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MINI-FOCUS

THE NEWSLETTER OF THE NORTHERN CALIFORNIA, NEVADA, AND HAWAII SECTION, MAA

Allan J. Rossman Wins Section Teaching Award

Allan J. Rossman of California State Polytechnic University, San Luis Obispo was the winner of the Section Award for Distinguished College of University Teacher of Mathematics for the year 2009. The award was presented at the annual section meeting held at the Mathematics Sciences Research Institute on February 20, 2009. The following is taken from the citation presented to Professor Rossman.

Allan Rossman (right) receiving his award from Ed Keppelmann

"Allan J. Rossman began his teaching career at Dickinson College in Pennsylvania. In 2001 he joined the statistics faculty of California State Polytechnic University in San Luis Obispo, California. His primary professional work has focused on the development of curriculum material for teaching introductory statistics courses. With his coauthors he has produced three volumes in the Workshop Statistics series and, with Beth Chance, a text *Investigating Statistical Concepts, Applications and Methods*. In addition he has published 16 journal articles, 7 book chapters, and 6 book reviews, and has spoken at an astounding 79 professional conferences here and abroad, including talks at joint meetings of the American Mathematical Society and the Mathematical Association of America as well as MAA Section meetings. His range of activities extends to colloquium talks on other campuses and frequent participation in minicourses and workshops. For the MAA he directed an NSF-funded project called STATS which supported workshops for mathematicians who teach statistics but have little formal training in the subject. He is also the current President of the International Association for Statistical Education. In short we conclude that he is a tireless ambassador for statistics in the mathematics and science community."

"His many off-campus activities have not, however, interfered with his commitment to the students in his classes. We quote some comments from his colleagues: 'His courses serve as a model in their organization, active- learning approach, use of technology, and focus on conceptual understanding.' 'He makes heavy use of "investigation assignments" . . . and generally grades these assignments himself, providing detailed feedback and assistance aimed at helping the students improve their understanding of the material.' 'He's a very affable, friendly, approachable instructor. What is clear to students is his love for his job.' 'I knew students who would wait at the computer on registration day clicking furiously at exactly 7:00 a.m. to make sure they were registered in his class. . . . This was because of his willingness to get to know each student, taking the time to help them succeed, and teaching a subject in a way that made you enjoy it and never forget it. . . . [He] made a positive, long-lasting impact on my academic career.' "

"We are proud to present this year's Section Award for Distinguished College or University Teaching of Mathematics to Allan Rossman of California State Polytechnic University, San Luis Obispo."

Proposed Section Name Change

The by-laws of the section currently state, "The name of this Section shall be The Northern California, Nevada, and Hawaii Section of the Mathematical Association of America." During the 2009 Section Business Meeting those in attendance approved changing this to "The name of this Section shall be The Golden Section of the MAA for Northern California, Nevada, and Hawaii. Depending on the context, either or both parts of this name (the geographical or the descriptive) may be used to denote the section although it is expected that in most situations the section shall be referred to as simply The Golden Section." The section will be voting at the 2010 section meeting on making this change permanent. All members of the section are encouraged to vote, either in person during the February 27th meeting, or by mailing their vote to Ed Keppelmann, section secretary-treasurer.

As rationale, the Executive Committee of the Section feels the current section name can be cumbersome, and the proposed name is mathematically significant and connotes the strong links between areas of the section and things golden. Although most people know Nevada for its tourism and gaming, Nevada produced in 2008 almost 76% of the nation's gold (177 metric tons) and ranks fourth in the world behind Australia, South Africa, and China. Hawaii is known for an abundance of golden sunshine. During the Gold Rush of 1849 to 1851 in northern California, Hawaiian agriculture boomed as Irish and sweet potatoes, onions, pumpkins, oranges, molasses, and coffee were sent to California. Today Hawaiians are very proud of their Kamiya gold papayas and pineapples.

Members who cannot attend the 2010 section meeting (especially our dear friends in Hawaii) are urged to share their thoughts on this proposal with the section secretary-treasurer Ed Keppelmann at keppelma@unr.edu . The full section by-laws are available at
http://wolfweb.unr.edu/homepage/keppelma/ByLawsNoCaNeHi.htm

Members of the section, i.e., members of the Mathematical Association of America who reside within the boundaries of the section, may vote at the 2010 Meeting at the University of San Francisco (where paper ballots will be available), or by completing the following ballot and mailing it by February 19th it to Ed Keppelmann, Department of Mathematics & Statistics, MS 084, University of Nevada, Reno, NV 89557.

If you wish to vote anonymously then please do not sign the ballot but seal it within an envelope with your printed name, signature and date. There will also be envelopes available at the meeting for this purpose.

Proposal to change the by-laws of the section section name to

I. NAME. The Golden Section of the MAA for Northern California, Nevada, and Hawaii. Depending on the context, either or both parts of this name (the geographical or the descriptive) may be used to denote the section although it is expected that in most situations the section shall be referred to as simply The Golden Section.

I approve of this change: _____ I don't approve of this change: _____

Name: _____
I am a member of the MAA and reside within the geographical boundaries of the Northern California, Nevada section (put your home zip code if you are not sure and we will confirm this). _____

Report on the 2009 Meeting at MSRI

At one of the most prestigious meeting locations ever enjoyed by the members of our section, we were all delighted to meet at the beautiful and excellent facilities of the Mathematical Sciences Research Institute above the UC Berkeley Campus. Marvelous talks and intellectual interactions of all sorts occurred overlooking the scenic Bay and Ocean beyond. 210 math enthusiasts (up 37 from 2008) helped to make the day unforgettable. Making up over 40% of the attendees the 85 students who attended were probably the highest percentage ever for our youngest members. The section owes a great deal of thanks to **Robert Bryant** and his staff for making everything run so smoothly. Continuing a tradition started in 2008 we again gave out t-shirts (this time depicting a very intriguing tiling on behalf of the golden section) free to all our student attendees. Unlike what happened in 2008 where yours truly came home with some extras for his family and friends, there was not one extra of these marvelous souvenirs.

The crowd was treated to 27 poster presentations (also up by 11 from 2008) and 5 great talks including two great representatives of MSRI itself. Robert Bryant (executive director of MSRI and currently chair of our section) started us off with an intriguing look at holonomy. This 100 year old concept is still very relevant in the study of a variety of invariants of geometric structures. Robert's example of a ball rolling on a surface (without slipping) and arriving or not at various locations on the plane with a given orientation made it particularly easy and enjoyable to appreciate this concept. **David Bressoud** of Macalester College looked deeply into the alternating sign matrix where rich history starting from Lewis Carroll and passing through important work at the Institute for Defense Analysis and drawing on specialists in combinatorics, algebra, and analysis gave a rich tale with many different ways of seeing the role of proof in mathematics (see Proofs and Confirmations: The story of the Alternating Sign Matrix Conjecture published by the MAA). Over lunch, **Frank Farris** (section governor and editor of Mathematics Magazine) shared a personal yet deeply mathematical story of the stained glass window that he commissioned to be built for his home in memory of his mother. (See it on the page 12.) The mathematics of complex functions and the spectrum of colors needed to visualize them along with the aesthetics and engineering of building a physical object for these ideas is a delightful story (see http://math.scu.edu/~ffarris/FocusFinalPDF.pdf)

After lunch **Kevin McCurley** of Google research gave us a view of the world-wide-web as a directed graph whose vertices are web pages and whose edges are the links among these pages. Finding efficient and fair ways to search this structure is an everchanging mathematical challenge of extreme importance. We finished our day with a deep discussion by **Hélène Barcelo** of MSRI of subspace arrangements and the beautiful mix of combinatorics, algebra and geometry that have given a rich history to this subject.

Climbing to the heights of MSRI

A whole variety of topics were touched upon in the 27 poster presentations (organized beautifully by **Julie Glass** of Cal State East Bay) and yet there were inviting trends. The full set of abstracts, speakers and affiliations) is available at http://wolfweb.unr.edu/homepage/keppelma/documents/Posters2009.pdf

7 of the posters were combinatorial in nature. These included a study of sequences of graph theory; placing pieces on a checkerboard to avoid rectangles; work started by Ramanujan ; the matrix theory of certain partitions and counting permutations which are pattern avoiding.

6 of the posters were medical in nature ranging from software which simulates site specific DNA recombination; the randomness of DNA

knots; the thermal properties of circular DNA structures; the mechanics of inter-cell communications and the applied mathematics and simulation of blood clotting.

9 of the posters touched on other topics of applied mathematics. Some used Monte Carlo or other stochastic methods to simulate level set estimators or the dynamics of social networks. Other topics involved the cryptography of secure image transmission, improving on the check digits of German Bank Notes, and the design of efficient traffic circles. There were 2 posters on Fluid mechanics. One of these was more traditional applied math studying the filming of fluids on cylinders and one of them was very theoretical in nature about the algorithm of Diffusion Limited aggregation for optimal transport.

2 posters used linear algebra in either studying the range of period 3 linear operators or using least squares solutions for fitting squares inside various regular pentagons.

3 posters covered pure math topics which used a mix from pure algebra (derivations and anti-derivations in the ring of integers) through a combination of hyperbolic geometry and algebraic topology to a study of braids via discrete configuration spaces.

2 expository posters touched on the UC Davis Math circle (great training for graduate students!) and the history of mathematics in ancient Babylon.

This was a mix with literally something for everyone, and we all owe our huge appreciation and thanks to the many faculty mentors who made all this work possible: **Tony Mendes**, **Linda Patton**, and **Jonathan Shapiro** (Cal Poly SLO); **Sergei Fomin; Benjamin Levitt** (Chico State); **Anant Godbole** (East Tennessee State); **Laurens Gunnarsen** and **Tatiana Shubin** (San Jose State); **Richard Scott** and **Byron Walden** (Santa Clara); **Javier Arsuaga**, **Yitwah Cheung**, **Arek Goetz**, **Jupei Hsaio**, **Rob Scharein**, **Zoe Talbot** and **Mariel Vasquez** (SFSU); **Rick Luttman**, **Sunil Tiwari**, and **Steve Wilson** (Sonoma State); **Lucas Sabalka** (SUNY Bingampton); **Wolfgang Polonik**; **Fu Liu**; **Robert Guy**; **Brant Jones**; **Jesus De Loera** and **Qinglan Xia** (UC Davis); **Ed Keppelmann** (University of Nevada);

—Ed Keppelmann, Secretary-Treasurer

News from the Departments

Humboldt State University: Professor **Phyllis Chinn** was awarded one of the highest honors bestowed by the Association of Women in Mathematics, the 2010 **Louise Hay Award**. Professor Chinn has long been known as an accomplished graph theorist and is now nationally recognized as a eminent mathematics educator.

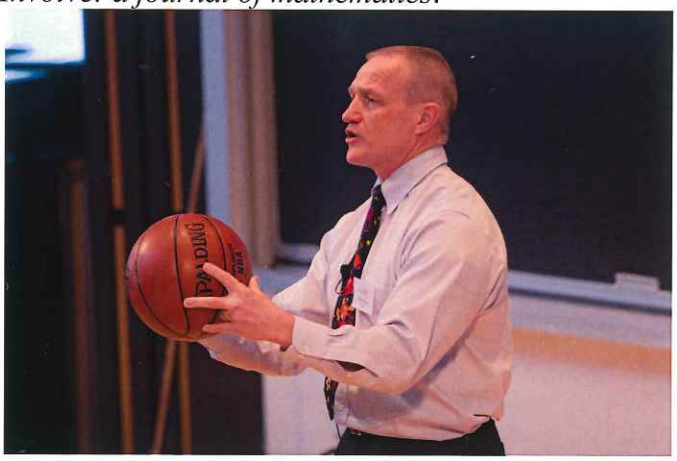
Professor **Rob Van Kirk** has won two grants; one from the **National Park Service**, and one from the **National Marine Fisheries Service.** Each support two students, two of whom, **Kai Ross** and **Anna Morgante**, are in the Mathematical Modeling program at HSU.

Professor **Dale Oliver**, in collaboration with partners from CSU Channel Islands and CSU Monterey Bay, and support from the National Science Foundation, has established the California Coast Noyce Scholars Program. This partnership aims to encourage talented Science, Technology, Engineering, and Mathematics (STEM) majors and professionals to enter into the teaching profession and teach high school mathematics. Each Noyce Scholar may receive up to three years of funding with stipends of $10,000 per year and professional development activities. In return for funding, scholars agree to teach two years in a "high needs" school district for each full year of support. For additional information, contact Professor Oliver.

Professor Oliver also received funding from the CSU Chancellor's Office for *MSTI-Tutors: An Early Experience in Teaching Mathematics*, a project intended to increase the number of students from STEM fields who earn single-subject credentials in mathematics. The competitive program will expose participants to the rewards of teaching through work in the HSU Math Department tutoring lab, and/or through work as a teaching assistant in a local 6 – 12 classroom, the types of early fieldwork experiences have been shown to increase the level of interest among cohorts of STEM students toward the teaching profession.

University of San Francisco: Professor **John Stillwell**'s book, *Yearning For the Impossible*, won the AJCU/Alpha Sigma Nu National Book Prize.

Santa Clara University: **Glenn Appleby** was asked to serve as Acting Associate Dean of the College of Arts and Sciences for 2008-2009 and also presented a paper at the October AMS sectional meeting in University Park, Pa. **Laurie Poe** received the David Logothetti Award for Teaching from the College of Arts and Sciences. **Frank Farris** gave the MAA Carriage House Distinguished Lecture in September on "Hyperbolic Wallpaper." **Rick Scott** serves on the coordinating committee for the Bay Area Discrete Mathematics ("BADMath") Days. A paper co-authored by Professor Scott and **Rebecca Glover** (Santa Clara University recent graduate) just appeared in *Involve: a journal of mathematics*.



Robert Bryant about to roll, but not bounce, a basketball into position, at the 2009 meeting.

California State University, East Bay: CSUEB hosted the Nineteenth Bay Area Discrete Math Day (BADMath Day) on Saturday, October 17, 2009. Keynote speakers were **Tom Edmunds and Dmitry Kozlov**. BADMath Days are one-day meetings aimed at facilitating communication between researchers and graduate students of discrete mathematics around the San Francisco Bay Area. These days happen twice a year and strive to create an informal atmosphere to talk about discrete mathematics.

Phillip Williams, an undergraduate at CSUEB, has been admitted to the McNair Scholars program. He is doing research on "perfect strategies for the ride and tie race" under the supervision of Professor **Ellen Veomett.** The goal of the McNair Scholars Program at CSUEB is to introduce students from eligible groups to graduate school, opportunities for academic research experiences, and the intellectual rewards of graduate study during their undergraduate training.

CSUEB undergraduate **Alex Casata** revitalized the department's Mathematics Club. They have been meeting regularly and have had several speakers.

New Hires

Brad Ballinger has joined the faculty of Humboldt State University. He earned his Ph.D. from UC Davis in 2003, and his teaching credential from Project IMPACT in 2008. **Weiwei Pan** is new to the Saint Mary's math department. She was awarded her Ph.D. from Wesleyan University in 2008.

Photos

All the photographs in this year's newsletter are courtesy of Jonathan Shapiro of Cal Poly. Thanks, Jonathan!

Northern California Undergraduate Mathematics Conference

The Sonoma State University Mathematics and Statistics Department hosted the fifth annual Northern California Undergraduate Mathematics Conference on April 4, 2009. Students from numerous colleges and universities in Northern California gave 18 excellent talks on topics such as statistical consulting, geometry, number theory, and mathematical modeling. The conference featured a very successful career panel discussion with three mathematicians from industry and research who showed specific mathematical problems that come up in their work. The conference concluded with a fascinating keynote talk "Tropical Mathematics" by **Bernd Sturmfels** from UC Berkeley. Mark your calendar for the next conference, scheduled for April 17, 2010 at San Jose State University. See http://www.math.sjsu.edu/nocalumc/ for details. Registration for student speakers will open February 15, 2010.

New Jobs, New Responsibilities, New Ideas

In 1994, **Jim Leitzel** and **Chris Stevens**, with the support of the Mathematical Association of America, created **Project NExT** (New Experiences in Teaching). Project NExT is a professional development program of the MAA for new or recent Ph.D.s in the mathematical sciences that addresses all aspects of an academic career: improving the teaching and learning of mathematics, engaging in research and scholarship, and participating in professional activities. It also provides the participants with a network of peers and mentors as they assume these responsibilities. Since 1994 Project NExT has graduated over 1000 fellows, who have appeared in all capacities in the academic mathematical profession.

Since Project NExT can only support a limited number of fellows per year, MAA sections have been encouraged to develop their own Section NExT programs. Section NExT programs are local versions of the national program that integrate Project NExT's goals with the local goals of the MAA section. The NorCal-NV-HI MAA has now established a Section NExT program. Our Section NExT will operate with same goals as the national program, but will specifically serve the members of our NorCal-NV-HI MAA section. In addition to supporting the new faculty in our section as they integrate into the mathematical profession, our Section NExT aims to (1) promote collaboration and interaction between faculty from the many different types of institutions in our region; and (2) encourage the participation of new faculty in the activities of the NorCal-NV-HI MAA section.

The NorCal-NV-HI Section NExT will meet at the same location and during the same day as our annual MAA section meeting. We will provide activities for Section NExT fellows before and after the MAA meeting, followed by a banquet for fellows and invited speakers in the evening. Fellows are encouraged to participate in MAA meeting between Section NExT activities. The Section NExT program will consist of panel discussions, workshops and talks by invited speakers, and will address issues of special relevance to new faculty. We will create a List-serve for all Section fellows where they may openly discuss their interests and concerns with a regional network of mathematicians through out the year.

We welcome applications for membership from all full-time mathematics faculty members in the region, who hold a Masters or a Ph.D. degree in the mathematical sciences, during their first six years of teaching at the college level. National Project NExT fellows, at their own request, will be automatically given NorCal-NV-HI Section NExT membership. We especially invite Project NExT fellows from all years to join us in expanding on the ideas from our national NExT experiences in our Section NExT programming! For more information and applications forms, see our website at: **http://galileo.stmarys-ca.edu/wp1/norcalnext.html/** or contact one of the NorCal-NV-HI Section NExT organizers for more information: **Maia Averett, maverett@mills.edu, Ralucca Gera, rgera@nps.edu, Weiwei Pan, wp1@stmarys-ca.edu, Cornelia Van Cott, cvancott@usfca.edu**

Looking from MSRI over the Lawrence Hall of Science, Berkeley and San Francisco Bay at the end of another wonderful meeting.

Call for Student Posters
for the
2010 Mathematical Association of America
Northern California, Nevada, and Hawaii Section Meeting

When: Saturday, February 27, 2010

Where: University of San Francisco, San Francisco, California

What: Presentations of research, new approaches to old problems, solutions to problems from mathematics journals, results of class projects or mathematical modeling contests, historical investigations in pure and applied mathematics, mathematical topics outside the standard curriculum, or mathematical investigations arising from internship experiences

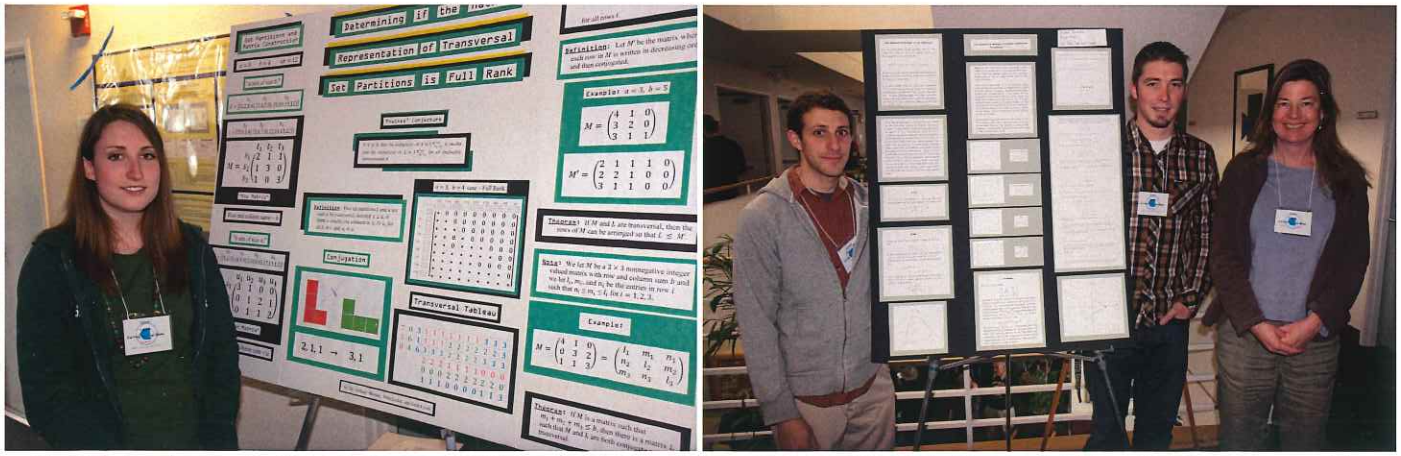
Who: All undergraduate and graduate mathematics students

Why: The meeting provides a great opportunity to learn about interesting and entertaining areas of mathematics as well as to network with other students and professors. Student presenters receive **complimentary registration and Saturday luncheon**, plus a **free one-year membership to the MAA** or (to those who are already members) a **free book**.

Details: All student posters should be typed, illustrated, and displayed on a poster board that is 3 feet high and 4 feet wide. Posters will be on view throughout the meeting, including during a scheduled poster session.

What to do: If you wish to participate or have any questions (*e.g.*, whether your idea is appropriate for presentation, what size font to use on your poster), contact Dr. Julie Glass at the address below. Participants are encouraged to have an e-mail address, possibly through a faculty mentor, where they can be contacted. Submit your name and abstract (2 to 5 sentences), including poster title, name of institution, and name of faculty advisor (if applicable), to Dr. Glass, preferably by e-mail, by Friday, February 19, 2010.

Contact: Dr. Julie Glass. Department of Mathematics, California State University, East Bay, Hayward, CA 94542, (510) 885–3997 (Office), (510) 885–4724 (Fax), julie.glass@csueastbay.edu



Cal Poly students Sarah Lyons, Michael Mazzella and Ryan Harris (from left to right), along with Professor Linda Patton, during the 2009 student poster presentation.

Call for Nominations
for the
2010 Mathematical Association of America Distinguished College or University Teaching Award

Each year the MAA identifies outstanding teachers of college mathematics and recognizes their achievements in the sections and at the national level. Initial nominations for the section Distinguished Teaching Award are due in early November 2010.

In past years the work of preparing nomination documents (letters of recommendation, teaching evaluations, etc.) has inhibited some potential nominators. To ease that burden, the award committee introduced a simpler, two-stage approach and was rewarded with a dramatic increase in the number of nominees. Initial nominations, consisting of a simple form and a statement by the nominator, are due in early November 2010. After reviewing these preliminary nominations, the award committee will ask submitters of clearly competitive nominations to complete additional documentation for the Section Award and for consideration for a National Award.

The formal Call for Nominations and the Nomination Form files, both in pdf format, are available at the site `http://wolfweb.unr.edu/homepage/keppelma/maanc.html` . These files describe the award, eligibility requirements, and the timeline for review. The Nomination Form and statement by the nominator can be submitted via the postal system or electronically to either of the addresses listed at the bottom of the Nomination Form. An e-mail acknowledgment will be sent upon receipt of the nomination package.

Thank you for your assistance in this important effort. Please direct questions to Professor James T. Smith, Awards Committee Chair, at the address below.

Professor James T. Smith, Department of Mathematics, San Francisco State University, San Francisco CA 94132, smith@math.sfsu.edu/

Previous Winners: An asterisk precedes names of winners of a national Haimo Award.

1992 G. D. Chakerian, University of California, Davis
1993 *Paul R. Halmos, Santa Clara University
1994 Jane Day, San José State University
1995 *Edward M. Landesman, University of California, Santa Cruz University
1996 G. Thomas Sallee, University of California, Davis
1997 Jean J. Pedersen, Santa Clara University
1998 Donald C. Pfaff, University of Nevada, Reno
1999 *Leonard F. Klosinski, Santa Clara University
2000 *Evelyn Silvia, University of California, Davis
2001 Wade Ellis, Jr., West Valley College
2002 *Paul Zeitz, University of San Francisco
2003 Peter Tannenbaum, California State University, Fresno
2004 *Gerald L. Alexanderson, Santa Clara University
2005 Russell Merris, California State University, East Bay
2006 Tatiana Shubin, San José State University
2007 William Fisher, California State University, Chico
2008 John B. Thoo, Yuba College
2009 Allan J. Rossman, California State University, San Luis Obispo

New Department Chairs

Mark Rizzardi is the new chair of mathematics at Humboldt State University. **Stephen Devlin** has taken on the same position at the University of San Francisco.

Section Executive Committee Meetings

The Executive Committee of the Section meets in April and October each year. If interested, please contact section secretary-treasurer Ed Keppelmann at keppelma@unr.edu for dates and locations.

Directions to the University of San Francisco

Consult the web site http://web.usfca.edu/directions/ for driving directions to USF.

Parking

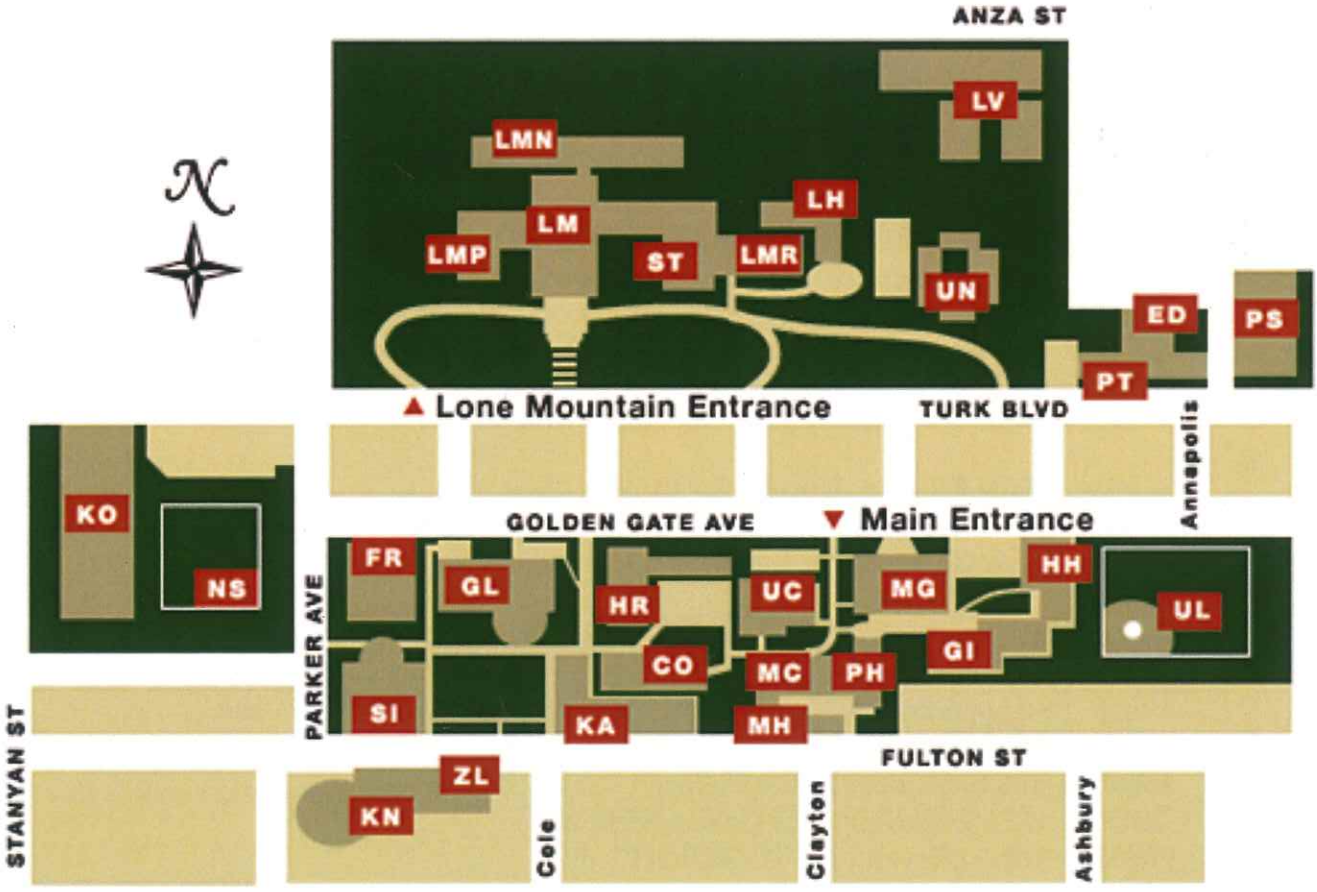
Parking will be available in the Koret lot, which is a two level structure on the corner of Parker and Turk streets, directly east of the Koret center labeled KO on the campus map (the garage is visible as a beige polygon, but not labeled, on the map). No permit is needed, and parking is available on both levels.

Public Transportation

Consult http://www.usfca.edu/publicsafety/parking/commuter.html for information on public transportation. The SF Muni bus lines, 5 Fulton and 31 Balboa, run parallel to the University of San Francisco on Fulton and Turk Streets and stop directly at the Kendrick School of Law, Main Campus and the Lone Mountain Campus. Visit the SF Muni website at http://www.sfmuni.org for details.

BART, Bay Area Regional Transit is separate from the SF Muni system. For BART information please visit their website at http://www.bart.gov.

All MAA events to be held in McLaren Conference Center (labeled MC below)



The UNIVERSITY *of* SAN FRANCISCO

MATHEMATICAL ASSOCIATION OF AMERICA
NORTHERN CALIFORNIA, NEVADA, AND HAWAII SECTION
Saturday, February 27, 2010
University of San Francisco

All events held in the
McLaren Conference Center

PROGRAM

8:30–9:30 Registration, Coffee Hour, Book Sales
Registration Fee: $15 ($5 for retirees; $1 for students and unemployed)

9:30–10:20 **Clifford Taubes**, Harvard University
"The Mysteries of 4-dimensions"
Presider: **TBA**

10:20–10:30 **MAA Section Business Meeting**
Presider: **Robert Bryant**, MSRI; Section Chair

10:30–11:00 **Student Poster Session**

11:00–11:50 **Estelle Basor**, Deputy Director, American Institute of Mathematics
"Eigenvalues of Toeplitz Matrices"
Presider: **Tatiana Shubin**, San Jose State University

12:00–1:10 **Luncheon***

1:15–2:00 Presentation of the 2009 Section Award for Distinguished College or University Teaching of Mathematics

Speaker: **Wade Ellis, Jr**, West Valley College (Emeritus)
"Inquiry-base Learning in Freshman and Sophomore Mathematics Courses"
Presider: **Dean Gooch**, Santa Rosa Junior College; Section Program Chair

2:10–3:00 **Daniel J. Teague**, North Carolina School of Science and Mathematics
"Developing Future Mathematicians with High School Mathematics"
Presider: **Stephen Devlin**, University of San Francisco; Section Vice Chair

3:10–4:00 **John Martin**, Santa Rosa Junior College
"Gold Rush! – Discovering the Golden Section"
Presider: **Robert Bryant**, MSRI; Section Chair

*Advance reservation for luncheon ($20.00) is required.

Section web site: http://wolfweb.unr.edu/homepage/keppelma/maanc.html

Program Abstracts

CLIFFORD TAUBES, Harvard University; "The mysteries of 4-dimensions"

Abstract: What with the three dimensions of space and the fourth dimension of time, our universe has four apparent dimensions. A goal of astronomy is to determine the large scale shape of the universe. This raises the following mathematical question: What are the possible large scale 'shapes' of four dimensional spaces? One can ask this same question for spaces of any dimension. As it turns out, the answer is more or less known for all dimensions except dimension 4. In dimension 4, we only know exactly how ignorant we are. I hope to explain why four dimensions is different than the others, and where the boundary of our knowledge/ignorance lies.

ESTELLE BASOR, Deputy Director, American Institute of Mathematics; "Eigenvalues of Toeplitz Matrices"

Abstract: Toeplitz matrices arise in many areas of mathematics including analysis, probability theory, and mathematical physics. These matrices are characterized by the property of having constant values along each diagonal. The focus of the talk will be to describe the limiting behavior of the eigenvalues as the size of the matrix grows and why we should expect (or not expect) such behavior. Many pictures and examples will be presented.

WADE ELLIS JR., West Valley College (Emeritus); "Inquiry-base Learning in Freshman and Sophomore Mathematics Courses"

Abstract: Mathematical learning objects can promote understanding by allowing students to act on mathematical objects, transparently observe the consequences of their actions, and reflect on the mathematical meaning of these consequences. Many such learning objects exist, but there are few well-developed sets of inquiry questions that can guide student construction of mathematical meaning through reasoning and sense-making. Such objects and their associated inquiry questions will be presented and discussed.

DANIEL J. TEAGUE, North Carolina School of Science and Mathematics; "Developing Future Mathematicians with High School Mathematics"

Abstract: The North Carolina School of Science and Mathematics has students whose backgrounds span the full mathematical spectrum. Some have never been taught by anyone certified in mathematics while others have attended RSI (Research Science Institute) and MOSP (Mathematical Olympiad Summer Program) sessions. In this presentation, we will consider some of the mathematical challenges that we present to students as they move through the high school curriculum. Examples will be taken from Precalculus, Calculus, Graph Theory, and Differential Equations.

JOHN MARTIN, Santa Rosa Junior College; "Gold Rush! – Discovering the Golden Section"

Abstract: Over the years many people have ascribed mystical properties to the number known as the golden ratio. Recently, several authors have taken the opposite view. In this talk, we will explore some of the legends and lore surrounding this number as well as the mathematics behind it. We will also discover the true Golden Section.

Advance reservation for lunch is required by February 19, 2010. Check all boxes that apply.

Please make _____ reservation(s) for the MAA lunch [$35 regular; $25 retirees; $21 students, unemployed]. (In 2009 the executive committee raised the registration fee by $5 to offset the costs of books and membership for student presenters, costs that are no longer provided by the national office.)
The fee includes meeting registration ($15 or $5 or $1) and luncheon ($20).

Copy, clip, and mail to:
MAA Luncheon
Mathematics Department MS084
University of Nevada, Reno
Reno, NV 89557

Enclosed is my check payable to MAA for $ _____.

MAA member: ☐

Student: Check undergraduate ☐ or graduate ☐.

College or university faculty member: Check the highest mathematics degree offered by your institution:

associate (or equivalent program) ☐; bachelor's ☐; master's ☐; or doctorate ☐.

High school teacher: ☐ **Business, industry, or government:** ☐ **Retired:** ☐

Name(s) _____

Affiliation or employer _____

E-mail address _____

From the 2009 Meeting: Frank Farris' stained glass window into the Fifth Dimension, and MAA President David Bressoud getting serious about Alternating Sign Matrices