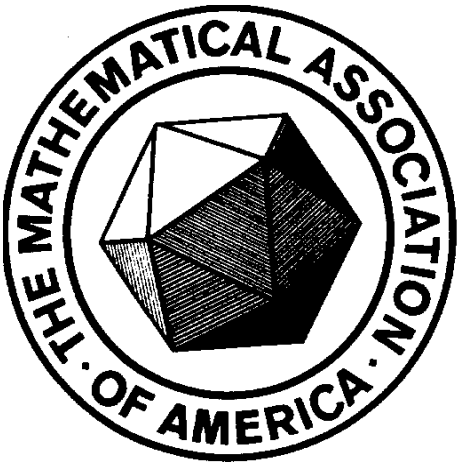
# The Mathematical Association of America

## Metropolitan New York Section
## and
## New Jersey Section




## Joint Meeting
## St Peter's College
## Jersey City, NJ

## Saturday, November 3, 2007

# Abstracts and Biographies of Speakers

### Was Cantor Surprised?
*Fernando Gouvêa, Colby College*

There is a story, much beloved by authors writing about the psychology of mathematics, that Cantor was so surprised at one of his theorems that he exclaimed, "I see it, but I don't believe it!" We'll look at the sources in order to see what really happened.

**Fernando Gouvêa** is the Carter Professor of Mathematics at Colby College. His main scholarly interests are in number theory and the history of mathematics. He is the author (or co-author) of four (or five, depending on how you count) books, including "Math Through the Ages" (with William P. Berlinghoff) and "p-adic Numbers" and he was co-editor of a fifth (or sixth). He is also the editor of FOCUS, the news magazine of the MAA, and of MAA Reviews, an online book review service.

He is fond of describing himself as "Christian, orthodox, Brazilian, American, conservative, husband, father, Lutheran, Sunday School teacher, choir director, editor, author, dog owner, bibliophile, wine geek, adoptive Mainer, historian wannabe, and the proud possessor of a graying scraggly beard." He has a serious case of collectoritis, and his book collection keeps growing. His interests range from mathematics to theology, music, poetry, classical literature, and science fiction.

### Calibrating the Difficulty of Classical Mathematical Problems
*Simon Thomas, Rutgers University*

In 1937, Reinhold Baer solved the isomorphism problem for the additive subgroups of the rational numbers, $\mathbb{Q}$. Since then, despite the efforts of many mathematicians, no satisfactory classification has been found for the additive subgroups of $\mathbb{Q} \oplus \mathbb{Q}$ and it is natural to ask whether this problem is “genuinely more difficult”'.

In this talk, I will discuss a recent method for measuring the relative complexity of classical mathematical problems and illustrate this approach with concrete problems from algebra, analysis, and topology. In particular, I will explain why

it would be a very bad idea to assign the classification problem for subgroups of $\mathbb{Q} \oplus \mathbb{Q}$ to one of your students.

**Simon Thomas** is a Professor in the Mathematics Department at Rutgers University, New Brunswick. He received his Ph.D. from the University of London in 1983 and joined the Rutgers faculty in 1986, after postdoctoral positions at Freiburg and Yale. His research interests include mathematical logic, group theory and combinatorics. He is a former editor of the Journal of Symbolic Logic and is currently on the editorial board of the Perspectives in Logic book series. In 2006, Professor Thomas gave an Invited Lecture in the Logic and Foundations Section at the International Congress of Mathematicians.

## Geometry, Symmetry, and Music

***Dmitry Tymoczko, Music Department, Princeton University***

My talk will focus on the role of symmetry in music theory. I will discuss five symmetries, the "OPTIC" symmetries, basic to ordinary musical discourse. I will generalize traditional music theoretical terminology by showing how to apply these symmetries, not just to musical objects, but to sequences of objects. I will then discuss a family of 32 quotient spaces representing various combinations of these symmetries, drawing connections to mathematical work by Bott, Ran, and others. Time permitting, I may also talk about two other geometrical models of musical structure, one originating in acoustics and suggesting connections to number theory, the other drawing on the techniques of Fourier analysis.

**Dmitri Tymoczko** is a composer and music theorist who teaches at Princeton University. He was born in 1969 in Northampton, Massachusetts. He studied music and philosophy at Harvard University, where his primary teachers were Milton Babbitt, Leon Kirchner, Bernard Rands, Stanley Cavell, and Hilary Putnam. In 1992 he received a Rhodes Scholarship to do graduate work in philosophy at Oxford University. He received a Ph. D. in music composition from the University of California, Berkeley, where his teachers included Jorge Liderman, Olly Wilson, David Milnes, Steve Coleman, Richard Taruskin, and Edmund Campion.

Dmitri's music has won numerous prizes and awards, including a Guggenheim fellowship, a Charles Ives Scholarship from the American Academy of Arts and Letters, two Hugh F. MacColl Prizes from Harvard University, and the Eisner and

DeLorenzo prizes from the University of California, Berkeley. He has received fellowships from Tanglewood, the Ernest Bloch festival, the Mannes Institute for Advanced Studies in Music Theory, and has been the composer in residence at the Radcliffe Institute for Advanced Study. He was awarded the Arthur Scribner Bicentennial Preceptorship from Princeton University. His music has been performed and by the Brentano Quartet, the Pacifica Quartet, Ursula Oppens, the Network for New Music, the Synergy Vocal Ensemble, the Gregg Smith Singers, the Cleveland Contemporary Youth Orchestra, and others. In addition to composing concert music, Dmitri enjoys playing rock and jazz.

Dmitri's writing has appeared in the *Atlantic Monthly, Boston Review, Civilization, Integral, Lingua Franca, Music Theory Online, Music Theory Spectrum,* and *Transition.* His recent article "The Geometry of Musical Chords" was the first music theory article published by *Science* in its 127-year history, and was discussed in *Time, Nature, The Washington Post*, *The Boston Globe*, NPR, *Physics Today,* and elsewhere. As a result of this work, he has been invited to speak to audiences of physicists, musicians, philosophers, mathematicians, and geneticists. He is currently writing a book for Oxford University Press about what makes music sound good.

## Abstracts and Biographies of Workshop Leaders

### Sharing Session: Recruiting and Retaining Math Majors

***Amy Cohen, Rutgers University***

Participants will describe initiatives that have been tried, preferably with some success.

**Amy Cohen** has taught at Rutgers since 1972. Her research interests are in partial differential equations with soliton solutions. She has worked extensively on projects to make education more satisfying for students and faculty alike. She has held offices in her department (e.g., Undergraduate Director) and in the MAA (e.g., Committee on the Undergraduate Programs).

### Making Mathematics-For-Non-Majors More Attractive
***Bonnie Gold, Monmouth University***

Depending on the school and its population, the majority of college math students may be taking calculus or the majority may be taking college algebra to satisfy distribution/general education requirements or requirements in their major. At the K-12 level, almost all college-bound students take the same sequence of courses. At the post-secondary level, should we teach courses designed so one-size-(mis)fits-all? In this workshop we will discuss the pros and cons of splitting basic general education course(s) into more specialized variations.

**Bonnie Gold** came to Monmouth University as department chair in 1998. She worked, over the next several years, on developing alternatives to the College Algebra course that most students take. She brings the perspective she gained working on two books on assessment in undergraduate mathematics, *Assessment Practices in Undergraduate Mathematics* and *Supporting Assessment in Undergraduate Mathematics*, to the question of what to do with service courses. She has been editor for many years of MAA Online's Innovative Teaching Exchange. She has also served on the MAA's Committee on Articulation and Placement, and on the Committee on the Teaching of Undergraduate Mathematics.

### What Makes a Good Book on Mathematics?
***Fernando Gouvêa, Colby College***

We will discuss math books from a consumer's point of view. Here are some possible topics. (1) What do you look for in a textbook? What distinguishes a mediocre textbook from a good one? (2) What's your favorite mathematics book? Is it a textbook or something different? (3) Are there "established classics" that we all like? (4) Can a mathematics textbook also be a good book?

For **Fernando Gouvêa's** biography, see page 3.

## Publisher Presentations

### WebAssign, by *Brooks Cole Publishing*

# Announcements

## Lunch Discussion Tables - Fall 2007 Meeting

Organized by Theresa C. Michnowicz, New Jersey City University

There will be 5 discussion tables at lunch (in addition to one for NJ-NExT).

1. *Historical anecdotes in the classroom: Do they help? And do we care if they're true?*, led by Fernando Gouvêa, Colby College.
2. *Music and Mathematics*, led by Dmitri Tymoczko, Princeton University
3. *Leading an undergraduate math research project*, led by Tom Hagedorn, The College of New Jersey.
4. *Mathematical preparation of elementary teachers*, led by Pat Kenschaft, Bloomfield College.
5. *Mathematics and technology*, led by Beimnet Teclezghi, New Jersey City University.

Those who pre-registered have priority at these discussion tables. We look forward to a set of lively and interesting discussions!

## Call for Nominations for the New Jersey Section Award for Distinguished College or University Teaching

The MAA-NJ Section Distinguished Teacher Award Selection Committee is seeking nominations for the 2008 Distinguished College or University Teaching Award. Information about the nomination process and eligibility requirements are posted at http://www.maa.org/newjersey. The process has been simplified. For more information you may contact Naomi Shapiro (Secretary MAA-NJ Section) at shapiro@georgian.edu 732-987-2340. Award nominations will be due Dec. 5, 2007.

## NJ-NExT

The third set of NJ-NExT workshops begins just prior to this meeting. There are 18 new NJ-NExT fellows, half from two-year colleges, half from four-year schools: Boualem Bendjilali, Rosemarie Gorini, Irene Jai, Miroslav Orna, and Tatyana Stepanova, all from Raritan Valley Community College; Zhixiong Chen from New Jersey City University; Micah Chrisman from Monmouth University; Svetlana Dubinin, Zsuzsanna Nagy, and Eshrat Sahafian, from Passaic County Community College; Dr. Srabasti Dutta, from College of St. Elizabeth; Dimitrije Kostic, from Drew University; David Nacin from William Paterson University; Sarita Nemani, from Georgian Court University; Michael Pezzimenti, from Ocean County Community College; Marek Slaby, from Fairleigh Dickinson University; Pangyen (Ben) Weng, from Ramapo College; and

(Continued on page 9, after the schedule)

**Mathematical Association of America**
**Joint New Jersey and Metropolitan New York Sections**
**Fall 2007 Meeting Program**

*All sessions except the concurrent workshops at 11:10 a.m. will take place in Dineen Hall, Roy Irving Theater*

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|---|---|
| 8:30 – 9:15 | **Registration and Coffee**, Dineen Hall, McIntyre Lounge |
| 8:30 – 1:30 | **Book Exhibits**, Dineen Hall, McIntyre Lounge |
| 9:15 – 9:30 | **Welcome by Dr. Eileen L. Poiani**, Vice-President for Student Affairs**,** St Peter's College |
| 9:30 – 10:20 | ***Geometry, Symmetry, and Music*, Dmitri Tymoczko**, Princeton University<br>Presider: Jerry G. Ianni, LaGuardia Community College (CUNY) |
| 10:20 – 10:50 | **Intermission**, (Coffee and Book Exibits), Dineen Hall, McIntyre Lounge |
| 10:50 – 11:10 | Chair's and Governor's Reports |
| 11:10 – 12:25 | **Workshops**<br>• **Sharing Session: Recruiting and Retaining Math Majors,** *Amy Cohen, Rutgers University,* McDermott Hall, Room 201<br>• **Making Mathematics-For-Non-Majors More Attractive**, *Bonnie Gold, Monmouth University,* McDermott Hall, Room 205<br>• **What Makes a Good Book on Mathematics**, *Fernando Gouvêa, Colby College,* Dineen Hall, Roy Irving Theater<br>**Brooks Cole, *WebAssign***, McDermott Hall, Room 204 |
| 12:25 – 2:00 | **Lunch**, Dineen Hall, McIntyre Lounge (Book exhibits end at 2:00.) |
| 2:00 – 2:50 | ***Calibrating the Difficulty of Classical Mathematical Problems,*** *Simon Thomas*, *Rutgers University*<br>Presider: Michael Puls, John Jay College (CUNY) |
| 2:50-3:30 | **Intermission and Refreshments**, Dineen Hall, McIntyre Lounge (Silent auction bidding ends at 3:30) |
| 3:30 – 4:20 | ***Was Cantor Surprised?,*** *Fernando Gouvêa, Colby College*<br>Presider: Michelle Picarelli, St Peter's College |
| 4:20 – 4:40 | Drawing of door prizes, and announcement of silent auction winners (must be present to win) |
| 5:00 | Dinner honoring Invited Speakers and Workshop Leaders |

(Continued from page 7)

Wei-Dong Zhu, from St. Peter's College. The workshops continue during and after this meeting (during the meeting, at the workshop time), and will be followed by an electronic discussion group, and more workshops at the next two New Jersey MAA section meetings.

### Future MAA-NJ Meetings

- The Spring 2008 MAA-NJ Section meeting will be held at William Patterson University, Saturday, April 12. Arthur Benjamin, of Harvey Mudd College, will be the joint MAA-GSUMC speaker.
- The Fall 2008 MAA-NJ Section meeting will be held at

### Call for Contributed Papers and Lunch Table Discussion Topics for the Spring 2008 MAA-NJ Meeting

There will be two general contributed paper sessions and three special sessions. All papers will be reviewed by the organizers and the selection committee. Please submit title, 3-4 line summary, and 1 page abstract by **March 5, 2008** to the organizer of the session.

- *Statistics: Practice and Pedagogy*. Organizer: Dexter C. Whittinghill, Rowan University, whittinghill@rowan.edu
- *Combinatorics and Theoretical Mathematics*. Organizer: Beimnet Teclezghi, New Jersey City University, bteclezghi@njcu.edu
- *Mathematics and Voting Theory.* Organizer: Michael Jones, Montclair University, , jonesm@mail.montclair.edu
- *General Contributed Paper Sessions*. Organizer: Theresa C. Michnowicz, New Jersey City University, tmichnowicz@njcu.edu

Please submit proposed Lunch Table Discussion Topics to Theresa C. Michnowicz, New Jersey City University tmichnowicz@njcu.edu, by **March 5, 2008**.

### Future MAA-Metropolitan NY Meetings

- The Spring 2008 MAA-MNY Section meeting will be held at New York University's Courant Institute of Mathematical Sciences on Saturday, May 3.

### MathFest 2008

The Mathematical Association of America will hold its annual MathFest in Madison, WI, July 31-August 2. Check MAA Online at http://www.maa.org for more information about MathFest.

**Other Future National MAA Meetings**

- 2008 Joint Mathematics Meeting, San Diego, CA, January 6-9.
- 2008 MathFest, Madison, WI, July 31-August 2, 2008.
- 2009 Joint Mathematics Meeting, Washington, DC, January 7-10, 2009
- 2009 MathFest, Portland, OR, August 6-8, 2009

**2008 PREP Workshops**

The program costs as well as the costs of food and lodging during the workshop are covered by PREP. However, there is a registration fee for each workshop. Visit MAA Online at http://www.maa.org/prep/ for information.

**Dinner Honoring the Invited Speakers**

The Section will honor the invited speakers at dinner following the meeting. Everyone is cordially invited.

**JOIN THE MAA** (http://maa.org/mbsvcs/future.html#joinmaa).

## Governor's Report

The meeting of the MAA Board of Governors in San Jose on August 2, 2007, was uniformly pleasant with the one exception at the end given below. Again I was impressed with how well this organization is run, but this time I also felt awed repeatedly by individuals who have remarkable intelligence, perception, and charm.

Bill Hawkins, director of SUMMA, asked that we appeal to members to consider applying for funding for helping minority students mathematically, most likely in undergraduate research. The TENSOR program is expanding every year, both in number of sites and activity per site. As he gets more applications, he hopes to be able to acquire more grants.

The longest discussion at the board meeting was about the motion to budget over $300K less for the income than expenditures of the "operating budget." It was pointed out that the MAA has been doing well financially and that if we include all items in the budget, the proposal is about $8000 positive in an annual budget of over $8 million--- "essentially balanced." After considerable discussion, the motion passed.

It was observed that both the budget and the size of membership vary considerably year by year. The break-out sessions were about membership. My session included an animated discussion about whether people join the MAA to be served or to serve and feel the power of a compatible group. We also talked about how the MAA appeals to people at various stages of their careers.

Officers and members of the staff told of their activities. Bob Anastasio, who joined the MAA Marketing and Membership Department last winter, told of a conference with his peers from other mathematical organizations. He commented that after working in for-profit corporations for many years, which were always competing and trying to keep information from each other, it was very nice to see how NGO's share information and help each other, even though they may compete somewhat for members.

Jennifer Galovich, the new governor from the North Central Section, had a motion in the agenda that the MAA do a study of how green its investments are, and how much it would cost to shift them to greener places. When it was her turn to speak, she withdrew the motion, telling us that the financial officers and staff had already initiated such a study and that they had promised to report back at the January meeting. This was greeted with animated applause.

The other piece of "new business" was a resolution that the MAA discourage employers from holding job interviews in bedrooms at MathFest and the JMM. A male governor said his department did this routinely because of the noise and unpleasantness of the public settings for interviews. The young female governor for minorities said she had been faced with two such interviews "in a difficult job market" when she felt she couldn't turn down any interview, and they made her very uncomfortable. Martha Siegel said it was not just women who reported being uncomfortable with interviews in a hotel bedroom. The same male governor said, "You are saying you don't trust employers!" and there was a large murmur of agreement.

When the vote was taken, his was the only "nay," and it was loud. However, afterward a much older male governor raised his hand and said, "Speaking of intimidation... I felt so intimidated by the discussion here that I couldn't vote "no" on this proposal.

The rest of the meeting was extremely congenial with many fascinating, impressive reports.

# News from NJ Departments

**Georgian Court University** Georgian Court University is very pleased to welcome Sarita Nemani to its Department of Mathematics. Sarita received the Doctor of Philosophy in Mathematics from the University of New Brunswick, Canada in 2001. Prior to that, she received the Master of Philosophy in Mathematics from the Indian Institute of Technology, Mumbai, India in 1998, and the Master of Science in Mathematics from the University of Bombay, India in 1994.

Her research interests include the follwing topics: Perturbation methods for solving systems of linear equations, developing efficient algorithms for parallel processing, and spectral approximation theory for variational problems.

**Monmouth University** Monmouth University welcomes three new faculty members this Fall. Micah Chrisman joins us as an Assistant Professor after receiving his Ph. D. from the University of Hawaii. Micah's research interests include algebraic and low-dimensional topology. Suneal Chaudhary also joins us as an Assistant Professor. Suneal received his Ph. D. from UCLA and held a postdoctoral position at the University of Utah before coming to Monmouth. Suneal's research interests are in mathematical and computational finance. Finally, joining us as a full-time lecturer is Bruce Ralli, who comes to Monmouth University after teaching for 35 years at J. P. Stevens High School in Edison, as well as at Middlesex County College. Bruce received his Master's in mathematics from Georgian Court University.

**New Jersey City University** The NJCU Mathematics Awareness Lectures will be held at New Jersey City University on Thursday, April 24, 2008. The theme is Mathematics and Voting, www.mathaware.org. If you are interested in giving a contributed paper, please contact Theresa C. Michnowicz, tmichnowicz@njcu.edu, 201-200-3219 before **December 15, 2007**.

## MAA-NJ Section Officers

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|---|---|
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**Awards Committee** Mark Korlie, Montclair State University, Theresa C. Michnowicz (chair), New Jersey City University, Naomi Shapiro, Georgian Court University

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**Teaching Award Committee** Janet H. Caldwell, Rowan University, Amy Cohen (chair), Rutgers University, Roger Pinkham, Stevens Institute of Technology, Arthur Schwartz, Mercer County Community College, Kenneth Wolff, Montclair State University

**Acknowledgments** The MAA New Jersey and Metropolitan New York Sections thanks the Mathematics Department of St. Peter's College for their kind hospitality in hosting the meeting. It also thanks Springer for donating books for the silent auction and door prizes.