

Rocky Mountain Section of the MAA – ColoMATYC 1997 Annual Meeting – Summary Program

Friday, April 11

- 10:00 - 4:00 Meeting Registration, North Classroom Galleria
- 10:00 - 5:00 Publishers Exhibits, North Classroom Galleria
- 10:30 - 12:00 **Math Awareness Week Workshop: *Operations Research and the World Wide Web*, Harvey Greenberg, CU-Denver, NC 2608**
- 11:00 - 12:30 ColoMATYC Lunch
- 11:00 - 12:30 MAA Executive Committee Lunch, CU-Denver Building 626
- 12:30 - 12:45 Welcome and Opening Remarks, NC 1130
- 12:45 - 1:15 *A Reformer Ruminates*, **Bill Emerson**, Recipient of MAA Distinguished Teaching Award 1995, Metropolitan State College, NC 1130
- 1:15 - 1:45 *Tales of a TechnoGeek*, **Zenas Hartvigson**, Recipient of MAA Distinguished Teaching Award 1996, CU-Denver, NC 1130
- 1:50 - 3:15 Submitted Talks, Special Sessions, and Panel Discussions
- 3:15 - 3:30 Coffee Break, East Galleria of NC
- 3:30 - 4:25 Submitted Talks, Special Sessions, and Panel Discussions, North Classroom
- 4:30 - 5:30 **Invited Lecture: *The Impact of Modern Software on Mathematical Theory and Practice*, Stan Wagon, Macalester College, NC 1130**
- 5:30 - 6:00 **MAA Department Liaison Meeting, NC 1204**
- 6:00 - 9:00 Wine and Cheese and Banquet Dinner, Executive Tower Inn, Columbine Room
- 8:00 pm **Banquet Talk: *Writing Commercial Calculus Software*, Keith Devlin, St. Mary's College of California, Executive Tower Inn, Columbine Room**

Saturday, April 12

- 8:00 - Noon Publishers Exhibits, North Classroom Galleria
- 8:00 - 8:45 MAA Business Meeting, all members, coffee and rolls, NC 1130
- 9:00 - 10:00 **Invited Lecture: *Goodbye Descartes?*, Keith Devlin, St. Mary's College of California, NC 1130**
- 10:00 - 12:25 Submitted Talks, Special Sessions, and Panel Discussions, North Classroom

We are grateful to the administrations of CU-Denver and Metropolitan State College of Denver for contributions that defrayed conference expenses.

We thank the following book publishers and developers whose exhibitor fees supported this meeting: **Addison Wesley Longman, Brooks Cole/ITP, DC Heath/Houghton Mifflin, Harcourt Brace/Saunders College, Prentice Hall, Wiley, Zometool.**

Thanks to **MathWorks** for the wonderful MATLAB T-shirts!

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Abstracts of Invited Talks and Workshop

Distinguished Teaching Award Talk: *Ruminations of a Reformer*, Bill Emerson, MSCD. Friday, 12:45, NC 1130

I plan to discuss calculus reform and some of its effects. I will reflect on some of the good ideas coming out of reform and how they have affected my teaching. Together, we might contemplate what the future holds for reform in calculus and other classes.

Distinguished Teaching Award Talk: *Tales of a TechnoGeek*, Professor Zenas Hartvigson, CU-Denver. Friday, 1:15, NC 1130

Invited Talk: *The Impact of Modern Software on Mathematical Theory and Practice*, Stan Wagon, Macalester College. Friday, 4:30, NC 1130

Once one learns to harness the tremendous power of Mathematica it is possible to carry out very complicated projects. And using computers to investigate familiar material often leads to new insights. I will present several illustrations, such as:

- How to automate what Escher did painstakingly by hand
- New ways to visualize solutions of differential equations
- A new view of the most famous false proof in history (Kempe's "proof" of the four-color theorem)
- Finding new formulas for pi
- Using space-filling curves to (almost) solve the traveling salesman problem.

Banquet Talk: *Writing Commercial Calculus Software*, Keith Devlin, Saint Mary's College of California. Friday, 8:00 pm, Executive Tower Inn, Columbine Room

Electronic Companion to Calculus is a commercially produced educational package comprising a CD ROM and an accompanying workbook. It is designed to be used with any textbook (though it's more suited to "non reform" calculus, and a reform version will come later). *Electronic Companion* was developed from scratch by a large, professional team with many years experience in the production of educational software and the publication of mathematics texts. What were the challenges involved in putting calculus onto a CD ROM that would have to make its own way on the market, and what particular challenges did I face as author working with a large team of developers with widely varying areas of expertise?

Invited Talk: *Goodbye Descartes?*, Keith Devlin, Saint Mary's College of California. Saturday, 9:00, NC 1130

Attempts to develop a mathematics of thought and language began with Aristotle and Zeno in ancient Greece and progressed through the work of Leibniz and then Boole to the mathematical logic and the mathematical linguistics of the twentieth century. After a rapid tour of this two thousand year development, I'll ask the question, "What will the twenty-first century bring by way of new developments in this area?"

Workshop: *Teaching Operations Research on the World Wide Web*, Harvey J. Greenberg, CU-Denver. Friday, 10:30, NC 2608

This is an introduction to the entitled subject, with no assumed knowledge about the World Wide Web. The workshop will begin with some browsing to show what is out there and some basic places for you to start on your own. This will include showing where to obtain guides for what you need to develop your own teaching materials. We shall examine the use of simple materials that offer nice explanations of certain mathematical concepts. From there, we look at animation, and beyond. One of the key pages for you to examine before the workshop is the <http://forum.swarthmore.edu>. You will find a wealth of materials there plus links to other places we shall visit. Near the conclusion of the workshop I shall demonstrate with an introduction to linear programming how we can selectively use web materials prepared by others to build a course students can take from their home.

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Final Program of Invited Talks, Contributed Talks and Special Sessions

Friday, April 11 (NC = North Classroom Building)

10:30 - 12:00	Math Awareness Week Workshop: <i>Using the Web to Teach Mathematics</i> , Harvey Greenberg, CU-Denver, NC 2608			
12:30 - 12:45	Welcome and Opening Remarks, NC 1130			
12:45 - 1:15	<i>A Reformer Ruminates</i> , Bill Emerson, MAA Distinguished Teaching Award 1995, MSCD, NC 1130			
1:15 - 1:45	<i>Tales of a TechnoGeek</i> , Zenas Hartvigson, MAA Distinguished Teaching Award 1996, CU-Denver, NC 1130			
	Session A - NC 1204 Panel Discussion	Session B - NC 1525 Special Session: History of Mathematics, Nancy Thompson, MSCD, chair and co-organizer	Session C - NC 1321 Discrete Mathematics, Guillermo Jimenez, Chair	Session D - NC 1326 Mathematics Education, Linda Sundbye, Chair
1:50 - 2:15	Liberal Arts Mathematics – Is There a Common (Transferable) Course?	<i>Set Theoretical Forcing: A Brief History</i> , Janet Heine Barnett, USC	<i>The Independence Numbers of Circulant Graphs</i> , Robin Ramirez, CU-Denver	<i>Mathematical Vocabulary: From Semantics to Classroom Practice</i> , Jeff D. Farmer, UNC
2:20 - 2:45	Panelists: Paul Beale, CU-Boulder, Marsha Driskill, Aims CC, Pat Enright, Arapahoe CC, Dave Wilson, CU- Boulder	<i>Genealogy Charts of Mathematicians</i> , Harry B. Coonce, Mankato State University	<i>Repetition in the Min-Plus Algebra</i> , Anne Spalding (speaker), Dave Fisher, CU-Denver	<i>Reading, wRiting, and 3-D peRception</i> , Igor Szczyrba, UNC
2:50 - 3:15	Organizer: Bill Briggs, CU-Denver	<i>The Problem of the Points Before and With Pascal</i> , Ruth Rebekka Struik, CU-Boulder	<i>Domination Problems on Rectangular Chessboards</i> , Dave Fisher, CU-Denver	<i>One Model Which Works: The MSCD Mathematics Group Learning Program</i> , Charlotte Murphy and Connie Novicoff, MSCD
3:15 - 3:30	Coffee Break, East GALLERIA of NC			
	Session A - NC 1204 Ingrid Fotino, Chair	Session B - NC 1525 Dave Fisher, Chair	Session C - NC 1321 Bill Cherowitzo, Chair	Session D - NC 1326 Jon Plachy, Chair
3:30 - 3:55	<i>Integrating MAPLE, Spreadsheets, and Writing into Algebra and Introductory Statistics</i> , Linda Duchrow, Regis Univ	<i>Marginal Analysis of the Analytic Center Solution</i> , Allen Holder, CU-Denver	<i>The Domination- Compliance Graph of a Tournament</i> , Guillermo Jimenez (speaker), Richard Lundgren, CU-Denver	<i>Uncovering a Problem in Underground Storage Tanks</i> , Aref Nammari, MSCD
4:00 - 4:25	<i>MATLAB and Laboratory Explorations in ODE Classes</i> , Janet Burgoyne, SDSMT	<i>Teaching a Neural network to Back up a Trailer</i> , Douglas Hundley, CSU	<i>Using Mathwright in a College Algebra Course</i> , Robin Cruz, USC	<i>Vectors, Vodka, and Visualization</i> , Patricia Haus, Jeffrey Berg, Arapahoe CC
4:30 - 5:30	Invited Lecture: <i>The Impact of Modern Software on Mathematical Theory and Practice</i> , Stan Wagon, Macalester College, NC 1130			
5:30 - 6:00	MAA Department Liaison Meeting, NC 1204			
8:00 PM	Banquet Talk: <i>Writing Commercial Calculus Software</i> , Keith Devlin, St. Mary's College of California, Executive Tower Inn, Columbine Room			

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Final Program of Invited Talks, Contributed Talks and Special Sessions

Saturday, April 12 (NC = North Classroom Building)

8:00 - 8:55	MAA Business Meeting, coffee and rolls, NC 1130			
9:00 - 9:55	Invited Lecture: <i>Goodbye Descartes?</i> , Keith Devlin, St. Mary's College of California, NC 1130			
	Session A - NC 1204 Steve Billups, Chair	Session B - NC 1324 Special Student Session: Algebraic Combinatorics, Bill Cherowitzo, Chair	Session C - NC 1515 Gail Gliner, Chair	Session D - NC 1326 George Donovan, Shahar Boneh, Chairs
10:00 - 10:15	<i>Quantitative Reasoning and Mathematical Skills</i> , John Martin, CU-Boulder	<i>Life Without Triangles: Constructing the Payne GQ</i> , Mark Miller, CU- Denver	<i>A New Approach to Business Math: Calculating to Help Students Get into Business</i> , Tom Kelley, MSCD	<i>Creative Mathematics</i> , Zim Olson
10:20 - 10:35			<i>The Use of the TI-83 Graphing Calculator in Business Calculus</i> , Linda Sundbye, MSCD	<i>Two Simple Absorbing Markov Chains</i> , Roger Johnson, SDSMT
10:40 - 10:55	<i>A Mathematical Model for the Closed Loop of Bacterial Gene Regulation</i> , Jihad Qaddour, MSC	<i>An Introduction to Difference Sets or How to Factor a Prime Number With Finite Geometry</i> , Ann Cushman, CSU	<i>A Characterization of Infima for Finite Dimensional Hilbert Space Effects</i> , Tim Moreland, DU	<i>Knotty Mathematics</i> , Jennie O'Rourke, USC
11:00 - 11:25	Panel Discussion: CCHE's College Entry Competencies	<i>On Generalized Orthogonal Arrays</i> , Mike Adams, University of Wyoming	Panel Discussion: Experience in Using New Materials for Teaching Calculus	<i>Platonic Polyhedra Are Prodigiously Perfect Playful Polygons</i> , Emily Borrego, USC
11:30 - 11:55	Panelists: Darel Hardy, CSU, Glenn Bruckhart, CSU	<i>An Alternative Approach to the "Names-in-the-Hat" Technique</i> , Leanne Holder, CU-Denver	Panelists: Nancy Baggs, UCCS, Rick Ball, DU, Brad Kline, USAFA,	<i>A Mathematica Implementation of an Algorithm for Unconstrained Minimization</i> , Jerry Shultz, MSCD
Noon - 12:25	Organizer: Jim Loats, MSCD		Organizer: Joan Hundhausen, CSM	<i>Mathematics Versus Intuition in Gambling</i> , Shahar Boneh, MSCD

CSM = Colorado School of Mines, CSU = Colorado State University, DU = University of Denver, MSCD = Metropolitan State College of Denver, SDSMT = South Dakota School of Mining and Technology, UCCS = University of Colorado at Colorado Springs, UNC = University of Northern Colorado, USAFA = U.S. Air Force Academy, USC = University of Southern Colorado

Rocky Mountain Section of the MAA – ColoMATYC

North Classroom Building

First Floor

All contributed talks are held in shaded rooms



