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# Mathematics Opportunities

## MAA Contributed Papers in Orlando

The Mathematical Association of America and the American Mathematical Society will hold their annual joint meetings from Wednesday, January 10, 1996, through Saturday, January 13, 1996, in Orlando, Florida. The complete meetings program will appear in the October 1995 issues of *Focus* and the *AMS Notices*. This preliminary announcement is designed to alert participants about the MAA's contributed papers sessions and their deadlines.

Please note that the days scheduled for these sessions remain tentative. The organizers listed below solicit contributed papers pertinent to their sessions; proposals should be directed to the organizer whose name is followed by an asterisk (\*). For additional instructions, see the Submissions Procedures instructions on page ???.

Sessions generally must limit presentations to ten minutes, but selected participants may extend their contributions up to twenty minutes. Each session room contains an overhead projector and screen; blackboards will not be available. You may request one additional overhead projector, a 35mm slide projector, or a 1/2-inch or 3/4-inch VHS VCR with one color monitor. Persons needing additional equipment should contact as soon as possible but prior to October 23, 1995: Donovan H. Van Osdol, Department of Mathematics, University of New Hampshire, Durham, NH 03824, e-mail: [dvanosdo@math.maa.org](mailto:dvanosdo@math.maa.org).

*My Favorite ODE Solver and Why*, Friday morning and Saturday afternoon.

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Robert Borrelli, Harvey Mudd College

This session will accept suitable papers from people who have used ODE solvers in introductory courses in ordinary differential equations. The focus will be on solvers that are available to college teachers and students either for free or for a reasonable fee. The speakers will say why they like the solver, what it can do for the introductory ODE course, and something about the minimal hardware requirements, and will give examples of experiments in ODEs that use the solver to advantage.

*Assessment of Student Learning for Improving the Undergraduate Major in Mathematics*, Friday morning and Saturday afternoon.

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Barbara T. Faires, Westminster College

In January 1995 the MAA's Committee on the Undergraduate Program in Mathematics (CUPM) adopted a document prepared by its Subcommittee on Assessment en-

titled "Assessment of Student Learning for Improving the Undergraduate Major in Mathematics". A draft of the document circulated within the mathematics community during the 1994 year. The Subcommittee on Assessment now wants to collect specific examples of assessment programs in undergraduate mathematics departments. We invite papers on such programs—ones that are still in the planning stage or have just begun or are ongoing.

*Standards for Introductory College Mathematics Courses before Calculus*, Wednesday morning and Thursday afternoon.

Gregory D. Foley (\*)  
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Jon Wilkin, Northern Virginia Community College

In the autumn of 1995 the American Mathematical Association of Two-Year Colleges will publish *Crossroads in Mathematics: Standards for Introductory College Mathematics before Calculus*. This document is aimed at breathing new life into a too-often neglected part of the undergraduate mathematics program—freshman or pre-freshman courses that either provide a foundation for further mathematical study or serve as terminal courses for students in liberal arts, humanities, social science, teacher preparation, or two-year technical programs. We invite papers that offer innovative content and approaches for courses at this level.

*Planning Reformed Calculus Programs: Experiences and Advice*, Thursday morning and Friday morning.

Martin E. Flashman (\*)  
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Changing calculus programs involves more than adopting textbooks or technology. The CUPM subcommittee on Calculus Reform and the First Two Years (CRAFTY) is sponsoring this session so departments planning changes can share experiences and advice. We invite papers reporting on the process or results of planning calculus reform. Possible topics include connections with client disciplines and administration; articulating goals; pedagogy, technology, and topic selection; resource considerations; preparations for change; and continuing program assessment.

*Innovations in Teaching Linear Algebra*, Wednesday afternoon, Thursday evening, and Friday afternoon.

Donald LaTorre (\*)  
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Steven J. Leon (ATLAST), University of Massachusetts at Dartmouth; David C. Lay (LACSG), University of Maryland

The teaching of undergraduate linear algebra is undergoing substantial change. This session invites papers on personal experiences with innovations in teaching linear algebra, including: 1) the creative use of computer algebra systems, supercalculators, or computer software; 2) experiences with the NSF-funded ATLAST summer workshops; 3) experiences with the core curriculum recommended by the Linear Algebra Curriculum Study Group (LACSG); 4) "gems" of exposition in linear algebra; and 5) other innovative teaching initiatives in undergraduate linear algebra.

*Active Learning Strategies for Statistics and Probability*, Wednesday morning and Thursday afternoon.

Allan J. Rossman (\*)  
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fax: 717-245-1690

Mary R. Parker, Austin (Texas) Community College

We invite presentations on the active engagement of students in the process of learning about statistics and probability. These learning strategies may include projects, hands-on activities, experiments, writing, computer exercises, and open-ended questions about real data. Issues might include the incorporation of these into the course, effects on students' achievements and attitudes, and their use in courses other than the introductory course, such as mathematics for liberal arts, precalculus, and mathematical statistics.

*The Scholarship of Humanistic Mathematics*, Thursday morning and Saturday afternoon.

Alvin White (\*)  
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Joan Countryman, The Lincoln School; Harald Ness, University of Wisconsin Center

The idea that teaching, learning, and creating mathematics issue from the same psyche as literature, aesthetics, and music has attracted, since 1986, a worldwide network of people who share that idea. The existence of the Humanistic Math Network has encouraged individuals and groups to try new approaches to teaching, doing, and publishing. We invite papers that describe these new approaches, including projects, poetry, and stories.

*Chaotic Dynamics and Fractal Geometry*, Wednesday morning and Thursday afternoon.

Denny Gulick (\*)  
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Jon Scott, Montgomery College

During the past few years, chaotic dynamics and fractal geometry have gained prominence in mathematics and in applications. The goal of this special session is to promote these fascinating subjects. We invite papers on topics related to either chaotic dynamics or fractal geometry. The papers need to have an expository flavor.

*Constructivism across the Curriculum*, Wednesday morning and Thursday afternoon.

David M. Mathews (\*)

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Keith E. Schwingendorf, Purdue University North Central

We invite papers describing undergraduate courses in mathematics or statistics that reflect the use of constructivist learning theory. Papers may address courses for elementary education majors, liberal arts, or other special groups of students, or courses for mathematics majors. Content areas might include algebra and trigonometry through calculus to linear algebra, analysis, abstract algebra, and beyond. The goal of this session is to disseminate innovative, successfully class-tested pedagogical techniques and classroom strategies that reflect the constructivist theoretical view of how mathematics is learned.

*Creating an Active Learning Environment: Preparing Pre-service Teachers*, Thursday morning and Saturday morning.

Hubert J. Ludwig (\*)

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Kay Meeks Roebuck, Ball State University

Pre-service teachers must be prepared to create classroom environments in which students are active participants in the process of learning mathematics. Active learning techniques include the utilization of appropriate technology, discovery learning, and using concrete models. We invite papers related to the preparation of pre-service teachers for the utilization of active learning techniques in their teaching, particularly those describing courses and/or projects designed to prepare pre-service teachers to use computers as a teaching tool.

*Interactive Mathematics Texts in the Classroom—A Math-Kit Perspective*, Saturday afternoon.

James E. White (\*)

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Starting in 1992, the MAA sponsored the Interactive Mathematics Text Project, a project jointly funded by IBM and NSF. During the years of the project, an authoring environment called MathKit was developed in collaboration with scores of mathematics and science teachers. MathKit includes computer algebra and graphics in an intuitive scripting language called MathScript. To date, teachers (and their students) have created over 300 interactive mathematics and science "WorkBooks" in MathKit. In this session, we invite teachers to report on various aspects of student use of MathKit WorkBooks, both in classrooms and at home.

*Teaching Mathematics by Blind Instructors or to Blind Students*, Wednesday afternoon.

Norberto Salinas (\*)

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The theme of this session is the use of alternative techniques by blind instructors to teach mathematics to sighted students and the use of adaptive equipment and high technology in the learning process. Presentations will include demonstrations of these techniques.

*Innovations in Teaching Precollege Algebra Courses*, Friday morning.

Mohammad H. Ahmadi (\*)

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This session focuses on courses ranging from basic to college algebra. Presentations are invited on personal experiences in teaching such courses using innovative instructional techniques such as (but not limited to) cooperative learning, computer software, and use of laboratories. The paper should describe the methods of teaching, student assessment techniques, and effectiveness of the approach on variables such as student performance.

*Interdisciplinary Programs with Undergraduate Mathematics*, Friday afternoon.

Jerry Johnson (\*)

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Louis Gross, University of Tennessee

There has been an increasing call for undergraduate courses to have more applications and more contact with other disciplines, and the NSF has regularly funded interdisciplinary projects with mathematics as their centerpiece. Papers are sought that describe undergraduate interdisciplinary courses, activities, or programs which involve a significant mathematics component and are well along

in their development. Special consideration will be given to programs that are innovative and can be readily disseminated. Incorporation of technology is also desirable.

*Research in Undergraduate Mathematics Education*, Wednesday afternoon and Thursday morning.

Annie Selden (\*)

Tennessee Technological University

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after August 15:

Center for Research in Mathematics and Science Education

San Diego State University

6475 Alvarado Road, Suite 206

San Diego, CA 92120

John Selden, Mathematics Education Resources Company

This session is sponsored by the AMS-MAA Committee on Research in Undergraduate Mathematics Education (CRUME). We solicit research papers which address questions concerning the teaching and learning of undergraduate mathematics. Both theoretical and empirical investigations utilizing qualitative or quantitative methodologies are welcome. Whenever possible, these should be set within established theoretical frameworks and further existing work. We are especially interested in reports on completed studies.

### Submission Procedures for Contributed Paper Proposals

After you have selected a session to which you wish to contribute a paper, forward the following directly to the organizer (indicated above with an (\*)):

- the name(s) and address(es) of the author(s), and
- a one-page summary of your paper.

The summary should enable the organizer(s) to evaluate the appropriateness of your paper for the selected session. Consequently, you should include as much detailed information as possible within the one-page limitation.

Your summary must reach the designated organizer by **Friday, August 25, 1995**. The organizer will acknowledge receipt of all paper summaries. If the organizer accepts your paper, you will receive a standardized abstract form. Use this form to prepare a brief abstract. Please return the completed form as instructed by the organizer by Friday, September 8, 1995. Abstracts received after the deadline will not be published in the January 1996 *Abstracts of Papers Presented to the American Mathematical Society*. The *Abstracts* will be available in the meetings registration area during the conference in Orlando.

**DO NOT FORWARD COMPLETED SUMMARIES TO THE MAA OR TO THE AMS. THEY ARE TO BE SENT TO THE SESSION ORGANIZER.**

—MAA

## News from The Fields Institute

In 1996–97, The Fields Institute for Research in Mathematical Sciences will sponsor an emphasis year in Algebraic Model Theory. The organizing committee for the program consists of B. Hart (McMaster University), A. Lachlan (Simon Fraser University), A. Macintyre (Oxford University), M. Makkai (McGill University), R. McKenzie (Vanderbilt University), and M. Valeriote (McMaster University). All activities will take place from August 1996 to June 1997. The program will comprise a mixture of workshops, graduate courses, lecture series, and seminars.

Three workshops are currently planned. One on Geometric Model Theory will be held January 13–17, 1997, and another on Model Theory of Functions will be held March 17–21, 1997. The third, to be held May 26–June 9, 1997, will be a longer workshop with emphasis on permutation groups, stable groups, model theory of modules, model theory of analytic functions, decidability theory, and tame congruence theory.

In the fall term of 1996, three graduate courses are scheduled: Geometric Model Theory, Model Theory of Analytic Functions, and Tame Congruence Theory.

In addition to these activities, there will be a weekly colloquium, regular research and graduate seminars, and a lecture series concerning the interactions of model theory with other disciplines.

Aside from the organizers, some of the participants will be: G. Cherlin (Rutgers University), L. van den Dries (University of Illinois), R. Freese (University of Hawaii), E. Hrushovski (Hebrew University of Jerusalem and Massachusetts Institute of Technology), D. Marker (University of Illinois at Chicago), A. Pillay (University of Notre Dame), and R. Willard (University of Waterloo).

Support is available to cover some of the transportation and accommodation costs of short- and long-term visitors. Participation of graduate students and postdoctoral fellows will be an integral part of the year's activities. Postdoctoral positions for 1996–97 will be offered as well as support for graduate students. The Fields Institute will advertise these positions in the fall of 1995.

For more information, send e-mail to [model@fields.uwaterloo.ca](mailto:model@fields.uwaterloo.ca) or contact: Algebraic Model Theory Program, The Fields Institute, 185 Columbia Street West, Waterloo, Ontario, Canada, N2L 5Z5; fax 519-725-0704.

—The Fields Institute