

Mathfest 2004
Providence, RI



MAA and Pi Mu Epsilon
Student Paper Sessions
August 12-13, 2004

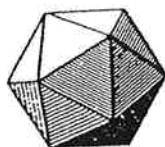


PI MU EPSILON

Pi Mu Epsilon is a national mathematics honor society with over 300 chapters throughout the nation. Established in 1914, Pi Mu Epsilon is a non-secret organization whose purpose is the promotion of scholarly activity in mathematics among students in academic institutions and among staffs of qualified non-academic institutions. It seeks to do this by electing members on an honorary basis according to their proficiency in mathematics and by engaging in activities designed to provide for the mathematical and scholarly development of its members.

Pi Mu Epsilon regularly engages students in scholarly activity through its *Journal* which has published student and faculty articles since 1949. In addition, the society awards monetary prizes for mathematics contests and awards established by chapters.

Since 1952, Pi Mu Epsilon has been holding its annual National Meeting in conjunction with the summer meetings of the Mathematical Association of America (MAA).



MAA Student Chapters

The MAA Student Chapters program was launched in January 1989 to encourage students to continue study in the mathematical sciences, provide opportunities to meet with other students interested in mathematics at national meetings, and provide career information in the mathematical sciences. The primary criterion for membership in an MAA Student Chapter is "interest in the mathematical sciences." Thus, the Student Chapter program supplements, but does not compete with, the chapters of Pi Mu Epsilon. Currently there are approximately 225 active Student Chapters on college and university campuses nationwide. Students are also members of the MAA Sections in their geographic region. Many of the MAA Sections provide special activities for students at their regularly scheduled meetings.

**Student Activities
Schedule of Events**

All events will be held in the Rhode Island Convention Center (RICC) and the Westin Hotel

Wednesday, August 11

5:30 pm - 6:30 pm	MAA/PME Student Reception	Rotunda, RICC
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Thursday, August 12

8:00 am - 11:30 am	PME Council Meeting	Executive Boardroom, Westin
9:00 am - 5:00 pm	Student Hospitality Center	Ballroom A, RICC
1:00 pm - 2:55 pm	MAA Session #1	Bristol Room, Westin
1:00 pm - 2:55 pm	PME Session #1	Newport Room, Westin
1:00 pm - 2:55 pm	MAA Session #2	Kent Room, Westin
1:00 pm - 2:55 pm	PME Session #2	Washington Room, Westin
3:00 pm - 4:55 pm	MAA Session #3	Bristol Room, Westin
3:00 pm - 4:55 pm	PME Session #3	Newport Room, Westin
3:00 pm - 4:55 pm	MAA Session #4	Kent Room, Westin
3:00 pm - 4:55 pm	PME Session #4	Washington Room, Westin
5:00 pm - 5:50 pm	MAA Modeling Contest Winners	Bristol Room, Westin

Friday, August 13

8:00 am - 11:30 am	PME Council Meeting	Executive Boardroom, Westin
9:00 am - 5:00 pm	Student Hospitality Center	Ballroom A, RICC
1:00 pm - 2:55 pm	MAA Session #5	Bristol Room, Westin
1:00 pm - 2:55 pm	PME Session #5	Newport Room, Westin
1:00 pm - 2:55 pm	MAA Session #6	Kent Room, Westin
1:00 pm - 2:55 pm	PME Session #6	Washington Room, Westin
3:00 pm - 5:35 pm	MAA Session #7	Bristol Room, Westin
3:00 pm - 4:55 pm	PME Session #7	Newport Room, Westin
3:00 pm - 5:35 pm	MAA Session #8	Kent Room, Westin
3:00 pm - 4:55 pm	PME Session #8	Washington Room, Westin
6:00 pm - 7:45 pm	PME Banquet	Waterplace Ballroom, Westin
8:00 pm - 9:00 pm	J. Sutherland Frame Lecture Joan P. Hutchinson , Macalester College <i>When Five Colors Suffice</i>	Narragansett Ballroom, Westin

Saturday, August 14

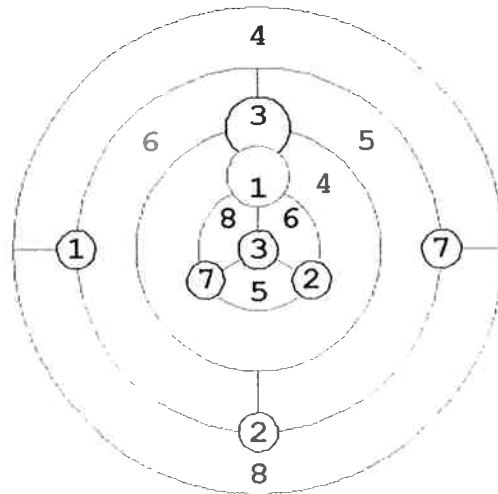
9:00 am - 3:00 pm	Student Hospitality Center	Ballroom A, RICC
1:00 pm - 2:50 pm	MAA Student Workshop Benoit Mandelbrot <i>Topics in Fractal Geometry</i>	RICC 557
3:00 pm - 3:50 pm	MAA Student Lecture Mario Martelli , Claremont-McKenna College <i>The Secret of Brunelleschi's Cupola</i>	RICC 557
4:00 pm - 4:30 pm	MAA Special Session on <i>Math Horizons</i> Arthur T. Benjamin , Harvey Mudd College Jennifer J. Quinn , Occidental College	RICC 557
4:45 pm - 5:45 pm	Student Problem Solving Competition	RICC 557

J. Sutherland Frame Lecture

Friday, August 13, 2004
8:00 - 9:00 pm
Narragansett Ballroom, Westin Hotel

WHEN FIVE COLORS SUFFICE
Joan P. Hutchinson
Macalester College

The challenging four-color conjecture, posed in 1852, asks whether four colors are enough to color the regions of any map so that two regions that share a boundary receive different colors. In 1976 K. Appel and W. Haken proved that "four colors suffice." With some changes to the problem, four colors may no longer be enough. We discuss these variations in which five, not four, colors suffice.



How many colors are needed to color this map? Each country consists of two connected regions, with the two regions numbered the same. Both regions of a country must receive the same color, and adjacent regions must receive different colors.

The J. Sutherland Frame Lecture is named in honor of the ninth President of Pi Mu Epsilon, who served from 1957 to 1966 and passed away on February 27, 1997. In 1952, Sud Frame initiated the student paper sessions at the annual Pi Mu Epsilon meeting, which is held at the Summer Mathfests. He continually offered insight and inspiration to student mathematicians at these summer meetings.

MAA Student Lecture

Saturday, August 14, 2004

3:00 - 3:50 pm

Room 557, Rhode Island Convention Center

THE SECRET OF BRUNELLESCHI'S CUPOLA

Mario Martelli

Claremont-McKenna College

How did he do it? In 1420 the architect Filippo Brunelleschi won the competition for building the "octagonal cupola" of Florence's cathedral. His innovative design did not use centering. Brunelleschi built a model to show that his proposal would work, but he categorically refused to reveal his secret. The mystery remains today, but a recent mathematical analysis has been able to lift the veil from parts of Brunelleschi's design. How? Come to the talk to find out.

Pi Mu Epsilon Delegates

Speakers

Name	School	Chapter	PME Session
Serina Alfano	St. Peter's College	NJ Epsilon	6
Melanie Antos	St. Norbert College	WI Delta	7
Holly Attenborough	Miami University	OH Delta	4
Stephanie S.Barille	Mount Union College	OH Omicron	1
Nicholas P. Biller	Occidental College	CA Theta	3
Brian Black	Providence College	RI Gamma	1
Dakota Blair	Texas A&M University	TX Eta	3
Angela Brown	Sam Houston State University	TX Epsilon	5
Nathan Brown	Northwestern University	IL Beta	2
Michael Cortez	Hope College	MI Delta	8
Nicole Cunningham	Youngstown State University	OH Xi	6
Paul Dawkins	Angelo State University	TX Zeta	2
Steve Dinda	Youngstown State University	OH Xi	8
Nathan D. Edington	Hood College	MD Delta	7
John Filkorn	John Carroll University	OH Lambda	4
Henry Gould	Hope College	MI Delta	8
Adam Gray	University of Mississippi	MS Alpha	4
Carly Grey	John Carroll University	OH Lambda	4
Brian Hahn	St. Norbert College	WI Delta	1
Caleb Hallauer	University of Mississippi	MS Alpha	6
Jeremy Hamilton	Youngstown State University	OH Xi	5
Colleen Hughes	Denison University	OH Iota	3
Julie Iammarino	John Carroll University	OH Lambda	5
Adam Kolakowski	St. Peter's College	NJ Epsilon	6
Eric Laber	UCLA	CA Alpha	4
Kristina M. Lund	Grand Valley State University	MI Iota	2
Melissa Marshall	Youngstown State University	OH Xi	5
Ashley Moses	Sam Houston State University	TX Epsilon	1
William Neris	SUNY Fredonia	NY Pi	3
Erin Polsley	Elmhurst College	IL Iota	3
W. Andrew Pruett	Millsaps College	MS Delta	2
Lisa Reeder	New Mexico State University	NM Alpha	7
Jill Schmidt	St. Norbert College	WI Delta	8
Rita Schneider	Fairfield University	CT Gamma	8
Patrick Sigmon	Wake Forest University	NC Lambda	2
Jodi Simons	University of New Hampshire	NH Alpha	6
Theodore T. Stadnik	Youngstown State University	OH Xi	8
Ryan Sternberg	Worcester Polytechnic Institute	MA Alpha	3
Anupama			
Tippabhotla	University of South Florida	FL Epsilon	1
Sarah Van Asten	St. Norbert College	WI Delta	5
Mark Walters	Miami University	OH Delta	7
Andrew Wells	Hope College	MI Delta	6
Ryan Westbrook	Texas A&M University	TX Eta	7
Alyssa Wood	St. Norbert College	WI Delta	5

Additional Delegates

Aja Johnson	Elon University	NC Nu
Brian Krummel	University of Maryland, Baltimore Cnty.	MD Gamma
Caroline White	St. Louis University.	MO Gamma

MAA Student Speakers

Name	MAA Session	Name	MAA Session
Brandon Batista	5	Meghan Kelley	1
Marisa Belk	1	Robin Koytcheff	8
Elizabeth Bellenot	8	Mark Lane	2
Christina Brakken-Thal	5	David LeRay	5
Kevin Brink	5	Kari Lock	6
Ashley Brown	8	Katherine Magouirk	2
Emily Buessing	6	Alicia Martin	8
Nathaniel Burch	3	Nicholas McClure	5
Brian Chen	6	Jacob McMillen	6
Drew Colthorpe	5	Amanda Morris	4
Ivan Corwin	7	Wing L. Mui	8
Adam Cox	6	Ryan Ottman	1
Christy Sue Crouch	6	Shannon Ponek	4
Aubrey da Cunha	8	Caleb Reusser	2
Agata Danielak	3	Andrew Reynolds	2
Matthew Davis	1	Becky Robinson	7
Amy DeCelles	8	Matt Rodrigues	1
Anthony DeLegge	1	Rebecca Russ	4
Christopher Dodd	7	Mary Servatius	1
Shawn Elledge	4	Vojislav Sesum	7
William Espenschied	8	Lauren Sharesian	8
Matthew Fanello	6	Matthew Spencer	3
Rachel Finck	3	Noah Stein	7
Todd Gaylord	1	Colleen Sweeney	8
Matthew Goldfield	8	Dan Tating	1
Richard Gottesman	8	Leya Tesmenitsky	4
André Harmse	4	Abby Van Houten	4
Mohammed Haque	3	Phillip Whitman	4
Stephanie Hurder	7	Kevin Wierzbicki	3
Phakawa Jeasakul	7	Robert Willenbring	8
Anne Jirapattanakul	7	Alice Wilson	8
Pollyanna Jones	2	Jenni Wirth	5
Daniel Kane	7	Zhongtao Wu	3
Matthew Katschke	2	Ya Xu	7