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MINI-FOCUS

THE NEWLETTER OF THE NORTHERN CALIFORNIA, NEVADA, AND HAWAII SECTION, MAA
THE GOLDEN SECTION

Dennis Smolarski, S.J., Wins Section Teaching Award

Fr. Dennis Smolarski of Santa Clara University was the winner of the Section Award for Distinguished College or University Teacher of Mathematics for the year 2010. The award was presented at the annual section meeting at the University of San Francisco on February 27, 2010. The following is from the citation presented to Professor Smolarski: (see website for complete citation)

Dennis Smolarski, S.J., receiving his award from James T. Smith

"Professor Smolarski cites two previous award winners as his principal mentors. He has incorporated their practices into his own approach, and is using this to extend his influence to students in his university, to alumni after graduation, to his academic and Church colleagues, and the discipline of mathematics.

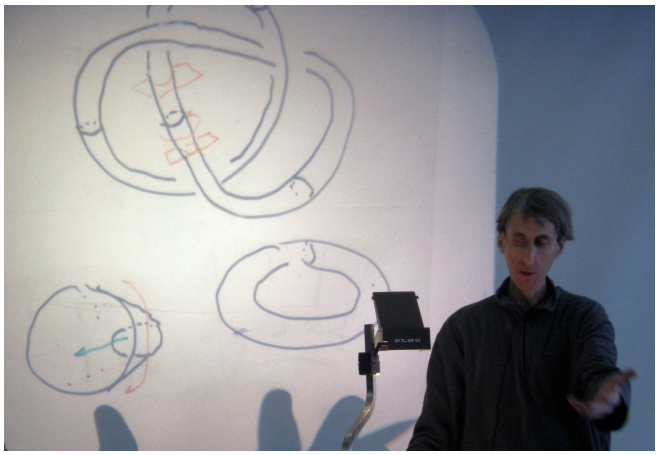
"In 1969 Dennis completed his undergraduate studies in mathematics at Santa Clara and entered the Society of Jesus. He then earned a masters degree in mathematics and two more in Church subjects, was ordained as a priest, and completed PhD studies before the two sides of his career came together at Santa Clara with appointments as resident minister and assistant professor of mathematics and computer science.

"Professor Smolarski has carried on and adapted the tradition of award-winning members of his department. He has acquired a reputation as a well-organized and caring teacher. Many students have been won over by his enthusiasm and skills of gentle persuasion. They comment, "his lectures are both humorous and understandable. He really shows interest in his students and goes above and beyond to help students outside of class." A colleague reports that Smolarski "has occupied every possible position at Santa Clara that has to do with students and their participation in the mathematical community." Dr. Smolarski serves as a career model, too. His publications include textbooks on elementary computer science, many articles on history and pedagogy of university mathematics, and scores of items on various aspects of religion. This dedication to our discipline affects his students; one alumnus relates, "Fr. Smolarski was also aware of [our] needs and what would help [us] progress. This applied not only to coursework, but also to advising". A Santa Clara colleague reports, Dennis "is a full participant in all aspects of the Department…With the information that he gleans through study and his connections with others in the profession … he is a power resource for his colleagues – thereby improving the quality of teaching in the entire department."

"We are proud to present this year's Section Award for Distinguished College or University Teaching of Mathematics to an extraordinarily effective, inspiring teacher, Fr. Dennis Smolarski, S.J."

Report on the 2010 Meeting at USF

On Saturday February 27, 2010, right in the heart of the Bay Area, the section enjoyed a full day of mathematical adventures of all sorts. Multi-time speaker at the International Congress of Mathematicians and winner of the Veblen and Clay prizes, **Dr. Clifford Taubes** of Harvard University began the day with a look at the mysteries of 4-dimensional manifolds. Why is dimension 4 so hard to understand compared with both smaller and larger dimensions? It is curious indeed that our own universe of space-time has this same mysterious dimension.



Clifford Taubes reaching out to us from the fourth dimension

At our business meeting we voted on the issue of whether we would become the Golden Section. This was approved by a wide margin of 50 to 6. The national board of MAA governors made this official for the section at Math-Fest in Pittsburgh this last August. Our web page has the latest bylaws but also look for changes in our graphics in the months ahead.

After the business meeting we had an excellent variety of student posters to examine. The topics involved were the following. Three posters on combinatorics and geometry – **Matthew Vicksell** from UC Davis studied the container problem for regular polyhedra; **Victor Garcia** from Santa Clara University looked at tetranomial coefficients and Pascal's simplex; and **Jeff Decker** of UC Berkeley along with **Carolina Benedetti** and **Frederico Ardila** of San Francisco State University (SFSU) studied volume calculations for matroid polytopes. One game theory poster by **Erin Kelly**, **Michael Mazella**, and **Josh Politz** of Cal Poly San Luis Obispo (POLY) looked at shell games as applied to infinite groups. **Jon Yaggie** of SFSU looked at the computation of enumerating homomorphisms between algebras that preserve certain subalgebras. There were two posters involving knot theory – **Andrew Smith** from CSU East Bay examined the computation of minimum bridge numbers for knots, and, in a combined medical knot theory poster, **Juliet Portillo**, **Trevor Blackstone**, **Rob Scharein**, and **Mariel Vasquez** of SFU looked at the DNA unknotting of type II Topoisomerases. There were two other medical posters – **Megan Evans** and **Emilie DeShon** of POLY looked at the dynamics of T-cell response to the Epstein Barr virus in acute infectious mononucleosis – a virus for which there is no cure. **Alex Pankov** of SFSU studied differences in genomic signatures as a method for determining appropriate breast cancer treatment. There were two forensic posters from POLY involved with predicting the next target of a serial killer – **Erin Kelly**, **Jeremy Kun**, and **Molly Stites** combined geographical and predatory models including prey density, and **Alex Eames**, **Kevin Lamb**, and **Troy Lewis** used game theory and Criminal Geographic Targeting for an entirely different set of approaches to this issue. **Tuan Le** of Fairmont High School in Anaheim (supervised by **Zair Ibragimov** of Cal State Fullerton) presented two trigonometric solutions to a previously unsolved inequality involving roots.

Just before lunch, **Estelle Basor**, deputy director of the American Institute of Mathematics (AIM), told us about Toeplitz Matrices. These are square matrices where each diagonal is constant. They have many applications in physics, engineering, probability and analysis. There are some striking asymptotic patterns for the eigenvalues of sequences of these matrices that grow in size. The linear algebra was presented in an accessible and very engaging manner.

Estelle Basor (AIM) and Tatiana Shubin (San Jose State University)

Our luncheon speaker was 2001 section teaching award winner **Wade Ellis,** now retired from West Valley College. Wade has an impressive history of using

technology and effectively teaching students who have traditionally had very little success in mathematics. As one student noted, "Dr. Ellis can explain anything to anyone." His presentation on tools for prompting effective inquiry-based learning were very intriguing and thought provoking in this regard.

A contemplative Wade Ellis, Jr.

After lunch we heard from MAA officer **Daniel Teague** of the North Carolina School of Science and Mathematics. This very unique high school takes on students with a huge variety of backgrounds. Dan spoke on his school's approach to teaching mathematics through deep and engaging problem solving project-based activities. Some of these include Voting Power (the mathematics of reapportionment), the gas station problem (studying tradeoffs of price versus location and other issues), and finding the best computer (by maximizing both price and performance). These can be seen at http://courses.ncssm.edu/math/Talks/index.htm.

In honor of our attempts to change the name of our section, we closed the day with a truly exceptional presentation by **John Martin** of Santa Rosa Junior College. His talk, "Gold Rush – Discovering the Golden Section," was a delightful tour through the mathematics of the golden ratio. Even for those who already know some of these ideas, his power point was absolutely breathtaking. If you missed it, you should get your own copy at http://www.santarosa.edu/~jomartin/GRFiles/.

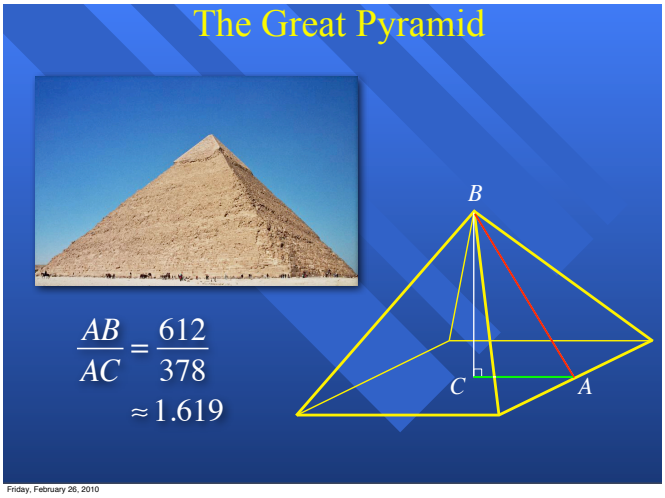
All in all it was a great day of math and good friends. Unfortunately, the total attendance of 145 was down by 31% from the meeting at MSRI in 2009. The section's executive board was surprised by this and wondered, with such a central location, what did we do wrong? The categories of students and those from Bachelors and Masters only institutions represented the biggest drops while the number of retired persons and those from PhD granting departments were slightly up. If you have thoughts to explain any or all of this, please email Ed Keppelmann at keppelma@unr.edu.

—Ed Keppelmann, Secretary-Treasurer

2010 Northern California Undergraduate Mathematics Conference

On April 10, 2010, one hundred twenty-eight students, faculty and guests attended the 6th Northern California Undergraduate Mathematics Conference at San Jose State University. Begun at Sonoma State in 2005, and hosted there through 2009, the annual event is a rare opportunity for undergraduate mathematics students to participate in a regional conference designed to showcase their work. At the conference, the students met fellow math students and other faculty members from different institutions in a congenial and very supportive atmosphere. Most of the twenty-five speakers came from the Bay Area, although one student from CSU Humboldt and four students from Cal Poly San Luis Obispo found their way to San Jose to give talks. One of the community college speakers came with eight of his family and friends who were beaming with pride at the accomplishments of their student. The event included a fantastic career panel composed of Lawrence Livermore National Laboratory researcher Dr. **Carol Meyers**, Genentech statistician Dr. **Sisi Kapp**, video game developer **David Richardson** from Cryptic Studios and investment consultant **Brent Wong** from TD Ameritrade. Dr. **Robert Lang**, creator of the most amazing origami (see http://www.langorigami.com/), gave the keynote talk entitled "From Flapping Birds to Space Telescopes: The Modern Science of Origami." What a treat!

—Bem Cayco, San Jose State University



John Martin's Great (but not Golden) Pyramid

News from the Departments

Humboldt State University: Professors **Chris Dugaw** and **Morgan Varner** (HSU Forestry Department) won a $292,000 federal grant to study forest fires. The grant will fund field and laboratory research in the Stanislaus-Tuolomne Experimental Forest and subsequent mathematical modeling of smoldering duff (decaying leaves and branches).

Professor **Bori Mazzag**, in collaboration with Dr. **Kami Larripa**, won a CSUPERB (California State University Program for Education and Research in Biotechnology) grant in the amount of $11,000 to design and teach a new mathematics course: "Introductory Mathematical Modeling in Biotechnology". The course will introduce biology students to current topics in biology in which mathematical and computational approaches have been fruitful.

Professor **Phyllis Chinn** has begun her retirement. Professor Chinn has been a faculty member at Humboldt State University since 1977. She made important contributions to the Mathematics Department through her innovative graph theory courses and by receiving several large NSF grants that funded mathematics teacher training. She was HSU's Outstanding Professor for the 1989-90 academic year.

The Mathematical Modeling option of the Environmental Systems Graduate Program at Humboldt State University would like to recruit undergraduate students interested in the application of mathematics to problems in the environmental and natural resources sciences. For more information, please see our website at http://humboldt.edu/mathmodeling. Applications are due March 15, 2011. For more information contact Dr. Bori Mazzag (borim@humboldt.edu).

—Bori Mazzag, Humboldt State University

Saint Ignatius Church, at USF

2011 Northern California Undergraduate Mathematics Conference

The 7th annual Northern California Undergraduate Mathematics Conference will be held on April 16, 2011, at the University of the Pacific in Stockton. The conference is a venue for undergraduate students to give and to listen to 15-minute talks, ranging from expository presentations to original undergraduate research. There will be a Career Panel highlighting different career choices for those majoring in mathematics. **Deborah Hughes Hallett**, from Harvard and the University of Arizona, will be giving the keynote address at the conclusion of the conference.

There are no registration fees, and lunch will be provided. For catering purposes, we would like to know how many are planning to attend, so please RSVP by registering through the conference website. There will be some money available to reimburse travel funds for undergraduates attending the conference, but students are encouraged to seek funding from their home institution as well. The conference hotel, should you need to stay overnight, is the Hilton Stockton, 2323 Grand Canal Blvd, Stockton, phone: 209-957-9090, where a limited number of rooms are being held. Tell them you are with the Northern California Undergraduate Mathematics Conference.

See https://sites.google.com/site/nocalumc/home or contact nocalumc@gmail.com for updates and details. Special thanks go to the MAA and the NSF, as the conference is an MAA NSF-RUMC sponsored activity, funded by NSF Grant DMS-0846477. We hope to see you in April!

--Christopher Goff, University of the Pacific

Section Executive Committee Meetings

The Executive Committee of the Section meets in April and October each year. If interested, contact section secretary-treasurer **Ed Keppelmann** for dates and locations.

National Teaching Award for Alan Rossman

The section is very proud to report that 2009 section teaching award winner **Alan Rossman** of Cal Poly San Luis Obispo was one of three national MAA winners of the Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics. This continues the fine tradition of the section, which now has seven such award winners over the past twenty years. Congratulations Alan!

Golden Nevada

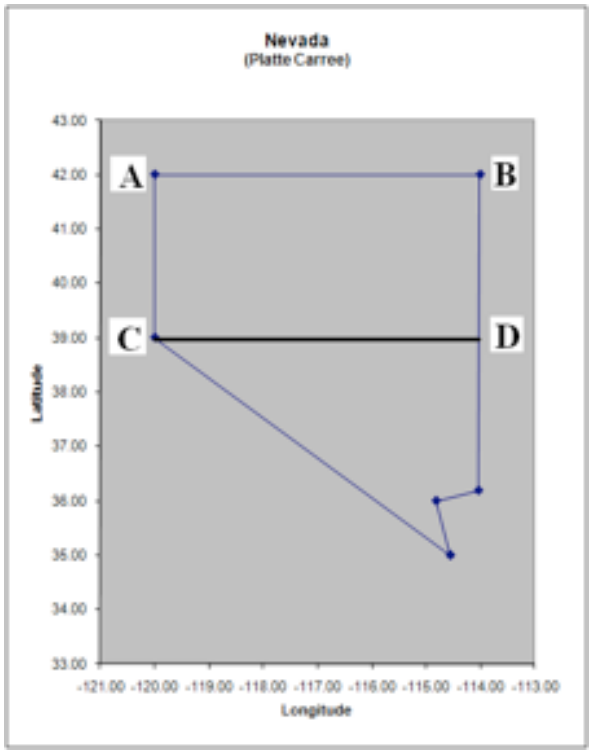
At last year's section meeting at USF, **John Martin** from Santa Rosa Junior College told us about the pyramids of Egypt, often celebrated by mathematicians for their use of the Golden ratio. On close inspection, John noted that the actual dimensions of the pyramid approximate this ratio with error of as much as 5%. (See John's slide on page 3.) Armed with that knowledge and a desire to find yet one more argument as to why our section should be named the "Golden Section," I contacted Nevada State Cartographer Dr. **Jordan T. Hastings** who works for the Nevada Bureau of Mines and Geology, which is in the college of science at the University of Nevada - Reno.

My question to Dr. Hastings was simple to ask but complicated to answer – Does Nevada have golden proportions? In some sense the answer would certainly have to be "no," since in reality Nevada lies on the surface of a sphere and hence is more rounded than rectangular. What we must mean is whether Nevada is a geodesic rectangle of golden proportions.

Even that question, however, requires some refinement. You see there are at least three ways to calculate distances on the earth based on longitudes and latitudes. One of these is a great circle calculation, which comes from modeling the earth as slightly ellipsoidal with a flattening of about .335% (the prime meridian being this much shorter than the equator). The second method, *Plate Carrée*, is based on the equi-rectangular projection mapping lines of longitude and latitude to the plane as equally spaced horizontal and vertical lines respectively. The last method, which was for us the best, is based on the universal Trans-Mercator (UTM) coordinate system. Like the first system, this method is based on an ellipsoidal earth and divides the earth into 60 longitude zones of 6 degrees each. Restricting from 80° S to 84° N then each zone is comprised of 20 latitude bands. The zones guarantee distortions of no more than 1 part in 1000 when projecting to the plane to calculate distances. In the end we, reported the dimensions of Nevada according to this UTM system.

Nevada's shape, essentially an upside-down trapezoid, suggests two different rectangles. One would involve adding to the entire state the missing triangle in the south-west to get a rectangle. This rectangle fails to be Golden by around 8%.

On the other hand, we should note that only *northern* Nevada is part of the Golden Sction of the MAA, so it is natural to consider the upper rectangle of the state. The bottom of this rectangle runs from the "Tahoe Corner" of the state at C (which is more or less in the middle of Lake Tahoe) to the "Lehman Caves" at D. In the Universal Transverse Mercator coordinate system (UTM), the ratio of CD to AC would be exactly the Golden ratio if CD were a mere 3.9% longer. (The ratio of AB to AC is not nearly as close. Remember this is a geodesic rectangle and not an actual rectangle.) If we refer to our standard that the pyramids of Egypt are only 5% golden, we can in fact brag that northern Nevada is actually more golden!



Of course one might suggest that we are picking among the data to find that which work, and to that we unabashedly plead guilty. Hopefully, though, the chance to have a little chuckle when anyone says "you have to name sections according to geography and not math" and the opportunity to learn a little geography, makes it all ok.

—Ed Keppelmann, University of Nevada, Reno

Math Wrangle comes to SRJC

A Math Wrangle is a team mathematical competition, incorporating elements of team sports and debate, with a dose of strategy tossed in for good measure. In addition to being good problem solvers, teams must learn to work together, give presentations and think on their feet as well as listen carefully to and critique the presentations of others. One of the many appealing features of this competition is that it can be held at any level starting as early as middle school. Regardless of the grade level it is as engaging, exciting, and enjoyable as any of your favorite sports – come and see for yourself at the Golden Section Meeting on February 26!

Call for Student Posters
for the
2011 Mathematical Association of America
Northern California, Nevada, and Hawaii Section Meeting

When: Saturday, February 26, 2011

Where: Santa Rosa Junior College, Santa Rosa, 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 18, 2011.

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 Megan Evans (left) and Emilie DeShon and their dynamical poster; Mike Nathanson (Saint Mary's, left) hearing how Matthew Vicksell (UC Davis) squeezes regular polytopes into containers, from the 2010 student poster presentation.

Call for Nominations
for the
2011 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 2011. (Please see the section website, which contains the application materials for the 2010 award. We do not expect significant changes for the 2011 award application.)

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 2011. 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, Cal Poly San Luis Obispo,
2010 Dennis Smolarski, Santa Clara

THE MATHEMATICAL ASSOCIATION OF AMERICA
NORTHERN CALIFORNIA, NEVADA, AND HAWAII SECTION
Saturday, February 26, 2011
Santa Rosa Junior College, Santa Rosa Campus

All presentations held in the Newman Auditorium

PROGRAM

8:30–9:45 Registration, Coffee Hour, Book Sales
Registration Fee: $15 ($5 for retirees; $1 for students and unemployed)

9:45–9:50 Official Welcome to Santa Rosa

9:50–10:50 **Shirley Yapp**, CSU East Bay
Differential Equations – Not Just a Bag of Tricks!
Presider: **Brad Chin**, West Valley College, In-coming Vice Chair

10:55–11:00 **MAA Section Business Meeting**
Presider: **Stephen Devlin**, USF, Section Chair

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

11:30–11:50 **William Stein**, University of Washington
Sage: Creating a Viable Free Open Source Alternative to Maple, Mathematica, Matlab and Magma
Presider: **Robert Bryant**, MSRI; Program Chair

12:30–1:15 **Lunch (Bertolini Student Center)**
Advance reservation for luncheon ($20.00) is required.

1:15–1:30 Presentation of the 2010 Section Award for Distinguished College or University Teaching of Mathematics

1:30–2:00 Speaker: **Alan Rossman**, California State Polytechnic University, San Luis Obispo
Ask Good Questions
(Alan won the section teaching award last year and also received the national Haimo Award)
Presider: **James T. Smith**, San Francisco State University, Teaching Award Committee Chair

2:15–3:15 **Erik Demaine**, Massachusetts Institute of Technology
Algorithms Meet Art, Puzzles, and Magic (Erik is a national MAA Polya Lecturer)
Presider: **Alon Amit,** Facebook, Section Vice Chair

3:15–4:15 **Ivars Peterson**, Mathematical Association of America
Newton's Clock: Chaos in the Solar System
Presider: **Ed Keppelman**, Section Secretary and Treasurer

4:30–5:30 Math Wrangle
Tatiana Shubin, San Jose State University, moderator

For updates, see section web site: **http://wolfweb.unr.edu/homepage/keppelma/maanc.html**

MATH WRANGLE, *Where Mathematics becomes a Spectator Sport*

Description: Although the concept of a Math Wrangle is somewhat novel to participants and spectators in the United States, this sort of event has been taking place in Russia for decades, where it goes by the title of "mathematical battle." The name Math Wrangle was suggested by Frank Farris and it captures the spirit of the event much better.

The format of a Math Wrangle engages students in mathematical problem-solving, promotes effective teamwork, provides a venue for oral presentations, and develops critical listening skills. A Math Wrangle incorporates elements of team sports and debate, with a dose of strategy tossed in for good measure. For this reason Math Wrangles would seem to be the perfect complement to math contests, since the latter often focus on individual performance as opposed to dynamic mathematical interaction. Wrangle skills are those which students will need to succeed as professionals.

During the first stage of a Math Wrangle members of each of two teams of students spend allocated time working together, in different locations, on a given set of hard problems. These problems require an explanation, as opposed to just an answer, and are somewhat open-ended, inviting multiple approaches or generalization. At the close of the solving period the two teams, a jury of three or more mathematicians; and spectators convene for the presentation of solutions. (The audience is provided with the problems when competition begins)

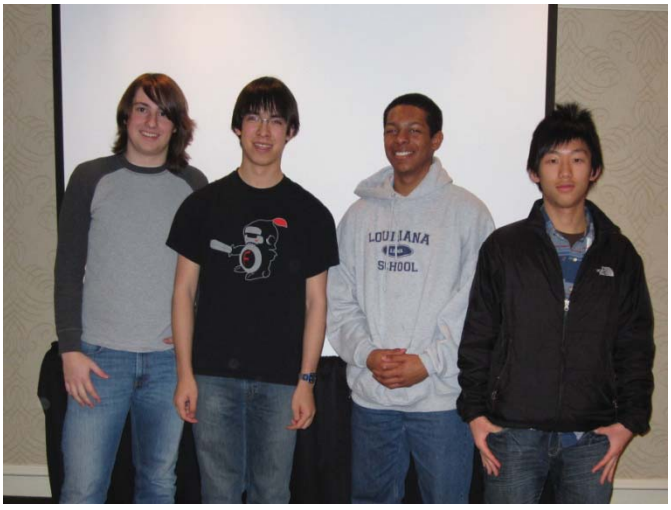
Essentially, the two teams take turns challenging one another to present solutions to specific problems. The receiving team may accept or return the challenge, in which case the problem's point value is increased. Then a member of the team which has accepted the challenge presents a five-minute solution, followed by a three minute critique given by a member of the opposing team who may point out any flaws or omissions in the explanation, illustrate how that explanation might be shortened or made more elegant, or provide a generalization or an extension. The jury distributes a portion or all of the available points among the two teams. This process is repeated until a designated number of problems have been presented and every student has spoken.

The first public presentation of the math wrangle occurred at the Great Circles Conference, MSRI, April 2009, followed by a Great Math Wrangle at the JMM 2010, in San Francisco. Steve Dunbar, AMC Director (http://amc.maa.org), watched that particular event and was so impressed that he decided to make it an integral part of the AMC package. To that end, he has organized a few local wrangles, and he staged an Exhibition Math Wrangle at the JMM 2011 in New Orleans. It was greatly enjoyed by the participating students, the jurors, and the audience.

Wrangles can be held at any level starting as early as middle school (or even elementary school) – the organizers should simply choose appropriate problems. Regardless of the grade level, a wrangle is engaging, exciting, and as enjoyable as any of your favorite sports – come and see for yourself at the Golden Section Meeting on February 26.

A more detailed set of rules and sample problems governing a Math Wrangle may be found at the MAA SIGMAA on Math Circles for Students and Teachers web site http://wolfweb.unr.edu/homepage/keppelma/home.htm

Wranglers from JMM 2011 in New Orleans 1/8/11



PROGRAM ABSTRACTS

SHIRLEY YAPP, CSU East Bay; *Differential Equations – Not Just a Bag of Tricks!*

Abstract: Differential equations often seems like a hodgepodge of techniques designed to solve very specific equations. There is, however, a unifying theme for many of those techniques, which is to find the right coordinate system with which to express the equation. In the mid-nineteenth century, Sophus Lie discovered how to find such coordinate systems by using symmetries of differential equations. This talk is suitable for undergraduates who have taken vector calculus and differential equations.

WILLIAM STEIN, University of Washington; *Sage: Creating a Viable Free Open Source Alternative to Maple, Mathematica, Matlab and Magma*

Abstract: I started the Sage mathematics software project (http://www.sagemath.org) in 2005. Sage has since grown in popularity and several hundred people have contributed, including high school students, undergraduates, grad students, postdocs, and professionals. Come to this talk and find out more about how Sage could be useful to you.

ALAN ROSSMAN, Cal Poly San Luis Obispo; *Ask Good Questions*

Abstract: Legend has it that when asked how to be a successful singer, Frank Sinatra replied: Sing good songs. My advice for successful teaching can be summarized in a similarly succinct manner: Ask good questions. What makes a question good? (Hey, there's a good question!) I'll explore this question in this talk, after presenting examples of what I consider to be good questions from the teaching of introductory statistics and probability.

ERIK DEMAINE, Massachusetts Institute of Technology; *Algorithms Meet Art, Puzzles, and Magic*

Abstract: When I was six years old, my father Martin Demaine and I designed and made puzzles as the Erik and Dad Puzzle Company, which distributed to toy stores across Canada. So began our journey into the interactions between algorithms and the arts (here, puzzle design). More and more, we find that our mathematical research and artistic projects converge, with the artistic side inspiring the mathematical side and vice versa. Mathematics itself is an art form, and through other media such as sculpture, puzzles, and magic, the beauty of mathematics can be brought to a wider audience. These artistic endeavors also provide us with deeper insights into the underlying mathematics, by providing physical realizations of objects under consideration, by pointing to interesting special cases and directions to explore, and by suggesting new problems to solve (such as the metapuzzle of how to solve a puzzle). This talk will give several examples in each category, from how our first font design led to building transforming robots, to how studying curved creases in origami led to sculptures at MoMA. The audience will be expected to participate in some live magic demonstrations.

IVARS PETERSON, Mathematical Association of America; *Newton's Clock: Chaos in the Solar System*

Abstract: With astronomical questions inspiring new mathematics, the remarkable insights of Johannes Kepler, Isaac Newton, and Henri Poincaré paved the way to celestial mechanics and modern notions of chaotic dynamics. The result is a new picture of a solar system less placid and predictable that its venerable clockwork image would suggest.

Registration for Santa Rosa Junior College MAA Sectional Meeting

Starting this year meeting registration will be online. The online system will help organize all the data that the national office needs us to track.

Register at http://tinyurl.com/2vsd64b. You can register yourself and up to 6 of your associates in each session and use repeated sessions if there are more. Registration and lunch costs are:
(1) Registration: Regular $15; Retired or unemployed $5; Students $1.
(2) Lunch: $20.

To pay, please send a check payable to the MAA to

MAA 2011 Luncheon
Department of Mathematics and Statistics MS084
University of Nevada Reno
Reno, NV 89557

To complete your registration we need your check to arrive no later than February 22, 2011.
If you experience any problems, contact Ed Keppelmann at keppelma@unr.edu or 775-722-0658.

Directions and Parking

Consult http://www.santarosa.edu/contact/index.shtml for driving directions to Santa Rosa Junior College. Park in the lot labeled "Emeritus Circle Student Parking." Emeritus Hall, which contains Newman Auditorium, is adjacent to this lot.