



THE TWELFTH CONFERENCE ON RESEARCH IN UNDERGRADUATE MATHEMATICS EDUCATION – RALEIGH, NC, FEB 26 – MARCH 1, 2009

As part of its on-going activities to foster research in undergraduate mathematics education and the dissemination of such research, the Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education (SIGMAA on RUME) presents its twelfth Conference on Research in Undergraduate Mathematics Education.

This conference is a forum for researchers in collegiate mathematics education and includes the following themes: Results of current research, contemporary theoretical perspectives and research paradigms, and general issues in the psychology of mathematics education as it pertains to the study of undergraduate mathematics. The program will include plenary addresses, contributed paper sessions, and preliminary paper sessions.

Plenary Speakers for the conference will be:

- Jere Confrey, North Carolina State Univ.
- Stacy Lowery-Betz, Univ. of Miami-Ohio
- Orit Zaslavsky, Israel Institute of Tech.

There will also be a special panel discussion on Collaborations of Mathematics Educators and Mathematicians. Panelists include James Hamos (National Science Foundation), Rebecca McGraw (University of Arizona), and Joe Wagner (Xavier University).

Sessions will begin at 7:00 pm on Thursday, February 26, 2009, and continue through to noon on Sunday, March 1, 2009. The opening plenary will take place on Thursday evening followed by a reception. **The deadline for proposals is November 3, 2008.** More information on the conference is available at <http://mathed.asu.edu/crume2009/>

WINNER OF BEST PAPER AWARD AT THE 2008 ELEVENTH CONFERENCE ON RESEARCH IN UNDERGRADUATE MATHEMATICS EDUCATION

Congratulations to Stacy Brown, Pitzer College, whose paper was selected as the winner of the Best Paper presented at the 11th annual conference on research in undergraduate mathematics education. Her paper, *Exploring Epistemological Obstacles to the Development of Mathematic Induction*, presents results from two teaching experiments centered on proof by mathematical induction. The research was designed to distinguish between student difficulties that stem from instructional practices and those that are inherent in the concept of induction, itself.

Congratulations also to Keith Weber, Anna Brophy and Kathy Lin, Rutgers University and Jennifer Noll, Portland State University, who received honorable mention for their papers, *How do undergraduates learn about advanced mathematical concepts by reading text?* and *An Investigation of Graduate Teaching Assistants' Statistical Knowledge for Teaching*, respectively.

Congratulations Stacy, Keith, Anna, Kathy, and Jennifer! Their winning papers are available at the RUME conference proceedings link at www.rume.org.

UPDATE ON THE COLLEGIATE MATHEMATICS EDUCATION RESEARCH JOURNAL – CALL FOR MEMBER INPUT!

During the 2008 Conference on Research in Undergraduate Mathematics Education, Pat Thompson, Chris Rasmussen, and Karen Marrongelle led an update on and discussion about plans to constitute a regularly published journal for undergraduate mathematics education research. This journal, which we anticipate calling the Collegiate Mathematics Education Research Journal (CMERJ), is a

natural outgrowth of the current, periodically published volumes entitled Research in Collegiate Mathematics Education. The overarching goal of CMERJ is both to serve as a resource to the broader community and as a venue for building the intellectual foundation of undergraduate mathematics education research.

During Mathfest 2008, Pat Thompson, Chris Rasmussen, and Karen Marrongelle met with members of the MAA Publications Study Group to present the proposal for CMERJ and get feedback from the study group. One major concern of the MAA is the cost of publishing (either online or print) a new journal. As a result, we are thinking creatively about ways in which SIGMAA on RUME members can help support the journal. Here is where we need your help. We are asking all members of RUME to respond to a brief web-based survey. The survey can be accessed at www.rume.org. The closing date of the survey will also be available at the SIGMAA on RUME website. We thank you in advance for your input, without which we cannot make important decisions about the future of a RUME journal.

We thank those of you who responded to the survey request that was sent to the listserv in March 2008. The survey results provided us and leaders of the MAA with valuable information about what members of the RUME community and academic administrators value most in publications. We thank you in advance for your continued support of the efforts to make CMERJ a reality!

MAKING THE CONNECTION: RESEARCH AND TEACHING IN UNDERGRADUATE MATHEMATICS EDUCATION NOW AVAILABLE FROM THE MAA!

Part of the MAA Notes Series, chapters from "Making the Connection" include papers written by mathematics education researchers and by mathematicians discussing topics in the undergraduate curriculum as well as overarching issues in undergraduate mathematics education, with emphasis on the implications of that research in the teaching of undergraduate

mathematics. Marilyn Carlson and Chris Rasmussen edited the book. Special thanks to Marilyn and Chris for their impeccable editorial work and to all of the authors for their thoughtful contributions. Order your copy today at www.maa.org for a member price of \$47.95.

SIGMAA OFFICER ELECTIONS

This year's officer elections are for the positions of Coordinator-Elect and Organizational Director.

Candidates for Coordinator-Elect:

Natasha Speer, University of Maine
Draga Vidakovic, Georgia State University
Keith Weber, Rutgers University

Candidate for Organizational Director:

Stacy Brown, Pitzer College

Candidate statements were distributed through the listserv and will be available at www.rume.org.

Elections are web-based and managed through the MAA office. Paper ballots will be provided on request only. The SIGMAA on RUME ballot will take place October 15-31, 2008. More information on the upcoming ballot will be available at www.rume.org and distributed through the SIGMAA on RUME listserv.

SIGMAA ON RUME SPONSORED EVENTS AT THE JOINT MATHEMATICS MEETINGS, 2009, WASHINGTON, D.C.

- 1) Two Contributed Paper Sessions
- 2) Business Meeting

1.1) *Research on the Teaching and Learning of Undergraduate Mathematics I, II, III (Tuesday, January 6, 1-4:15pm; Wednesday, January 7, 3:15-5:15pm; Thursday, January 8, 9 – 10:55am)*

This contributed paper session includes research presentations that address issues concerning the teaching and learning of

undergraduate mathematics. The first session will begin with an invited talk by *Stacy Brown*, A Multiage Examination of Students' Approaches to Mathematical Induction Tasks. The second session will begin with an invited talk by *Craig Swinyard*, Reasoning about the Concept of Limit in the Context of Reinventing the Formal Definition. The third session will begin with an invited talk by *Vilma Mesa*, Dialogical Engagement in Two Interactive Mathematics Lessons. Each invited talk will be followed by three to five shorter presentations.

1.2) *Guided Discovery in Mathematics Education (Thursday, January 8, 1-5:15pm)*

This contributed paper session presents research related to the teaching of mathematics. There is growing research evidence in many fields, particularly mathematics and physics, that non-lecture based approaches to teaching are more effective in providing conceptual understanding of the subject. Physics has extensive published research on the efficacy of such programs. Mathematics education has been much slower to embrace this movement, rightly or wrongly. The session will include an invited paper presentation by *Joan Ferrini-Mundy*, Division Director, Division of Research on Learning in Formal and Informal Settings, National Science Foundation. This invited presentation will be followed by shorter paper presentations.

(2) *Business Meeting (Tuesday, January 6, 6pm-7:30pm)*

Items for the business meeting can be sent directly to Karen Marrongelle at karenmar@pdx.edu.

RESEARCH IN COLLEGIATE MATHEMATICS EDUCATION – PUBLISH YOUR WORK

Considered one of the top publications for RUME, the Research in Collegiate Mathematics Education (RCME) volumes are overseen by SIGMAA on RUME and jointly published by The American

Mathematical Society and the Mathematical Association of America. Current editors are *Derek Holton* and *Patrick Thompson*. Articles in RCME are peer-reviewed for two major features: (1) advancing our understanding of collegiate mathematics education, and (2) readability by a wide audience of practicing mathematicians interested in issues affecting their own students. For information on how to submit a paper for consideration in RCME, see <http://www.rume.org/rcme/index.html>.

RCME VI is available from the AMS Bookstore at www.ams.org/bookstore for an individual price of \$39.

NEW SIGMAA ON RUME HISTORIAN

This year, the RUME Executive Committee approved the creation of a RUME Historian. Initially, the historian will document the organization's history to date, beginning with its formation as ARUME (Association for Research in Undergraduate Mathematics Education), its connection to MAA, and its role as the first SIGMAA, to the present.

Once this has been accomplished and this record has been preserved on the RUME website, the historian shall keep an ongoing record of the organization's activities. These shall include, but will not be limited to, documenting the RUME conferences, when and where they were held, the plenary speakers, the number of contributed papers presented, and the number of attendees.

Annie Selden has been appointed the first RUME Historian. Thank you Annie for your continued efforts to document the progress of the SIGMAA on RUME organization!

RESEARCH TO PRACTICE SESSION AT MATHFEST AGAIN A SUCCESS!

This year we continued the successful workshop model that SIGMAA on RUME debuted at MathFest 2007. *Marilyn Carlson* led two, 90-minute interactive sessions that were attended by over 40 participants. The

sessions, Essential Reasoning Abilities and Conceptual Foundations for Beginning Calculus, were designed to make strong connections between research and practice. For example, during the first session participants discussed video of student reasoning on tasks from the *Precalculus Assessment Instrument*. This instrument assesses student understanding of the function concept and related reasoning abilities that mathematics education research studies have revealed to be foundational for understanding concepts in first semester calculus. After the first session participants read two mathematics education research papers and had follow up discussions the next day. They also had the opportunity to discuss modules developed in a current research project to promote students' understandings of the concept of function. Participants examined video data of students as they completed tasks in these modules. Discussions also led to reflections about the function knowledge needed for understanding ideas of limit, derivative and accumulation. Curricular activities that have been successful in promoting function understandings in students and select items from the PCA instrument were shared with workshop participants. Thanks to Marilyn Carlson for making this new session format a success two years in a row! Look forward to a new SIGMAA on RUME interactive session at the 2009 MathFest in Portland, OR.

RECHARGED LITERATURE COMMITTEE

The literature committee has been renewed and recharged to update and improve the literature database available at the SIGMAA on RUME website (www.rume.org). Keith Weber is chairing the committee, with fellow committee members Kelly Finn, Teri Jo Murphy, Debasree Raychaudhuri, Gloria Robalo, Mary Shepherd, Monica Harrison Smith, and Aaron Weinberg. Thank you to

all these committee members for volunteering their time and energy to improve and update the literature database. This is a hugely important resource for the entire RUME community.

IMPORTANT REMINDER

Most SIGMAA on RUME communications are electronic. All important SIGMAA on RUME announcements appear on the RUME listserv. In order to receive these announcement sign up by following the e-mail discussion list link at www.rume.org.

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Special thanks to Nicole Engelke, California State University – Fullerton, for her work on the 2008 RUME Newsletter.