Closing the Circle: the use of meetings to complete and promote undergraduate research

AMS Sectional Meeting, March 2014

UMBC

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SUMS through the RUMC

- Regional Undergraduate Mathematics Conferences (RUMC) Program, funded by NSF, administered by the MAA

- First round of conferences in 2003

- Shenandoah Undergraduate Mathematics and Statistics (SUMS) Conference at James Madison University, 2005-2014

- Designed and implemented by Laura Taalman and myself

Rationale

- Communication of outcomes is an essential part of conducting research. So undergraduate conferences must be part of the national mathematics and statistics community REU effort.

- Students are inspired by seeing what their peers have accomplished; conferences can boost research engagement.

Motivations for MAA RUMC:

To provide undergraduate students with the opportunity to:

- present mathematically-oriented talks

- better expand their knowledge of the wide range of theory, history, and applications of the mathematics sciences

- (with an implicit regional component)

Additional goals of SUMS:

- Reflect the energy and sophistication of the REU summer program onto the academic year.
- Expose students to mathematical practice and outstanding exposition
- Boost research engagement on the part of JMU student
- Increase the diversity of the research pool by highlighting and supporting student and faculty speakers from a variety of demographics.
- Outreach to Virginia high schools students

How it works:

- Contributed undergraduate research talks

- Outstanding exposition by invited speakers

- Poster competitions for research and expository

- Panels on: REU, math careers, graduate school

- Social and networking: puzzle table, prizes, tea, T-shirts

- http://www.jmu.edu/mathstat/sums/Schedule.shtml

Nine years of SUMS

Year	Talks	Posters	Schools	Attend	Budget	RUMC
2005	16	11	33	233	$5,850	$2,500
2006	23	27	35	252	$7,160	$3,000
2007	28	32	46	237	$6,960	$2,700
2008	21	18	37	177	$7,650	$2,700
2009	29	20	42	256	$7,900	$2,700
2010	40	15	58	322	$8,600	$2,500
2011	35	12	44	331	$9,100	$3,000
2012	36	9	52	262	$10,290	$4,100
2013	35	8	45	26	$10,441	$3,840

SUMS participants – 2008-2010
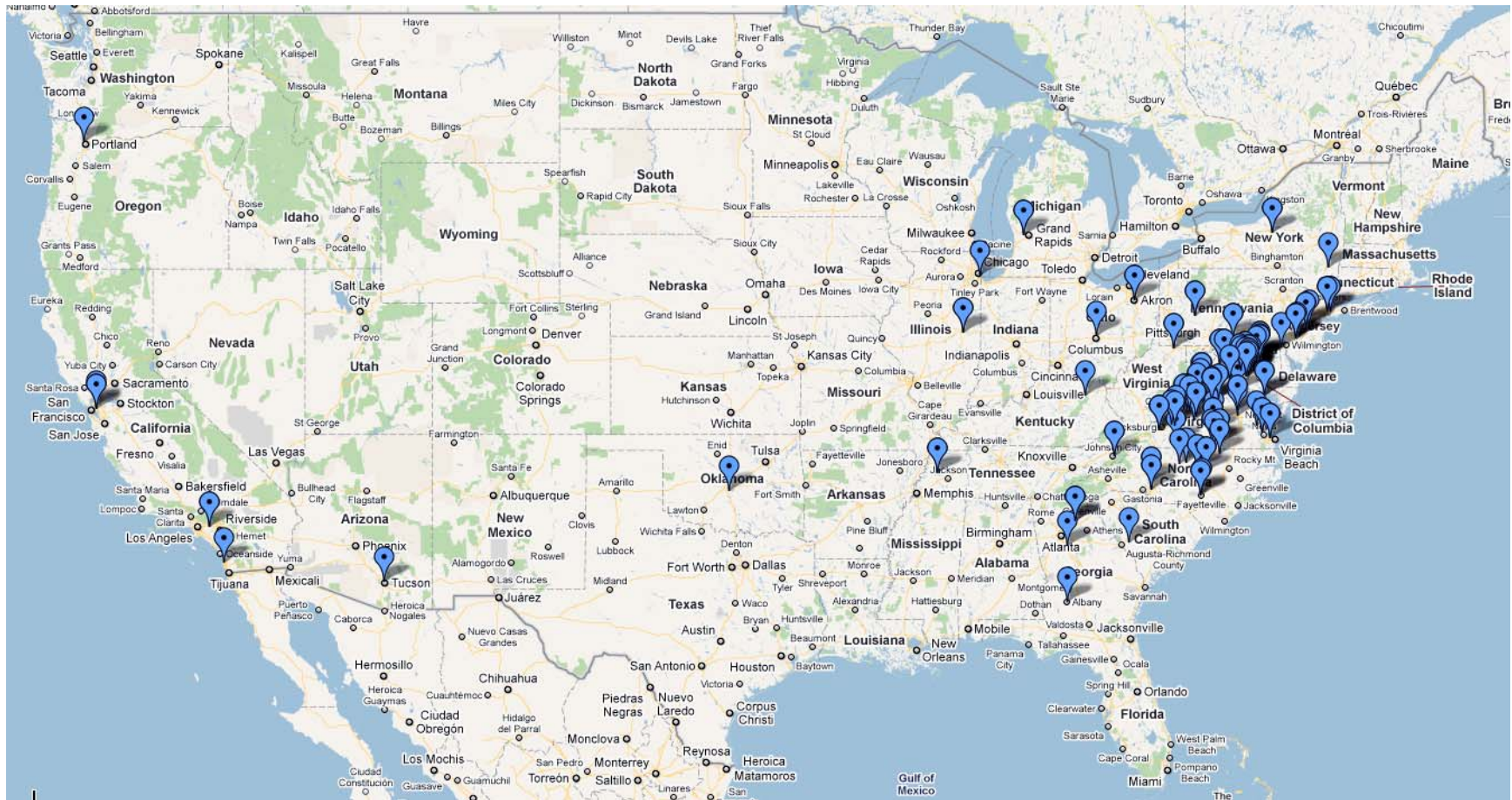
SUMS regional participants 2008-2010
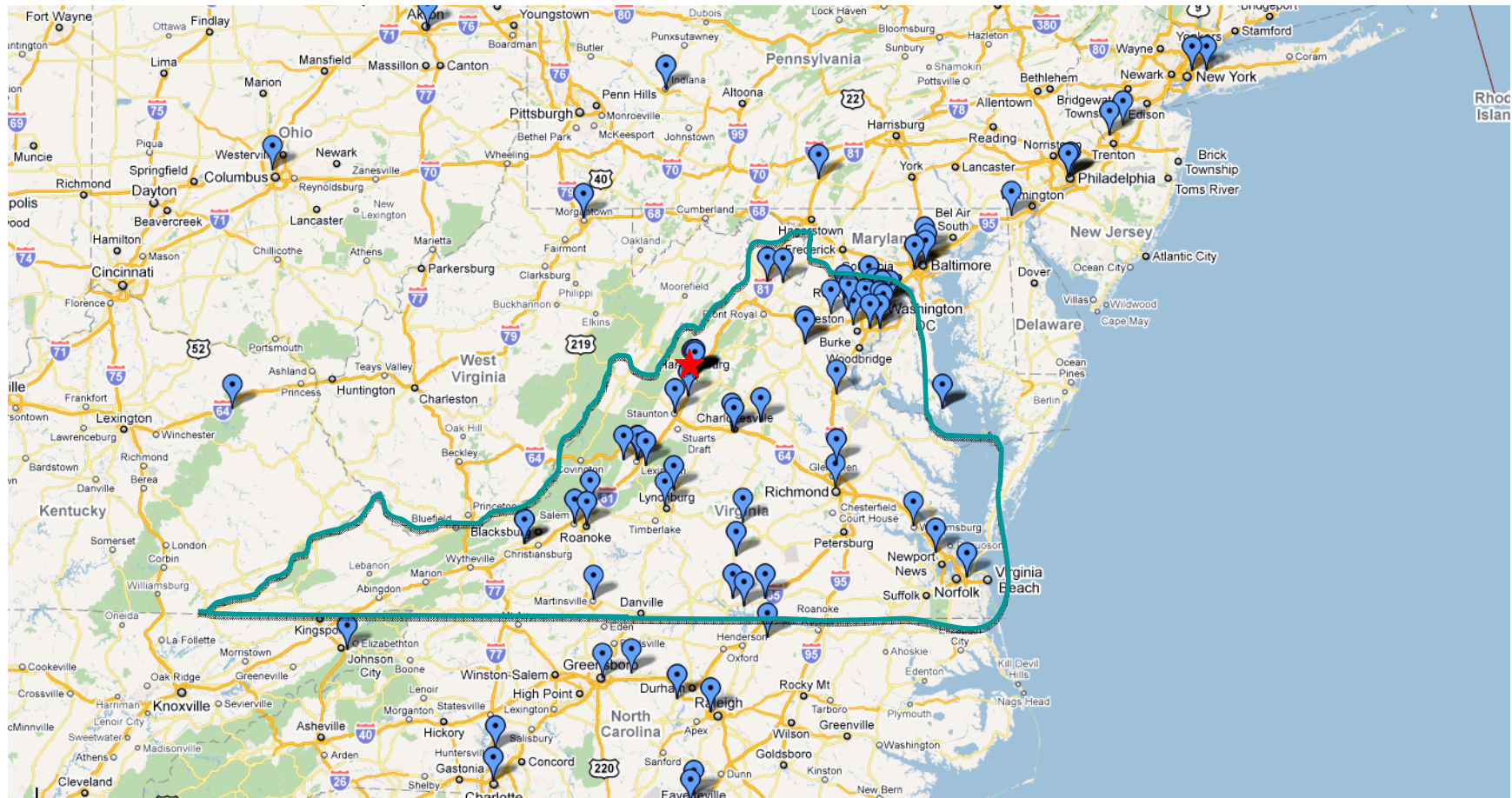
Invited faculty speakers:

Art Benjamin, Harvey Mudd College
Proofs That Really Count

Greg Warrington, Wake Forest
Juggling Probabilities

Ed Burger, Williams College
Conjugate Coupling: The romantic adventure of the quintessential quadratic

Tim Chartier, Davidson College
Putting a Spring in Yoda's Step

Ann Trenk, Wellesley College
Groovy Graphs: Coloring, Scheduling and Solving Mysteries

Mike Krebs, California State University, Los Angeles
Beaucoup de Sudoku

Michael Mossinghoff , University of South Carolina

Sufferin' Succotash! A Problem of Sylvester's

Robin Wilson, Cal Poly Pomona

Knots, Surfaces, and 3-Manifolds

Doron Zeilberger, Rutgers University

SUMS

Michael Starbird, University of Texas at Austin

The Fourth Dimension

Ravi Ramakrishna, Cornell University

Elliptic curves: What are they and why should we care?

Cliff Stoll, Acme Klein Bottle Company

"Low Dimensional Topology for Fun and Profit"

-or how to extract money from the 4th dimension...

Ruth Charney, Brandeis University
   From Robotics to Geometry
Colin Adams, Williams College
   Blown Away: What Knot to Do When Sailing

Robert Bryant, MSRI
   Geometry Old and New: From Euclid to String Theory
Chuck Sonenshein, Sunshine Math
   Adventures in Mathmagic Land

Robert Lang, Lang Origami
   From flapping birds to space telescopes: the mathematics of origami
Carolyn Yackel, Mercer University
   Beautifying life with mathematics

Outstanding expositors and researchers

Challenges

- Resources

- Optimize the invited speakers on campus

- Funding, always

- Making undergraduate research into an activity which complements rather than hinders faculty research

- The next step-publication

Conclusion:

Thank you for coming today!

Save the date:

    SUMS X will be October 4, 2014.

Questions?