Cal Poly Pomona Mathematics and Statistics

Professor Receives Research Award!

On Tuesday April 23, 2013, Dean Brian Jersky announced that Mathematics and Statistics Professor Hubertus F. von Bremen is the College of Science Ralph W. Ames Distinguished Research Award recipient for 2012-2013. In his announcement, Dean Jersky notes that Professor von Bremen's *record of sustained research productivity and his international reputation, as well as his work with undergraduate and graduate students, are impressive and worthy of recognition*. This honor will be formally announced during the June 16th College of Science graduation commencement ceremony. As part of the celebration of this award, Professor von Bremen will present a seminar on his research to the university community during the fall quarter of 2013. Dr. von Bremen has authored and coauthored publications in the areas of computational methods for nonlinear dynamical systems, structural dynamics, time delayed control of structures, developing, modeling and testing of micro/macro

Ryan Szypowski; Teacher-Scholar

Assistant Professor Ryan Szypowski has been awarded a Provost Teacher-Scholar Award for 2013-14. Only ten Provost Teacher –Scholar Awards were distributed on campus this academic year.

Through the Teacher-Scholar program, Dr. Szypowski plans to continue his efforts to acquire funding from external sources for the adaptive approximation of solutions to non-linear elliptic partial differential equations. In particular, his plan is to focus on funding sources targeted at undergraduate institutions, and to be based on the use of the adaptive finite element method. This approximation method is widely applicable and has an extensive theory of convergence.

Dean Jersky acknowledged Professor Szypowski's award saying:
It's great to see your work getting recognition from your colleagues. Congratulations on a succinct and powerful proposal, which I am sure will lead to further interesting results and more funding in future. Well done!

Associate Vice President for Research Frank Ewers remarked:
I am very pleased to announce that, following extensive review, you have been awarded a Provost Teacher-Scholar Award for 2013-14. Congratulations on this significant stepping stone!

Hi Achieving Seniors...Well Done!

Kara Lynn Rotunno

has maintained an outstanding Grade Point Average of 3.96

Mathematics and Statistics major, Kara L. Rotunno, has maintained an outstanding Grade Point Average of 3.96 which is the highest GPA over all graduating seniors in the College of Science this year. This fact qualifies Kara to be the Valedictorian of the 2013 graduating class.

However, in addition to being class Valedictorian, Kara Rotunno is to be congratulated for also receiving the College of Science McPhee Award. The McPhee Award is presented to only one student in each college in recognition of their outstanding overall contributions. Each college develops criteria for the award based on both academic achievement as measured by grade point average (GPA) as well as co-curricular and service contributions to the college and university, so that the awardee need not be the student with the highest overall GPA. The McPhee awardee is given the honor of delivering a brief speech at the graduation ceremony.

In Kara Rotunno's case, some of the *co-curricular and service contributions to the college and university* considered in addition to her outstanding grade point average were:

Resident Advisor for 2 years for University Housing Service, September 2011-Present: Supervise 60 residents through intentional interactions; handle situations including roommate conflict & emergency procedures and plan educational and community development programs

Member of Society of Women Engineers: motivate high school students to pursue degrees in STEM fields through outreach events; attend tours of company plants and warehouses

Volunteered for YES program, which motivates young girls to pursue degrees in engineering and science

VP of Finance for *The Herd* which is a student fan club that supports the school's athletic teams: student only fan club focused on gaining school spirit through support of Bronco athletics; manage budget & record membership fees

Rose Float member for 1 year

Tutor for MaSH, Math and Science Help, which is located in the Learning Resource Center on campus: assist numerous students in comprehending math concepts; experience working in a culturally diverse environment

Kappa Mu Epsilon: mathematics club focused on networking & becoming successful in mathematics

In addition to Kara L. Rotunno, the graduating class of 2012-2013 is distinguished for having a significant number of very talented mathematics and statistics majors having extraordinarily high grade point averages: The next five highest ranking graduating seniors in Math and Stat with outstanding grade point averages are: **Keenan S. Breik, John D. Miller, Valerie E. Torpey, Yusuf J. Jabri** and **Michelle K. Yang.**

If we did all the things we were capable of doing, we would literally astound ourselves. -- Thomas Edison

Students Have Mathematical Plans...

Here are a few of the exciting Mathematical activities coming up for Cal Poly Pomona students!

Vanessa Salvary will be studying in Iowa City this summer at University of Iowa. She does not know her project topic yet, but it will be in Biostatistics.

Ruben Yuriar will be participating in the University of Minnesota's Summer Institute in Biostatistics (SIBS). He is really looking forward to it, especially because he has never been to Minnesota.

Natalie Gasca received a summer internship position at Johns Hopkins University (Baltimore, MD) through their Diversity Summer Internship Program. She will be helping Dr. Stan Becker with his NIH (National Institutes of Health) research project regarding the sample weights of couples in a household versus the sample weights of individuals.

> *Natalie Gasca will spend the summer at Johns Hopkins University*

Kristin Dettmers will be participating in MIT's Summer Research Program. Her project will deal with the modeling of wave-particle systems.

Kara Rotunno is graduating this Spring and will be working as a Software Engineer at Raytheon Space & Airborne Systems in El Segundo, CA.

John Miller will be attending UCLA this Fall, working towards a Ph.D. in Elementary Particle Theory.

A Special Thank You

$\sqrt{-1}$ ❤ MATH

A big thank you goes out to math student Lynn Haddock who, on her own, purchased and donated a new microwave oven and small refrigerator for our multi-purpose room, 8-146. Lynn, who plans to graduate next year, has a very mathematical family. She and her casualty actuary husband have two sons; one is graduating from the University of California, Santa Barbara with a degree in Financial Mathematics and Statistics and the other son has a Computer Science/Statistics degree. Lynn really appreciates having room 146 as a place to study mathematics and interact with other math majors. She wanted to give back and make it easier for students to have a comfortable setting for doing mathematics.

Joint Mathematics Meetings "Flash Knot"!

Many Cal Poly Pomona mathematics majors participated in a "flash knot" at the Joint Mathematics Meetings this past January, to celebrate the American Mathematical Society's 125-year anniversary. See the video (and explanation!) here:

http://www.youtube.com/watch?v=HTwwOE6IVZY

Future mathematicians participated as well, including Dr. Patricia Hale's granddaughter!

Kappa Mu Epsilon

KME members at broomball event

Dr. Lapidus will be attending the KME Math Club banquet

The local chapter of KME, the national mathematics honor society, has been extremely active this past year. A sampling of some of the fun that has been had includes a Pi day celebration, the integration bee, and broomball! KME also made an impressive showing at the Joint Mathematics Meetings in January in San Diego. Still to come, on May 24 is the KME banquet. This banquet will be at the Restaurant at Kellogg Ranch and tickets are available for purchase.

KME also recently elected their executive board for the 2013-2014 year, and it is:
President: Vanessa Salvary
Vice President: David Contreras
Treasurer: Xavier Pantoja
Secretary: Andrea Wuethrich
Social Chair: Lisa Ngay
Science Council Rep: Ankush Rao

Pi Day at Cal Poly!

Master's Degrees Earned

The Department of Mathematics and Statistics had the following nineteen graduate students successfully complete their Master of Science in Mathematics during Summer 2012, Fall 2012, Winter 2013 or Spring 2013:

Saba H. Ali,

Brandi A. Bailes,

Jung-Jin Judy Choi,

Rolando De Santiago,

Nicholas E. Drake,

Michael E. Freeman,

Dana L. Hasbach,

Gregory A. Henkle,

Brian J. Kahovec,

Peter Kim,

Jin-goo Lee,

Anthony O. Medina,

April M. Morton,

Brandelyn J. Neal,

Christopher F. Sanchez,

Jose Sanchez,

Keven Y. Tsai,

Sarah J. Underwood,

Jiahui Yao

Statistics Corner : New Classes

By Hoon Kim

Two special topic courses in statistics are scheduled . STA 599 (MW 2:00pm-3:50pm; 4 units; Fall 2013) focuses on the statistical computing with SAS and R. Both are widely-used comprehensive software to perform statistical data analysis. This class is open to all graduate students. Advanced undergraduate students are eligible to enroll STA 599 with instructor's consent. The topic for

STA 499 (MW 2:00pm-3:50pm; 4 units; Winter 2014) is Applied Multivariate Statistical Methods. In applications of statistics, many problems arise in which two or more variables (or populations) are to be studied simultaneously. This STA 499 is an applied version of STA 565 and is specially designed for undergraduate students from various disciplines. Any under-

graduate students with statistics option can take STA 499 to fulfill their requirements. Our experienced instructor Dr. Mun will teach both classes.   Any further questions should be directed to Dr. Mun at jmun@csupomona.edu.

New Center

The Statistics Group, as well as interested mathematics faculty, is currently updating the proposal for establishing the Consulting Center that has been on hold for a while. Statistical consulting is an essential service for many researchers at an academic institution. The Center will serve as an interdisciplinary nexus on campus, working to support research and educational activities in the University community and the broader community of industries and local government. The establishment of the Center would benefit our students and the department in many aspects. It has potential for service learning opportunities and in giving the department exposure. Through the industrial partnerships, the Center will provide students with practical and hands-on experience. The Center will further the University's commitment to community service-learning and its educational philosophy "**learn-by-doing**."

New Faculty

The Provost has approved our department to hire one statistics faculty for the upcoming year. This is great news for everyone in the department. Two statistics faculty have left our department. Dr. Phil Yates resigned at the end of spring quarter 2010 and currently teaches in the Mathematics Department at Saint Michael's College, Vermont. Dr. Frank Mathur retired at the end of spring quarter 2011 and lives every day happy in Las Vegas. The number of graduate students who are interested in a Statistics emphasis has been gradually increasing. This is the right time to hire new tenure-track faculty. New statistics faculty will not only cover statistics courses but also advise graduate students on their master's thesis in Statistics and direct undergraduate research projects.

New Celebration

The year 2013 is the International Year of Statistics. The Department of Math & Statistics at Cal Poly Pomona is pleased to participate this worldwide celebration and recognition of the contributions of statistics. "Why celebrate statistics?" The short answer is because statistics have powerful and far-reaching effects on everyone, yet most people are unaware of their connection—from the foods they eat to the medicines they take—and how statistics improve their lives (http://www.statistics2013.org/about-us/).

MathFest 2013!

MAA MathFest 2013 will be held at the Connecticut Convention Center and Hartford Marriott Downtown in Hartford, Connecticut. There will be a complimentary Grand Opening Reception on the evening of Wednesday, July 31, and the scientific sessions will take place from Thursday, August 1 through Saturday, August 3.

MAA MathFest is the largest annual summertime gathering of mathematicians. In 2013, MAA MathFest will offer all of the great sessions that you have come to expect from the conference: Invited Addresses, Invited Paper Sessions, a Short Course, Contributed Paper Sessions, Minicourses and more.

MAA MathFest provides an excellent opportunity for attendees to meet and talk to mathematicians from many varying disciplines, reconnect with colleagues, and enjoy mathematics as a community.

It is not too late to apply to actually give a talk at MathFest! The deadline is June 8. For more information visit the website at http://www.maa.org/mathfest/mathfest.html

Alumni Updates and News

Cal Poly grad Jonathan Neal shares some things he has learned.

Robert Beck (2011) is currently a student in the Ph.D. Program in Mathematics at University of California, Davis. He is at the end of his second year in the program, and just passed the last of his preliminary exams. He will be continuing with the program next year and working toward passing his qualifying exam.

Brittany Camp (2012) will be entering into the Teach for America program as a high school math teacher in June.

Morgan Cole (2011) will be graduating this May from the University of South Carolina with her Master's in Mathematics and plans to move back to California after graduation. She is working this summer in North Carolina for Duke TIP, teaching advanced mathematics to high school students, and will be applying for jobs starting this fall as a Mathematics Instructor in Southern California.

Jonathan Neal (2011 M.S.) will be having a new baby boy in August. He is currently employed with the County of San Bernardino Probation Department as a statistical analyst in the research unit. His job entails a lot of SQL to manipulate data for validation and consumption in a variety of reports for administration. He shares: "Some things I learned as a newly employed student."

1. Chebychev's formula is an awesome way to sift through thousands of data points each month to determine which are unlikely to be true.
2. Doing the stats is the easy part, validating the data, verifying the assumptions and following the process of how that data came to be is where all the work is.
3. Mathematics is awesome!!

Rolando de Santiago (2012) Since completing his Masters at Cal Poly, he has been teaching at East Los Angeles College. He will be attending the University of Iowa to start a PhD program this summer.

COLLOQUIUM

Cal Poly Mathematics and Statistics...Join Us!

By Arlo Caine

We've had an active Colloquium series this academic year and look forward to another good year to come. Industry experts in applied mathematics, such as Dr. Abhi Jain from JPL, have shared with us recent work in a variety of topics, from the control of robotics systems to the numerical simulation of electromagnetic activity in the heart. Education researchers, including our new faculty member Dr. Stacy Brown, have presented analyses of teacher training, professional development, and student learning in mathematics. Mathematicians, such as Dr. Bogdan Suceava from CSU Fullerton, told us of recent work involving undergraduate students in research in fields such as geometry. New features for this year were the start of the series in the fall with a pair of student talks, reporting on results of undergraduate research projects and experiences, and a Distinguished Lecture in the spring. Our distinguished lecturer is Prof. Michel Lapidus of UC Riverside. His talk, titled "Can you hear the shape of a Fractal drum," will survey the grand plan driving his research over the last decade or more which explores a fascinating connection between the geometry of fractal sets and the Riemann Hypothesis, one of the most famous unsolved problems in the mathematics of number theory. Please join us on Friday, May 24, from 4:30-6:00pm in Building 3 Room 2870 for this special showcase of mathematical culture.
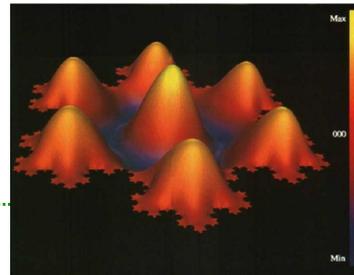
Can you hear the shape of a Fractal drum?

Image from the Lapidus talk

Special Topics Courses

We are pleased to be offering several special topics courses this coming year!

In Fall 2013, Dr. Mits Kobayashi will be teaching a graduate-level Number Theory Course (MAT 599) and Dr. Chris Mun will be teaching a graduate-level course in the statistical software packages SAS and R (STA 599).

In Winter 2014, Dr. Chris Mun will be offering an upper division undergraduate course in Applied Multivariate Statistical Methods (STA 499).

In Spring 2014, Dr. Hubertus von Bremen will be teaching an upper division undergraduate course on MATLAB Programming (MAT 499). Dr. von Bremen wrote the following description of this course:

MATLAB is a software package for interactive numeric computation, data analysis and graphics. It is widely used as a teaching and research tool in industry and academia. This course is geared towards students that are interested in learning how to program in MATLAB and to use it as a problem solving environment. The class we will start with some basics and distinctive features of MATLAB. We will cover arithmetic (and data types), matrices, operators, flow control, M-files, two and three-dimensional graphics. We will also cover aspects of numerical linear algebra and of numerical methods using MATLAB. The course will be homework intensive and there will be one programming project. The prerequisites for the course are C or better in MAT 201, 208, 216 or consent of instructor.

Putman Competition

By Ioana Mihaila and Jennifer Switkes

Every year on the first Saturday of December thousands of college students take one of the most famous (or infamous!) mathematics exam, the *William Lowell Putnam Mathematical Competition*, in short, "the Putnam". The test is administered by the Mathematical Association of America (MAA) and it dates back to the 1930s. It has grown from national to now international level, with 4277 students taking the test in December 2012.

There are two things that make this exam so famous and challenging, the scores and the grading rubric. The test consists of 12 problems, administered in two three-hour sessions of 6 problems each. Each problem is worth 10 points and there are no penalties or negative scores. That being said, each year roughly half the contestants (sometimes more!) achieve a score of 0. Here are percentiles from this year's test:

    1 point = rank 1927, top 45%
    10 pts = rank 1360.5, top 31.8%
    23 pts = rank 495.5, top 11.5%

How is this possible? First, the problems are pretty difficult, not only in the sense of mathematical knowledge, but also in the type of thinking they require. There are no set recipes for solving those mathematical challenges, and a lot of thinking outside the box is required. Then there is the writing of the proofs. Notice that the participants get three full hours for each set of 6 problems, while in a typical college math class you get 8-10 problems in a one-hour exam. That's because it's not about the answer, it's about the writing of the proof. Final-

ly, there's the grading rubric. Unknown to most people, even though each problem is graded from 0 to 10, only scores of 0, 1, 2, 8, 9, 10 are possible. A correctly solved problem with a badly written proof would typically receive a 2 (or maybe a 1!). A correct answer with no proof is worth nothing.
The grading is done manually by a group of mathematicians, with all tests being read two or three times, and the results are not released until April of next year.

In December 2012 a talented group of Cal Poly Pomona math majors showed up on the Saturday before final exam to take "the Putnam." The students were mentored in preparation for the exam by Dr. Ioana Mihaila, from the Department of Mathematics and Statistics, with help from Dr. Arlo Caine and Dr. Berit Givens. When we finally got the answers, we were thrilled to find out that out of the 9 students, 6 got scores higher than 0 (that's way better than the national average!). Keenan Breik, Thu Dinh, and Yusuf Jabri received an impressive 10 each, while Charles Frayne achieved an amazing 23 (ranking him in the top 500 students and getting his name in the results brochure)! All in all, the Cal Poly Pomona team (consisting of Jabri, Frayne and Breik) placed 77 out of 578 institutions from around the world.

This noteworthy performance is something that we can all be proud of. Hopefully the results of this year's team will inspire more students to commit to this challenge, even though for the time that we are on a quarter system the exam will always be given on the Saturday before finals. And if you want to get more acquainted with the exam and practice on problems given during previous competitions, check the Putnam practice sessions held every Fall.

Cal Poly's Charles Frayne achieved an amazing 23 ranking him in the top 500!

"I advise my students to listen carefully the moment they decide to take no more mathematics courses. They might be able to hear the sound of closing doors."
Caballero, James

Dean's List

Hats off to the following math majors who made the deans list in the fall quarter 2012:

Devonna Alatorre
Matthew Allen
Alicia Arrua
Joshua Balkcom
Keenan Breik
Nicholas Caruso
Andrew Chang
Hsin-Jui Chou
Karen Daniel
Shant Danielian
Yuan Fu Deng
Kristin Dettmers
Thu Dinh
Lynn Doyon
Brenda Duenas
Johnny Estrada
Megan Ford
Charles Frayne
Jonathan Gama
Aisi Gao
Natalie Gasca
Juliet Gilek
Robert Giza
Lauren Gomez
Jacqueline Guadarrama
Megan Hans
Shanise Hawes
Brandon Heine
Emma Huynh
Yusuf Jabri
Emily Jasien
Itzia Jeronimo

Renazar Jose
Emi Kaneko
Christine Kchech
Nisha Khilnani
Lindsay Kohorn
Eric La Fevers
Darren Lai
Lydia Lei
Garrett Lew
Talin Masihimirzakhanian
Matthew McDonough
John Miller
Jonathan Mim Mack
Quang Nguyen
Thu-Van Nguyen
Erik Ortega
Nicole Osby
Eddie Pena
Luis Perez
Dan Regan
Miguel Rodriguez
Kara Rotunno
Brighten Schulze
David Severin
Noel Somoza
Scott Tandy
Eric Tapelband
Valerie Torpey
Yosuke Uehara
Adrian Veloz
Heren Wei
Michelle Yang
John Zaheer
Kalin Zaluzec

Congratulations to the following math majors who made the deans list in the winter quarter 2013:

Alicia Arrua
Joshua Balkcom
Monique Betancourt
Louis Bohorquez
Michael Bonilla
Michael Bortis
Karen Daniel
Shant Danielian
Kristin Dettmers
Thu Dinh
Lynn Doyon
Megan Ford
Charles Frayne
Matthew Frutos
Jonathan Gama
Aisi Gao
Natalie Gasca
Robert Giza
Lauren Gomez
Juan Gonzalez
Megan Hans
Brandon Heine
Kelly Hinrichs
Haibin Huang
Emma Huynh
Yusuf Jabri
Emily Jasien
Itzia Jeronimo
Emi Kaneko
Eric Kawaguchi
Christine Kchech
Nisha Khilnani
Eric La Fevers
Darren Lai

Hon Fai Lai
Edward Lee
Lydia Lei
Michael Lessley
Jennifer Levario
Grace Lim
Loc Mai
Liliana Manrique
Talin Masihimirzakhanian
Matthew McDonough
John Miller
David Nguyen
Michelle Nguyen
Quang Nguyen
Erik Ortega
Nicole Osby
Akiyo Oto
Christopher Pino
Hilda Prado
Eduardo Quintanilla
Ankush Rao
Dan Regan
Miguel Rodriguez
Cristina Romo
Kara Rotunno
Noel Somoza
Janice Spradley
Valerie Torpey
Nathalie Torres
Patricia Valle
Adrian Veloz
Brad Vidal
Vanessa Yanez-Guzman
Michelle Yang
John Zaheer
Kalin Zaluzec

The Department Newsletter Committee welcomes news from alumni, current students, faculty and staff. Please contact committee members for information on how to be included in upcoming issues!

Dr. Laurie Riggs, lriggs@csupomona.edu
Dr. Jenny Switkes, jmswitkes@csupomona.edu
Dr. Ryan Szypowski, rsszypowski@csupomona.edu

Upcoming Sabbaticals
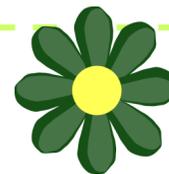
By Jennifer Switkes

This coming year, we have five faculty members going on sabbaticals! A sabbatical can provide the time for a unique mathematical experience that in return benefits the university and students when the faculty member returns refreshed and with new research/teaching experiences to bring to his or her work here at Cal Poly Pomona.

During the Fall Quarter, Dr. Jenny Switkes is taking a sabbatical. She will be traveling to Uganda to teach mathematics at Makerere University in Kampala. While there, she will conduct research with a Ugandan faculty member, Dr. Betty Nannyonga, on a topic related to the mathematical modeling of a disease prevalent in Uganda.

In the Winter Quarter, Dr. Greisy Winicki-Landman and Dr. Lilian Metlitzky will be on sabbatical.

During the Spring Quarter, Dr. Chris Mun will be taking a sabbatical working with Dr. Jun Li from the University of California – Riverside. They will do research on classification for repeated measurements.

Also during the Spring Quarter, Dr. Berit Givens will take a sabbatical. She writes the following:

Last year I was contacted by Dr. Ben Newton, an acquaintance from graduate school. He was about to apply for his first sabbatical and was interested in coming to Cal Poly Pomona to work with me on algebra and semigroup research projects. I agreed and he ended up coming here to work with me a few times in Fall 2012. Since then we've been corresponding by e-mail and continuing to work on our projects. In Spring 2014, I'm going to return the favor by taking my own sabbatical and visiting him. While I'll continue to live here, I'm hoping to be able to fly out to visit Dr. Newton a few times and that I can have a productive quarter focusing on research. Our main project has been reading some material on topological semigroups that is very heavily topology focused and figuring out whether approaching it from a semigroup/algebraic point of view can give us more insights into what is going on.

Makerere University is in Kampala Uganda

Dr. Berit Givens will work with Dr. Ben Newton

Dr. Randall Swift to Travel to the Land Down Under

Since 2005, Professor Randall Swift has had an extremely productive collaboration with Professor Joe Gani of the Australian National University. Their collaborations have led to over 25 published peer-reviewed articles, a co-edited journal special issue on applied probability and several additional articles in submission and preparation. Professor Swift has visited the Australian National University many times over the last 8 years as a visiting fellow, including an extended sabbatical stay. Professor Gani has invited him to visit once again and the Australian National University has generously provided living accommodations and a small living stipend. The visit is scheduled for 16 May – 27 May.

Addition Twister!

Cal Poly Pomona mathematics education students participated in *The Gift of Numbers* at Eagle Canyon Elementary School on May 14, 2013. The event ran from 5:30 pm-7:00 pm; Cal Poly Pomona students arrived at 5 pm to set up their games and activities. We had many families attending with students at this event. Everyone who participated seemed to be having an excellent time. The *Liberal Studies Club* gave awards to the activities and games they found to be impressive. *Addition Twister* was wildly popular! There were 83 Cal Poly Pomona students participating from Math 194, 394, 395, and 494, and more from Dr. Greisy Winicki-Landman's capstone class. A geometry game created by two of Greisy's students was enthusiastically played.

The Gift of Numbers

By Ann Shedden

During Winter Quarter 2013, the Cal Poly Pomona Liberal Studies students enrolled in Math 194, 394, 395 and 494 classes participated in "The Gift Of Numbers" at Barfield Elementary School in Pomona. Although this early field experience happens each quarter, this was our first time partnering with this school, and it was one of our best Gift of Numbers events ever! The principal, Ms. Rosario Ambriz, did an outstanding job getting her elementary school students and their parents excited about attending. This event gives our Cal Poly students an opportunity to design games and activities based on the California State Mathematics Standards and share them with the elementary school students for a fun evening of mathematics. Once again, we appreciated having The Liberal Studies Club judge games and present awards for the ones they determined to be the best and most engaging.

This experience is a great opportunity

Cal Poly and Barfield Elementary students

Cal Poly Student David Severin at Gift of Numbers

The Gift of Numbers for Math Majors

By Greisy Winicki-Landman

Since our last Newsletter, the math major students enrolled in the course MAT 497 were engaged in three Gift of Numbers. These events take place every quarter and this year we were lucky to have some students from the College of Engineering supporting our mission. The first event took place early February in Pioneer Middle School (Upland Unified School District) where more than 250 kids were exposed to several mathematical games and hands-on activities. The second event took place late February at the Fremont Academy of Engineering and Design (Pomona Unified School District) and about 100 kids from local schools participated. The last implementation of the Gift of Numbers was on May 1st and we had the opportunity to play with about 100 kids from Marshall Middle School (Pomona Unified School District) and their parents. This experience is a great opportunity to create bridges between our department and the community. Cal Poly students connect with local school students modeling the idea that mathematics is much more than solving equations.

Cal Poly student Hilda Prado with Pioneer Middle School students

Faculty News

By Ryan Szypowski

The faculty in the department of mathematics is constantly striving to self-improve and accomplish our academic goals. Often this comes in the form of publications and presentations, both purely academic sort and educational. These can also come in the form of in-class experimentation and general department improvement. Below are a few selected accomplishments submitted to the newsletter committee.

Dr. Robin Wilson

Dr. Robin Wilson recently published an education focused paper titled "Developing High School Students Understanding of the Function Concept", with Ed Dubinsky in Journal of Mathematical Behavior Vol. 32 (2013) 83–101. He also gave a talk about this paper on April 1 titled "Supporting mathematics achievement for under-prepared students using the Algebra Project model for experiential learning" at Teachers College, Columbia University. Dr. Wilson has also had a math paper accepted for publication titled "The Coarse Geometry of the Kakimizu Complex", with Jesse Johnson and Roberto Pelayo. This should appear some time in 2013 in Algebraic and Geometric Topology. Finally, Dr. Wilson will be on academic leave on the 2013-2014 academic year serving as a Visiting Professor in the Department of Mathematics and Statistics at Georgetown, University.

Congratulations to Cal Poly Pomona Professors Dr. Lilian Metletzky and Dr. Greisy Winicki-Landman for developing a successful Gates Foundation grant proposal

Dr. John Rock recently gave a talk on May 16, 2013 titled "Dimensions of fractals and the Riemann Hypothesis" as a lead up to the Distinguished Lecture by Dr. Lapidus. He has also published two articles about fractals, one of which is with his graduate student Rolando de Santiago. Dr. Rock is currently involved in updating the webpage for the Math and Stats graduate program. This new redesign is expected to be up and running by Fall 2013 and he welcomes comments and suggestions. Also, for information on suggested timelines for applying to graduate programs, the GREs (general and subject), writing personal statements, templates for writing a master's thesis in our graduate program, or finding a job after obtaining a degree in math, contact Dr. Rock.

Mr. Chuck Hale received special permission to teach two sections of trigonometry (MAT 106) four days a week in the winter quarter. They met for an hour each day Monday through Thursday. They decided to have traditional lecturer Monday, Tuesday & Wednesday, reserving Thursday for "activities" and a weekly quiz. An online homework program was used and supplemented this with traditional "write ups". The pass rate was typical, around 70% however, the quality and depth of the students work was far superior to other Trigonometry classes Mr. Hale has taught over the years. Additionally, an overwhelming majority of surveyed students really liked the four day format.

Congratulations to Cal Poly Pomona Professors **Lilian Metletzky and Greisy Winicki-Landman** for developing a successful Gates Foundation grant proposal through the *CSU Entry Level Math Consortium*. Their proposal is to revise and streamline the Department's College Algebra (MAT 105), Trigonometry (MAT 106) and Pre-Calculus (MAT 112) classes.

Congratulations to Lecturer **Subhash Malakar** for earning a range elevation promotion. Subhash Malakar has taught for Cal Poly Pomona since 1996.

Faculty News...in Memory

Paul Salomaa

Cal Poly Pomona Lecturer Paul Salomaa passed away on January 19, 2013 of arteriosclerosis. His surviving brother and sister-in-law, Sam and Raija Salomaa of Rogers, Arkansas said that Paul's interest in teaching math began early, when he taught his younger sister every subject of math through entering M.I.T. where Paul also was an undergraduate. Paul taught for over ten years at Cal Poly Pomona from 2001 to 2011 when he decided to go back to the University of California, Irvine for his doctorate degree. Unfortunately, Paul was unable to complete that goal. However, Raija commented that *Math was Paul's passion, and we are so grateful he had a chance to teach others the subject he loved.*

"Math was Paul's passion."

Faculty Gather....

Berit and Mark Givens graciously hosted a Math & Stat department party at their home in Upland on Sunday, March 3, 2013. There was a spirited turn-out of family, friends, students, staff, children and pets who came to enjoy each other's company, welcome our latest colleague, Stacy Brown, to our department and celebrate with Alan Radnitz the culmination of his 42 year career at Cal Poly Pomona. Alan delighted everybody by bringing his wife and his wife's mother (who is nearly 104 years old) with him to the party. It was also good to see some retired colleagues (Jack Hofer, Bernard Banks, Yu Chang, Ricki Maslowski, etc.) drop by and bring gifts and best wishes for Alan Radnitz as he closes out his teaching career at Cal Poly Pomona.

Dr. Radnitz and his family

Sudoku

Product Paradox

A student picks four whole numbers less than 10 that are all different and multiplies them together. Another student picks four whole numbers less than 10 that are all different and also multiplies them together. Although the numbers the two students picked are not all the same, they have identical products. How is this possible?

machine augmented composites, composite materials and sandwich structures, mathematical models for population dynamics, contact dynamics in robotics. His work has been cited extensively. Over the course of his career, Professor von Bremen has published about 45 articles and presented 30 professional talks. Almost all his publications are in refereed journals or proceedings. He also has several technical papers associated with his grant activities which include, for example: the Aerospace Corporation and Jet Propulsion Laboratory. Many of Professor von Bremen's more recent presentations are one-hour invited addresses (including keynote addresses) before international audiences of leading researchers. Some of the locations of these international conferences are: Wiesensteig, Germany; Guaratingueta, SP. Brazil; Cartagena de Indias, Colombia; Tossa de Mar, Costa Brava, Spain; Universidad Nacional de Colombia, Bogotá. He has also given presentations closer to home, for example: New Orleans, Louisiana; Birmingham, Alabama; San Diego, California and Riverside, California.

Professor von Bremen has a long and significant association with Cal Poly Pomona. He is a double Cal Poly Pomona alumnus having earned his Bachelors of Science Degree here in Aerospace Engineering in 1986 and his Masters of Science in Mathematics Degree in 1992. Hubertus von Bremen's teaching career began at Cal Poly Pomona. In the early 1990's, he successfully taught (essentially the whole range of our lower-division courses from remedial classes through second-year calculus) as a mathematics instructor for four years. During this time, Hubertus von Bremen and his talented thesis advisor, J. Scott Sportsman, jointly published "Minimum Covering of a Bipartite Graph," in the Cal Poly Pomona *Journal of Interdisciplinary Studies*, Volume 6, fall 1993. Thus Professor von Bremen's first publication was material developed within his Cal Poly Pomona Master's thesis and appeared in print almost twenty years ago.

From 1993-2003, Hubertus von Bremen furthered his higher education and teaching experience at the University of Southern California. He earned two additional degrees at USC: an M.A. in Applied Mathematics and a Ph.D. in Mechanical Engineering. In the late 1990's he also taught at USC as a Teaching Assistant in both Mathematics and Mechanical Engineering. He won Outstanding Teaching Assistant awards from each department. Dr. von Bremen worked as an Assistant Professor in Mathematics from 2001-2003.

> *In 2004, Professor von Bremen returned Cal Poly to take a tenure-track Assistant Professor position in Mathematics*

In 2004, Professor von Bremen returned to Cal Poly Pomona to take a tenure-track Assistant Professor position in Mathematics. In 2007, Dr. von Bremen earned early tenure and promotion to Associate Professor. To achieve this distinction means that Dr. von Bremen was acknowledged as being *extraordinary* at teaching, scholarship and service. In particular, Dr. von Bremen's teaching capabilities are highly regarded and recognized by both his students and his peers. At the end of the 2011-2012 academic year, Professor von Bremen was promoted to Full Professor. During his working time at Cal Poly Pomona, Professor von Bremen has published 21 articles and given 17 major presentations. Since 2004, Professor von Bremen has overseen 25 student research projects. Of this total, Professor von Bremen has significantly contributed to the health of our graduate program by supervising the master's thesis of 20 graduate students. Remarkably, Professor Hubertus von Bremen was able to achieve all of the preceding accomplishments and earn the Ames Research Award while serving as Associate Chair of the Mathematics & Statistics Department from 2007-2011.