

**Mathematics Association of America Rocky Mountain Section Report-1996 Meeting**

The annual meeting of the Rocky Mountain Section was held April 19-20, 1996, on the campus of Mesa College in Grand Junction. This meeting was a joint meeting with the Intermountain Section and a regional meeting of Kappa Mu Epsilon. There were a total of 66 contributed papers, 24 by students, of which 13 were from the Rocky Mountain Section. All of these values were records for the Section. Total registration was over 200, an outstanding turnout. The program co-chairs were Clifford Britton and Carl Kerns of Mesa State College.

The invited addresses were –

**Secrets and Geometry**, Dr. Gustavus Simmons, Rothschild Professor of Mathematics at Cambridge University and Visiting Fellow of Trinity College;  
Retired Director for National Security Studies, Sandia Laboratories

**Equalization and Optimization by Colonies of Foraging Ants**, Dr. Fred Adler, Univ. of Utah

**A Gossipy Historical Story about Factorization in  $L^1$** , Dr. Kenneth Ross,  
University of Oregon, President of MAA

**Patterns, Symmetry and Chaos**, Dr. Martin Golubitsky,  
Cullen Distinguished Professor of Mathematical Biology, University of Utah.

At the banquet Friday evening, Zenas Hartsvigson (U of Colorado, Denver) was recognized as the 1996 winner of the Distinguished Teaching Award. Recognition was made of those members who had just completed 25 years in the MAA: Stephen D. Bronn, Douglas F. James, J. Richard Lundgren, John S. Maybee, and Franklin P. Witte. Finally, Carl Kerns recognized the student presenters of papers. Then Dr. Ross, our banquet speaker, was introduced by Ed Hawkins.

In addition to the above addresses, the program consisted of the following:

Workshop on new TI-92, Richard Tebbs of Southern Utah University

Mini-Course on *Combinatorics via Functional Equations*, Donald Snow, Brigham Young Univ.

Contributed talks – (a \* indicates a student presenter)

*How Dense will We get?*

Lee Badger, Weber State Univ.

*An Inductive Algorithm for Producing Graphs of N-cubes*

\* William Van Bain, Mesa State College

*Knights Tours and Magic Squares*

\* Barry Bolof, Colorado College

*Geršgorin and Beyond*

\* Jason Knight Belnap, Utah State Univ.

*Bootstrap and Delta Estimators*

\* Jerome Bennett, Univ. of Southern Utah

*College Algebra Concept Learning Enhanced with Graphing Calculator*

Jeffrey Berg and Pat Hauss, Arapahoe Community College

*Waiting for Change at the Box Office: A Fun Combinatorial Problem*

Shahar Boneh, Metro State College at Denver

*Classroom Case Studies in Liberal Arts Mathematics*

William Briggs, Univ. of Colo. – Denver

*The History of Fermat's Last Theorem*

\* Amanda Brown, Univ. of Southern Utah

*Queen's Domination of  $M \times N$  Chessboards*

\* Aesoo Chung, Univ. of Colo. – Denver

- Counting Parallelograms in a triangulated equilateral triangle*  
\* Cristine Collier, Univ. of Northern Colo.
- Examples of Noncommutative Algebraic Geometry*  
Robin Cruz, Univ. of Southern Colo.
- An Elementary Use of Wavelets to Choose the Optimal Bin Width of a Histogram*  
James E. Daly, Univ. of Colo. at Colo. Springs
- Fermat's Last Theorem – A Marvelous Proof*  
Harold Davenport, Mesa State College
- Exploring Reflections: Uniform Illumination of Proximal Objects using Spectral Reflector*  
Gary DeYoung, Mesa State College
- Roller Coaster Design*  
\* Domenica Donovan, Univ. of Denver
- A Computerized Mathematical Exploration*  
George Donovan, Metro State College at Denver
- Maximally Even Sets in Magnetic Ordering*  
J. Douthett, Albuquerque Community College; R. Krantz, Metro State College at Denver
- Teaching Differential Equations with Mathematica*  
Bill Emerson, Metro State College at Denver
- An Asymptotic Formula for Powers of Binomial Coefficients and about Inductive Reasoning*  
J. Farmer and S. Leth, Univ. of Northern Colo.
- Squaring a Tournament: A Proof of Dean's Conjecture*  
David Fisher, Univ. of Colo. at Denver
- Demonstration of the Geometer's Sketchpad Software*  
Robert J. Fisher, Idaho State Univ.
- Math and Bungee Jumping*  
\* Shannon Flowers, Westminster College
- Voting Procedures which can be Determined by Pairwise Elections between Alternatives*  
Lawrence Ford, Idaho State Univ.
- Bounded Principal Minor Ratios of Positive Semidefinite Matrices*  
\* Tracy Hall, Brigham Young Univ.
- Teaching Calculus using Scientific WorkPlace*  
Darel Hardy, Colo. State Univ.
- The Games People Play*  
\* Ann Marie Harris, Utah State Univ.
- Ripping a Text to Bytes*  
Robert Heal, Univ. of Southern Utah
- The Gamblers Ruin*  
\* Derek Hein, Univ. of Southern Utah
- Some Observations on the Integers mod  $(pq)$*   
Jay Huber, Idaho State University
- Toward a Construction of the A-Cellular Approximation of a Space*  
Michele Intermont, Mesa State College
- Writing in Mathematics*  
Matthew Isom, U. of Northern Colo.

- The Axiom of Choice*  
\* Asim Jalis, Utah State Univ.
- Effects of School Reform on Math Departments*  
Larry Johnson, Metro State College at Denver
- Self-Similarity in Magnetic Phase Diagrams*  
Richard Krantz, Metro State College at Denver & J. Douthett, Albuquerque Com. Coll.
- Cyclic Subspaces, Invariant Polynomials, and Regression*  
Patrick Lang, Idaho State Univ.
- Easy Continued Fraction Convergents*  
Kay Litchfield, GTE/ Univ. of Utah
- Using Rubrics in the College Math Classroom*  
Jim Loats, Metro State College at Denver
- Galois Representation Attached to Elliptic Curves*  
\* Melissa MacDonell, Mesa State College
- A Mathematical Model of an Oscillating Chemical Reaction*  
\* Troy McVay, South Dakota School of Mining and Technology
- Report on NSF Young Scholars Grant for Denver Public Schools*  
Tino Mendez and Ernest Cisneros, Metro State College at Denver
- Nagell-Lutz Theorem*  
\*Robin O'Connor, Mesa State College
- Parabolic Primality Testing*  
\* Colin O'Donnell, Metro State College at Denver
- The Real Positive Semidefinite Completion Problem for Nonchordal Graphs: Revisited*  
Mohammad Omran, Brigham Young Univ.
- Perfect Card Shuffling*  
Eric Parkard, Mesa State College
- Smoothing Splines – Current Status and New Developments*  
\* Crain Pringle, Idaho State Univ.
- A Mathematical Model of Bacterial Gene Regulation*  
Jihad Qaddour, Mesa State College
- Horner's Algorithm, Base Conversion, Remainder Theorem, etc.*  
Scott Searcy, Idaho State Univ.
- A Symbolic Manipulation Program for Learning Algebra*  
Jerry Shultz, Metro State College at Denver
- Romberg Integration, Rearranged*  
Vencil Skarda, Brigham Young Univ.
- Table Algorithm Takes the Hard Work Out of Finding Series Solutions to DE's*  
Don Snow, Brigham Young Univ.
- Technological vs. Traditional Approach in Conceptual Understanding of Series*  
Hortensia Soto-Johnson, Univ. of Southern Colo.
- Knights Domination of a  $k \times n$  Chessboard*  
\* Anne Spalding, Univ. of Colo – Denver
- Stability Properties for the Collection of a Function's Attractive Sets*  
T. H. Steele, Weber State Univ.

*The Dilemma of a Prisoner Named C3PO*

\* Jason Stetton, Colorado College

*Computers and 3-D Cognition*

Igor Szczyrba, Univ. of Northern Colo.

*A Nonlocal Problem in Shear Banding*

Paul Talaga, Weber State Univ.

*Two Tree Mountain Pine Beetle Model*

\* Jessica Tams, Utah State Univ.

*Gauss and the Computation of Planetary Orbits (Part II)*

Don Teets, South Dakota School of Mining and Technology

*Population Model Applied to Easter Island Data*

\* Brian Traver, Weber State Univ.

*The "Calculus for Kids" Project*

\* Rick Trujillo, Univ. of Colo. — Denver

*Solution to  $\Delta f/\Delta x = f$*

Dick Walker, Ft. Lewis Col.

*The Pipeline Problem: A Multimedia Approach*

\* Greg Wheeler, Utah State Univ.

*Gauss and the Computation of Planetary Orbits (Part I)*

Karen Whitehead, South Dakota School of Mining and Technology

*Fractions in Finite Rings*

Jim Wolper, Idaho State Univ.

*The Exponent Set of a Primitive matrix with a Primitive Submatrix*

Cindy Wyels, Weber State Univ.

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*Business Meeting of the Rocky Mountain Section of the MAA 8:15 am, Saturday, April 20, 1996*

Chair Ed Hawkins called the meeting to order, with approximately 30 members present.

Minutes of the 1995 meeting at USC were approved as circulated. The Treasurer's report, a summary of which follows, was approved.

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Financial Statement April 19, 1996 Rocky Mountain Section Mathematical Association of America  
Savings Account

March 31, 1995 Balance	4179.58
Interest paid Ap 1, 1995 to Mar 31, 1996	138.95
March 31, 1996 Balance	4318.53

(note: Included here is a \$1500 fund which can be loaned for expenses in connection with a summer short course offered in the section)

Checking Account

April 22, 1995 Balance	<u>414.23</u>
Income	
Subvention from national MAA (annual support)	500.00
additional support (to bring total up to last years allocation)	200.00
Exxon Grant for student activity on Internet	750.00
Total	1450.00

Expenses paid	
Student Internet expenses	254.39
Newsletter mailing from FLC	333.18
	Total
	587.57

Net Change in Checking Account	862.43
Balance April 19, 1996	<u>1276.66</u>

Note: The Exxon student grant of \$750 has had only \$254.39 spent, leaving \$495.61 encumbered. Tom Kelley expects that to be spent in a fall, 1996, student Internet activity.

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Gail Gliner, Chair of the Nomination Committee, submitted their report. Bill Ramaley for Secretary/Treasurer; Karen Whitehead (SDSMT) or Shahar Boneh (MSCD) for Chair. Karen Whitehead was elected. It was announced that a mail ballot conducted by the national MAA resulted in the election of Janet Barnett (USC) had been elected as Governor of the Rocky Mountain Section. This is a three-year term.

Darel Hardy, the Chair for 1996-97, was introduced.

A report was made of the Student Internet activity. Groups of students at four schools (UNC, FLC, USC, and CU-D/MSCD) communicated over a 2-day workshop, learning how to use the Internet. As part of this there was a 15-item Scavenger Hunt, with fascinating questions and topics, both mathematical as well as general. Examples are: "Some first cousins of the Fibonacci numbers are the Pell numbers. Find the formula for the Pell numbers and give the first ten Pell numbers."; "Who Gave the 1989 SIAM von Neumann Lecture"; "A well-known story claims that there is no Nobel prize in mathematics because a mathematician seduced the wife of Alfred Nobel. Give two reasons why this story either is or is not true"; "A new book has just been published about the great Indian mathematician Ramanujan. The title is *Ramanujan: Letters and Commentary*. Find the publisher, author(s) and the number of pages." For complete list of questions and the students responses, contact Tom Kelley at MSCD.

A member asked whether a student group needed to be a MAA student chapter in order to participate in the Internet Activity. The answer is no. Contact Tom Kelley for details. He and Bill Briggs (UC - D) plan to set up a Web page for the Rocky Mountain section. Details on this have not been worked out.

Governor Tino Mendez gave a summary of his written report, which is found attached to these minutes. Janet Barnett, incoming Governor of the Section, reminded attendees of the Section Activities Fund, which can grant up to \$500 for an activity of benefit to the Section. For details of how to apply for this money, contact Bill Ramaley at FLC.

A discussion ensued over Colorado Governor Romer's recognition of student's mathematical achievements, it was mentioned that there also should be recognition of faculty achievements. In particular, the winner of the Distinguished Teaching Award should be recognized. The Section agreed to help support this event.

The business meeting ended with a motion of appreciation for the hospitality of Mesa College and hard work of everyone - faculty, students, and administration - who contributed to the outstanding success of this meeting. Especially: Cliff Britton and Carl Kerns (the program co-chairs), and Ed Hawkins, the Chair of the Mesa College Mathematics Department.

William C. Ramaley, Sec'y/Treas  
Rocky Mountain Section MAA

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*Meeting of the Executive Committee of Rocky Mountain Section of the MAA  
11 am, Friday, April 19, 1996*

Present: Ed Hawkins, Chair; Janet Barnett (Past Chair and Governor-Elect); Tino Mendez (Governor-and financial advisor); Bill Ramaley (Sec'y/Treas). Also present were Kenneth Ross (national MAA President) and Linda Hill (Chair of the Intermountain Section of MAA)

The minutes of the 1995 meeting of the Executive Committee were approved as circulated.

The Distinguished Awards Committee (DAC) has reported that only a very few nominees are submitted each year. The committee this year was: A. Duane Porter (as last year's recipient), Ed Hawkins (as Section Chair) and Bob Gaines. We discussed a change in format for nomination. In the future, an initial nomination may, as in the past, include supporting documentation. However, an individual may be nominated without documentation. If that happens, then the DAC will send a request for supporting documentation from the chair of the individual's department.

Tino continues to work with setting up a Department Representative network.

On May 3, a reception for HS mathematics contest winners is being held at the Colorado Governor's mansion in Denver. At the reception there will also be recognition of high achievers on the Putnam Examination and the Mathematical Contest in Modeling. A request for \$100 to help with this reception was brought by Tino, on behalf of Ernest Cisneros. This was approved, subject to a formal request being submitted. *(Additional information as of 6/27/96---Attached is a copy of the formal request. After communicating with several member of the Executive Committee, I recommend we approve \$150 for this year. The NCTM gave about \$500 and other organizations have also supported this reception and recognition. If you would like to recommend some other amount, please let me know. Also, unless I hear to the contrary, I will commit the Section to an ongoing contribution of this amount to this event. We do need to be careful that similar support would be offered to similar events in other States of our Section.)*

Bill Ramaley distributed a proposed Handbook of the Rocky Mountain Section. This will be corrected and updated annually.

The meeting for 1997 will be held on the campus of University of Colorado - Denver, but the meeting is hosted by them and Metropolitan State College at Denver and Auraria campus of Denver Community College. The program co-chairs are Bill Briggs (UC - D) and Tom Kelley (MSCD)

The Executive Committee recommended Bill Ramaley be nominated for the Distinguished Service Award for the Section.

Janet Barnett brought forth the idea for changing the term of Section Chair to be two years. This is the term in most sections of the MAA. We would elect a Chair-Elect every two years and on the Executive Committee there would be just either a Chair-Elect or a Past-Chair. Furthermore, it means the term of service of Chair becomes actually 4 years: one each as Chair-Elect and as Past-Chair, as well as two years as Chair. This question is to be discussed in the fall 1996 newsletter and brought up for possible action at the 1997 Section meeting. If approved there, it needs to go to the national Committee on Sections and could be finally implemented at the 1998 Section meeting.

William C. Ramaley, Sec'y/Treas  
Rocky Mountain Section MAA