own faculty members, Alexander Woo, Linh Nguyen, Lyudmyla Barannyk, Monte Boisen, Somantika Datta, Hirotachi Abo, Arie Bialostocki, Hong Wang, and Paul Joyce. On December 8th, 2011, Arie Bialostocki gave his colloquium

*"The 2011/12 colloquium series was very s[ecial. It had more interdisciplinary flavor than ever! "*

talk entitled "On Points in the Plane in General Position", which turned out to be his last presentation at the University of Idaho before his retirement (please also see the article "Retirement of Professor Arie Bialostocki" written by Mark Nielsen). Many people showed up at the reception, which took place before the colloquium, to celebrate his accomplishment in Mathematics as well as his twenty-seven years of service at the University of Idaho with Hummus (a Mediterranean food dip) made by Arie himself.

The department will maintain the colloquium series during the year 2012/13 and will try to coordinate it with the Department of Mathematics at WSU. The schedule will be posted in the website at

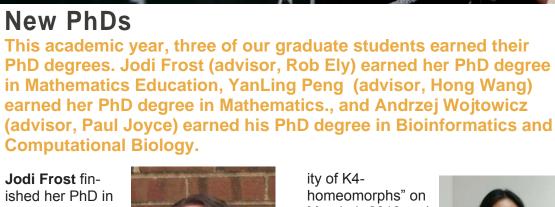http://www.webpages.uidaho.edu/~barannyk/Seminars/ColloquiumUI.html

Finally, if you have a fun math-related story to tell us and are interested in giving a talk, please let us know. We would like to have you as a colloquium speaker!

# New Graduate Students Fall 2011

**Michael Eldredge received his Bachelor's Degree in Mathematics from University of Idaho in 2010. He is pursuing a M.S. in Mathematics.**

**Liang Lu received his Bachelor's Degree in Photo—Electronics from YanShan University in 2006 and his M.A. in Econometrics from NanKai University in 2009. He is pursuing a Ph.D. in Mathematics.**

**Xian Wu received his Bachelor's Degree in Mathematics from Jilin University in 2009 and his Auditor in School of Mathematics from Zhejing University in 2010. He is pursuing a M.S. in Mathematics.**

## New PhDs

**This academic year, three of our graduate students earned their PhD degrees. Jodi Frost (advisor, Rob Ely) earned her PhD degree in Mathematics Education, YanLing Peng (advisor, Hong Wang) earned her PhD degree in Mathematics., and Andrzej Wojtowicz (advisor, Paul Joyce) earned his PhD degree in Bioinformatics and Computational Biology.**

**Jodi Frost** finished her PhD in mathematics, specializing in Mathematics Education, in the summer of 2012. Her dissertation focused on how pre-service teachers understand literal symbols, including how they reason with indeterminate quantities and differentiate between variables and unknowns. This research is important in determining how to prepare teachers who are guiding students through the transition from arithmetic to algebraic thinking in grades 5-7. Jodi started in the fall as a tenure-track assistant professor of mathematics education at Indiana State University.

Indiana State University
More. From day one.

**YanLing Peng** successfully defended her dissertation entitled "The Chromatic-ity of K4-homeomorphs" on March 1, 2012 and received her PhD degree in Mathematics this spring. She will be returning to China and take her held position at Suzhou University of Science and Technology.

**Andrzej Wojtowicz** successfully defended his dissertation entitled "Estimating the number and distribution of beneficial mutations for models of adaptive evolution" on July 23, 2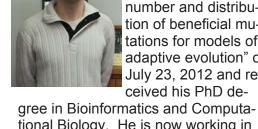012 and received his PhD degree in Bioinformatics and Computational Biology. He is now working in the Department of Animal Sciences at Washington State University as a Postdoctoral Fellow in Dr, Holly Neibergs' Lab

**By Rob Ely Math Club Advisor**

The UI Math Club had a fun year! We picnicked in the fall, investigated Scary Math Paradoxes at Halloween, played games for a night, watched a debate about whether pi or e is the better number, and went to see "mathemagician" Arthur Benjamin. We also had a terrific Pi Day celebration complete with an Integration Bee, a pi-ku contest, and plenty of tasty pie (which, like Euler's formula, combines "pi" and "e" in a delicious way). Thanks to President Audrey Hitchman, Vice President Jessica Herring, and Transcendental Geometer, Meredith Sargent, as well as our faculty math club advisors Drs. Nielsen, Woo, and Ely. For more information about the UI Math Club, contact Rob Ely at ely@uidaho.edu.

# Bialostocki Retirement

**Article prepared by Mark Nielson**


July 2005

## Professor Arie Bialostocki retired at the end of 2011, after having been part of the UI Mathematics faculty since 1984.

Professor Bialostocki's career contributed to all aspects of the Mathematics program at Idaho. Originally trained in group theory, he developed a reputation as a world-class researcher in combinatorics, bringing international stature to the department though his work. His many collaborations with other UI mathematicians (particularly with Bill Voxman and Paul Dierker, but also including Professors Barbut, Snevily, Wang, Nielsen, Gao, Linh, Ely, and Shaska, as well as his wife Dora) enriched the efforts of the entire department.


July 2005

Professor Bialostocki leaves a legacy of seven PhD students (Craig Steenberg, Mark Lotspeich, Dan Schaal, Pete Bloomsburg, Terry Meerdink, Lixin Huang, and Dinh Tran Luong), and numerous undergraduate students who enjoyed his entertaining and colorful anecdotes and advice.

Few University of Idaho faculty members have ever had international connections to rival Professor Bialostocki's. He continues to this day correspondence with mathematicians from India, Kashmir, Iran, Jordan, and China. His friendship with the late Paul Erdös (one of the 20th centuries most noted mathematicians) brought Erdös twice to Idaho in the 1990s.

Professor Bialostocki also maintains contact with many of the students from his summer REU program that he organized at UI from 1999 to 2003. Because of Professor Bialostocki's reputation, the program attracted some of the most promising undergraduate students, and many have gone on to their own outstanding research careers. One participant in the 2000 REU program was David Grynkiewicz, who went on to earn his PhD at Caltech in 2006 and currently holds a research position at Karl-Franzens University of Graz, Austria, with nearly 40 research papers and a book to his credit. "I surely would not be were I am now were it not for the REU program there," David says. He describes the feeling of having solved one of the open problems presented to him by Dr. Bialostocki, and thinking that "maybe, just maybe, I might actually be able to have some success doing mathematics myself. It was the first time I saw myself really having a chance doing math." He adds "I actually find it somewhat humbling to trace back my current career in mathematics and see how unimaginably important that one summer REU program in Idaho would become for me."

From his unconventional advice and stories to his encouragement for young aspiring students, Professor Bialostocki's career was devoted to introducing others to the love he felt for mathematics.



## Undergraduate Award Winners

*Several of our outstanding students have received recognition for their achievement.*

### *Chair's Award for Excellence*
Awarded to graduating seniors in recognition of excellent academic performance.



**Amanda Downen** is from Emmett, ID. After graduation, she will start work for a tax software company called FAST Enterprises as an Implementation Consultant. She says "A memorable moment for me was the bonfire after the homecoming serpentine last semester. I was on the Homecoming Committee and it was amazing to see the school spirit and excitement of the student body along with the support of the alumni. The whole process of planning homecoming was an unforgettable experience."

**Audrey Hitchman** is from Boise, ID. Her immediate plans are to go



back to Boise, find a job, travel, get married! She says her top memories are "hanging out with my co-workers at Polya, accidentally getting myself elected Math Club President but then loving the position :) , joining the Water Polo team and being Assistant Coach my senior year, or the best was the opportunity to spend a year in FRANCE! Thank you for an awesome 3.5 years in the math department!!"

**Nishelle Klinkhamer** is from Kuna Idaho. Her immediate plan is to go to graduate school to get a masters in accountancy leading to a CPA and a career as a financial advisor. She says that her most memorable experience was the academic year that she studied abroad in Mexico.



**Elaine Lee** is from *Sarawak, Malaysia.* She came to the University of Idaho after completing two years at Lewis Clark State College. She is a very talented and determined student who completed both the Applied Statistics and Applied Operations Research Mathematics degrees. She has been accepted to an Operations Research graduate program in Florida where she will continue her studies.

## Frank Gao's Promotion

**By Steve Krone**

Frank Gao is a mathematician known internationally for the quality of his research and the originality he displays in bringing together different fields. Frank's work spans the areas of probability and functional analysis, where he and his co-authors have solved some long-standing open problems. The diverse topics include small ball probabilities for Gaussian processes, metric entropy and approximation theory, convex geometry and harmonic analysis, with applications that extend to statistics, large deviations, etc.

Frank and his wife, Ling, are avid gardeners and also raise chickens. Their generosity extends to hungry colleagues whose gardens are neither large nor overly productive.

**Awarded to graduate students who demonstrate excellence in teaching.**

At Spring commencement **Doug Torrance, Zhenxia Liu, Jesse Oldroyd, Liang Lu, and Masaki Ikeda,** received the Outstanding Teaching Assistant Award.
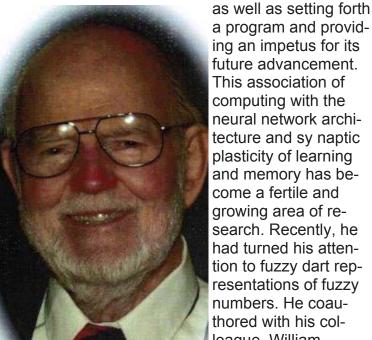
# Remembering Roy Goetschel
**Article prepared by Ralph Neuhaus**

The department mourns the passing in November of Professor Emeritus Roy Goetschel. Roy, survived by his wife Jane and his younger brother Charles, was born and raised in Chicago, Ill. and attended Northwestern University and DePaul University concentrating on mathematics and music. His mathematical development was inspired and guided largely by Dr. Guido Weiss and he earned a doctorate in 1966 at the University of Wisconsin as the first Ph.D. student of the stellar analyst, Wolfgang Wasow. Dr. Goetschel taught at Sonoma State University in California before accepting a professorship in mathematics at the University of Idaho in 1969. In 1971 he met and married Jane Peterson, a University of Idaho graduate assistant in English.

His research centered on fuzzy sets and was directed equally towards the theoretical conceptualization and development of this new area and towards its promising applications in logic, economics, computing, actuarial science and neurology. He was internationally recognized for inaugurating the implementation of fuzzy hypergraphs into Hebbian structures

as well as setting forth a program and providing an impetus for its future advancement. This association of computing with the neural network architecture and synaptic plasticity of learning and memory has become a fertile and growing area of research. Recently, he had turned his attention to fuzzy dart representations of fuzzy numbers. He coauthored with his colleague, William Voxman, a textbook Advanced Calculus: An Introduction to Modern Analysis as well as collaborating with Bill in introducing and developing the concept of fuzzy matroids. Roy had two Ph.D. students, Bill Craine and Sam Stockett.

Roy's outsized enthusiasm, spontaneity, and ready good cheer left no friend or colleague without a plentiful supply of warm and fond memories:

The sworn enemy of the standard 50 minute graduate class, Roy appreciated it when students came early so he could add a couple of minutes to the beginning of a lecture. Adding a couple of minutes to the end of one was never a problem as, when needed, he would plant himself in the doorway while finishing one last pertinent point or quick summary. When criticized about it, he did admit that he'd never really had enough confidence in the practice to employ it in any ground floor classroom with open windows.

A student and friend of Chicago Symphony oboist Alfred Barthel, Roy was an accomplished musician - instrumentalist and vocalist, a passionate fan of opera and German lieder, and endlessly entertaining in conversations sorting out the relative merits of musical works and performers.

To the construction of his house Roy brought a handsaws-on approach although his perfectionism in all things carpenterial required a saint's patience from his wife in the rearing of this abiding work in progress. The exquisite craftsmanship of the stairway that Roy designed and assembled without a single nail moved one particularly knowledgeable admirer to remark that Roy was so meticulous that he never considered a living room corner to be true unless its measurement added at least two places to the known decimal expansion of $\pi/2$.

## We Would Like to Hear From You!

If you have some news/information about yourself that you would like printed in the next Math News, please send your information to math@uidaho.edu or 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*

Several scholarships are available to math 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. The generosity of our donors makes it possible to award scholarships to some of our best students. The following students received the following awards for the 2010-2011 academic year:

# Scholarships Awarded for 2011-2012

### 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. **Hannah Hallock is this year's recipient.**

### Mathematics Graduate Student Scholarship

This scholarship is supported by annual contributions of friends of the department and is awarded to mathematics graduate students. This one time gift is awarded at the discretion of the Math Department. The recipients this year were:

*James Cockreham, Jon Fledderjohann, Masaki Ikeda, Liang Lu, Jesse Oldroyd, Jonathan Olson, and Yijun Wang.*

### 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:

**Monica Agana, Nathan Anderson, Ryan Cook, Thomas Jacobs, Adam Johnson, Emily Moes, Katherine Phelps, and Lee VanGundy,**

### *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.

*Lesley Williams is this year's recipient.*

### Math Deptartment 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. The recipients this year were:

*Hannah Bochsler, Kareen Dahl, Dallas Gosselin, Gg Templeman, Benjamin Tucker.*

### Clancy and Barbara Potratz Math Education Scholarship

This scholarship was established by Clancy and Barbara Potratz. Clancy was on the Mathematics Department faculty from 1966 to 1994. He served as head of the department from 1990 to 1994. The scholarship will be available to full time students majoring in the Department of Mathematics. Students with sophomore, junior, or senior standing are eligible. First preference will be given to students preparing for a career teaching mathematics at the middle through high school levels. This scholarship is based on merit.
*Chelsea Small 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.
*Wayne Thompson is this year's recipient.*

### *Arnold Misterek Family Scholarship*

The Misterek Scholarship was established by Arnold R. and V. Kay Misterek in 2007. Mr. Misterek earned a master's degree from the University of Idaho in 1965. He was a high school math teacher for 25 years. Two of the Mistereks' children graduated from the University of Idaho with math degrees. Mr. Misterek passed away in 2009. The Misterek Scholarship is awarded to graduate students majoring in mathematics, with preference to United States citizens. Selection is based on merit.
*Jonathan Olson and Jesse Oldroyd are this year's recipients.*

### *Leo F. Boron Memorial Fellowship*

Established in 1987 by the colleagues and friends of Leo F. Boron. This fellowship is based on merit and need. It is awarded to international students in their first year in the United States.

# Faculty News
## 2011—2012

**Hirotachi Abo** continued to work on the projects in Algebraic Geometry funded by National Science Foundation. He reported the recent progress on the projects at the AMS 2011 Fall Western Section Meeting at the University of Utah, Salt Lake City, Utah, the AMS 2011 Fall Central Section Meeting at the University of Nebraska, Lincoln, Nebraska, at the 2011 SIAM Conference on Applied Algebraic Geometry at North Carolina State University, Raleigh, North Carolina, and at the Foundation of Computational Mathematics Conference, Budapest, Hungary.

**Lyudmyla Barannyk** participated and gave a talk entitled "Deconvolution closure for mesoscopic continuum models of particle systems" at the Second Annual CAES Workshop on Modeling, Simulation and Visualization, Boise, Idaho, September 8, 2011 She gave a talk "Regularized deconvolution method for modeling mesoscale continuum equations for particle systems" at the Department of Mathematics Colloquium, University of Idaho, September 29, 2011. Another talk was on "Fast algorithms for mesoscale evolution of large particle systems" at the Department of Physics Colloquium, University of Idaho, February 6, 2012. She worked on the research project on "Passivity and Causality Enforcement of Electronic Package Models" that was funded by the University of Idaho Foundation "Micron Mechanics Modeling"

**Somantika Datta** continued to work on an AFOSR funded project. She gave a talk on recent progress on this project in Washington D.C., titled "Low Autocorrelation Stochastic Sequences: Construction and Characterization". She attended the *February Fourier Talks*, an annual conference held at the University

**Rob Ely** published research articles about student reasoning in calculus and algebra. Along with several other math educators at UI and WSU, he was awarded a $5 million NSF grant, *Making Mathematical Reasoning Explicit* (please see the article "Research Collaboration in Mathematics Education" with WSU written by Rob Ely for more details). As part of this grant, he taught courses for 70 teachers and administrators from northern Idaho and eastern Washington at a 2 1/2 week mathematics institute at WSU this summer. He also gave some conference presentations and led a working group on limits and infinity in undergraduate mathematics education. This year he became one of the editors of the journal *Mathematics Teaching in the Middle School.*

**Frank Gao** was an invited speaker for the 2012 NSF-CBMS Conference "Small Deviation Probabilities: Theory and Applications" in June 2012 at Huntsville, AB, and attended Banff workshop on high dimensional probability in October, 2011 at BIRS, Canada.

**Jennifer Johnson-Leung** participated in a workshop on Modular Cycles at the Banff International Research Station in November after being on maternity leave for the first part of the fall semester. In January, she organized a special session at the Joint Meetings in Boston on Arithmetic Geometry. She was also the organizer of this year's Pacific Northwest Number Theory Conference, which brought number theorists from neighboring states and provinces to Moscow for a weekend following graduation. This summer she will be working with Rob Ely, Anne Adams, and several faculty from WSU at the Making Mathematical Reasoning Explicit summer institute for teachers from Eastern Washington and Northern Idaho (please see the article "Research Collaboration in Mathematics Education with WSU" written by Rob Ely for more details). She is also looking forward to leading a project at the third Women in Sage workshop in July.

**Paul Joyce** maintains multiple grants to fund several different projects in Mathematical Biology. He gave invited talks at many different meetings including the MBI workshop "New Questions in Probability Theory Arising in Biological Systems", Columbus, Ohio; Ecology and Evolution of Infections Disease PI meeting, Berkeley, California; Conference in honor of Michael Waterman and Simon Tavaré, Los Angeles, California; Nordstat Statistics Conference, Umea Sweden; Probability, Population Genetics and Evolution Meeting, Marseille France. He was on the review panel of the German Research Foundation, DFG-Priority Programme "Probabilistic Structure in Evolution", Bielefeld, Germany. He also continues to serve as Associate Editor of Biology Letters. Finally, he served as the Chair of the faculty senate during the academic year 2011/2012.

**Steve Krone** gave invited talks at two different conferences at the Mathematical Biosciences Institute (MBI, located at Ohio State University), and the CIRM conference on Probability, Population Genetics and Evolution (in Luminy, France). He also gave a two-day graduate workshop at MBI on Stochastics Applied to Biological Systems and was an invited participant at a Workshop on Antimicrobial Resistance where the goal was to make recommendations for slowing the generation and spread of resistance genes in the environment. He continues to serve as Associate Editor for the Annals of Applied Probability and the Journal of Mathematical Biology.

# Interview with David Yopp

**Article prepared by Hirotachi Abo**

**BIRTHPLACE**
Hayti, Missouri

**FAMILY**
Wife: Misty; Daughter: Chari Anne, age 8 months

**DEGREES**
Bachelors of Science in Mathematics Education: Arkansas State University
Masters of Science in Mathematics: Arkansas State University
Masters of Arts in Mathematics: Indiana University
Doctorate of Arts in Mathematics: Idaho State University

**RESEARCH AREA**
Arguing and Proving in Grades K-14; Impacts of Mathematics Specialists in Elementary (K-8); Grades; Teachers' Understanding of Real Number

**FAVORITE LIVING MATHEMATICIAN:** Keith Weber

**FAVORITE DEAD MATHEMATICIAN:** Évariste Galois because he stayed up all night doing mathematics, certain he would die at dawn in a duel.

**FAVORITE THEOREM:** The equivalence of norms in finite dimensions; it's quite helpful in proving the theorems Matt Damon didn't actually prove in Good Will Hunting

**FAVORITE AREA IN MATHEMATICS:**
Generating Functions

**FAVORITE AMERICAN FOOD:** Elk

**FAVORITE NON-AMERICAN FOOD:**
Lamb Khorma

**FAVORITE MOVIE:** Woody Allen's Crimes and Misdemeanors

**FAVORITE TV SHOW:** IT Crowd

**FAVORITE BOOK:** Richard Russo's Nobody's Fool

**FAVORITE SPORT:** Mountain Biking

**IN MY SPARE TIME I LIKE TO:**
Bird Hunt

**PEAK EXPERIENCE:** Still on my way up, I hope.

**I CAN'T STAND:** Lactose; won't tolerate it for a minute.

**I WISH I KNEW:** How to get students to state H and not C when giving a counter example.
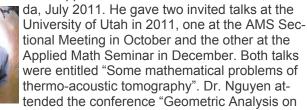
**I WOULD MOST LIKE TO MEET:**
The band Spinal Tap.

**FUN FACT ABOUT ME:** I love grapefruit; couldn't care less about grapes.

# Faculty News Continued

**2011—2012**

**Linh Nguyen** attended the International Congress of Industrial and Applied Mathematics in Vancouver, Canada, July 2011. He gave two invited talks at the University of Utah in 2011, one at the AMS Sectional Meeting in October and the other at the Applied Math Seminar in December. Both talks were entitled "Some mathematical problems of thermo-acoustic tomography". Dr. Nguyen attended the conference "Geometric Analysis on Euclidean and Homogeneous Spaces" held at Tufts University in January 2012. He also gave a talk on "Range description of spherical mean transform on spaces of constant curvature". Right before that, he attended the Joint Math Meetings organized by the American Mathematical Society (AMS) in Boston, MA.

**Mark Nielsen** continues to serve as Associate Dean in the College of Science.

**Kirk Trigsted** presented at the following conferences during the 2011-2012 academic year: Garden State Mathematics Workshop at Bergen County Community College in Paramus, New Jersey, International Conference on Technology in Collegiate Mathematics, Orlando, Florida, and ORMATYC Conference in Lincoln City, Oregon. Kirk was also invited to speak at three universities to share his experiences with course redesign. He spoke to administrators and mathematics faculty at the following institutions: the University of Mississippi, the University of North Florida, and Eastern Washington University. Kirk currently has authored or co-authored eight mathematics eTexts. In Spring 2012, his eTexts were nominated for a prestigious CODiE award for best Mathematics Instructional Solution.

**Alexander Woo** visited and gave talks at the University of British Columbia and the University of Washington. He also attended and spoke at the annual Permutation Patterns conference, held this year in Scotland.

## Outstanding Seniors

Awarded to seniors who have shown exceptional mathematical talent.

**Sarah Helland** is from *Olalla, Washington.* She will be attending the University of Washington to earn her masters in mechanical engineering in the fall, specializing in controls and robotics. Longer term she would like to get her doctorate in the same topic and work in the biorobotics field, designing medical robots and improved prosthetics.

**Nathan Anderson** is from Spangle, WA. This summer he will work as an intern for Bayer Crop-Science in cooperation with University of Nebraska. This will primarily be aiding wheat breeders, but will also involve a meteorology component. In the fall, he will attend graduate school at the University of Oklahoma in Meteorology. He says that his most memorable experiences at UI "include skiing and hiking trips with the outdoors program, ice skating and other events associated with the honors program, and the freedom to take unusual courses outside of my major (ranging from fencing to philosophy, geology, etc)."
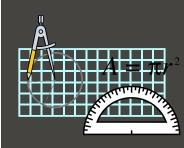
**Katherine Phelps** is from Philomath, Oregon. She completed not only the mathematics major, but also all of the courses prerequisite for admission to medical school and scored very well on the MCAT exam. She expects to begin medical school this fall with the eventual aim of being a pediatric physician.
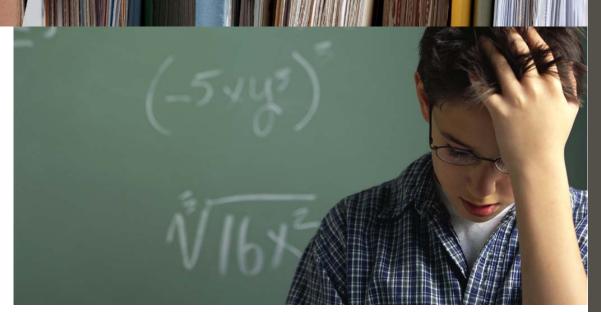
standing students who are planning to pursue a career in this area. It was a great pleasure for me to visit with our first PhD graduate, Newman Fisher (1963), this June in San Francisco. Professor Fisher retired after a distinguished career at San Francisco State University where he served as chair of the Mathematics Department. I appreciated his valuable advice and perspective on issues surrounding being a chair. We greatly appreciate that he continues to be supportive of our program. Diana Johns (BS Math, 1977) continues to serve on the College of Science Advisory Board and provides an important perspective to their deliberations. These are just a few examples of the good work we can do thanks to our alumni and supporters who have remained active math Vandals. In this newsletter, there is a listing of some of the scholarships our generous donors have made possible for us. Especially in these difficult eco-

nomic times any investment we can make in our students is extremely valuable. I thank all of you who have donated to our department to help our students be successful.

We certainly enjoy the accomplishments of our past graduates and faculty but our current students' success is what is most important.  This has been an amazing year. We honored seven exceptional students, three chosen as outstanding graduating seniors and four as recipients of the Chair's Award for Excellence at graduation! Each of these remarkable students is featured elsewhere in the newsletter. The student leadership (Audrey Hitchman and Meredith Sargent) was responsible for a very successful year for the Math Club. Of course, we had pi day activities including the integration bee with a haiku twist and lots of delicious pies. Clearly, there is a lot to celebrate this past year.

You can learn more about the UI Math Department and see a full color version of the newsletter by visiting our website:

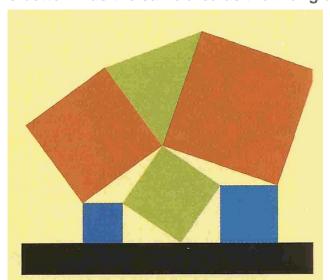**www.uidaho.edu/ math**

$A = \pi r^2$

## Prize Problems

Solve one of the two Prize Problems and you win a prize!!! Some problems may appear hard or impossible, but all have a clear solution if you approach them in the right way. Prizes will be awarded while supplies last. Show or send your written solution to the math department: **math@uidaho.edu.**

**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.

1.  **Five squares are arranged in the picture below.  Show that the middle square on the bottom has the same area as the triangle above it.**



2.  **Consider 2 triangles. The edges of the second triangle have the same length as the medians of the first triangle. Determine the ratio of the areas of both triangles.**

3. **Prove that 1/15 < (1/2)(3/4)(5/6)...(99/100) < 1/10**

## Graduate Student Highlights

**Doug Torrance** and **Jia Wan** gave presentations at the mathematics session of the 93rd annual meeting of the American Association for the Advancement of Science (AAAS) held at the Boise Center of the Grove, Boise, Idaho, from 06/24/12 to 06/27/12 (AAAS is the publisher of the well-known scientific journal *Science*). Both Jia and Doug received the Student Awards of Excellence (First Place and honorable mention respectively). The Student Awards of Excellence are offered to students who make superior presentations at the annual meeting by the Pacific Division of AAAS.