

Jason Rosenhouse

CONTACT INFORMATION

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EDUCATION

Dartmouth College, Ph.D. in Mathematics, 2000
Dartmouth College, M.A. in Mathematics, 1997
Brown University, B.S. in Mathematics, 1995

EMPLOYMENT HISTORY

James Madison University, Harrisonburg, Virginia
Professor of Mathematics, 2014-present

James Madison University, Harrisonburg, Virginia
Associate Professor of Mathematics, 2008-2014.

James Madison University, Harrisonburg, Virginia
Assistant Professor of Mathematics, 2003-2008.

Kansas State University, Manhattan, Kansas
Instructor in Mathematics, 2000-2003.

Dartmouth College, Hanover, New Hampshire 1995-2000
Lecturer in Mathematics, 1997-2000; Teaching Assistant, 1995-1997

RESEARCH INTERESTS

Algebraic Graph Theory, Recreational Mathematics,
Science Education, Analytic Number Theory.

AUTHORED BOOKS

Games Of the Mind: The History and Future Of Logic Puzzles. Forthcoming from Princeton University Press, November 2017.

Among the Creationists: Dispatches From the Anti-Evolutionist Front Line, Oxford University Press, New York, April 2012. Nominated in the non-fiction category of the annual Library of Virginia Literary Awards.

Taking Sudoku Seriously: The Math Behind the World's Most Popular Pencil Puzzle (with L. Taalman), Oxford University Press, New York, December 2011. Recipient of the 2012 PROSE Award, from the Association of American Publishers, in the category "Popular Science and Popular Mathematics."

The Monty Hall Problem: The Remarkable Story of Math's Most Contentious Brainteaser, Oxford University Press, New York, June 2009. Chosen as one of the top ten math and science books of 2009 by the editors of Amazon.com.

EDITED BOOKS

The Mathematics of Various Entertaining Subjects, Vol II: Research in Recreational Math, (edited with J. Beineke). Forthcoming from Princeton University Press, August 2017.

RESEARCH
PAPERS

The Mathematics of Various Entertaining Subjects: Research in Recreational Math, (edited with J. Beineke), Princeton University Press, Princeton, December 2015.

Four Lives: A Celebration of Raymond Smullyan, Dover Publications, Mineola, March 2014.

Fuzzy Knights and Knaves, to appear in *Mathematics Magazine*

The History and Future of Logic Puzzles, to appear in *The Mathematics of Various Entertaining Subjects, Vol. II: Research in Recreational Math*, Princeton University Press.

On Mathematical Anti-Evolutionism, *Science and Education*, Vol. 25, No. 1-2, March 2016, pp. 95-114

Knights, Knaves, Normals and Neutrals, *The College Mathematics Journal*, Vol. 45, No. 4, September 2014, pp. 297-306.

Non-Classical Knight/Knave Puzzles, *MAA Focus, Puzzle Page*, Vol. 34, No. 2, April/May 2014, p. 22. Solution in *MAA Focus*, Vol. 34, No. 3, May/June 2014, p. 25.

Isoperimetric Numbers of Regular Graphs of High Degree with Applications to Arithmetic Riemann Surfaces (with D. Lanphier), *Electronic Journal of Combinatorics*, Vol. 18, 2011, #P164, 16 pages.

The Monty Hall Problem, Reconsidered (with S. K. Lucas, A. Schepler), *Mathematics Magazine*, Vol. 82, No. 5, December 2009, pp. 332-342.

Cheeger Constants of Certain Arithmetic Hyperbolic 3-Manifolds (with D. Lanphier), *Illinois Journal of Mathematics*, Vol. 53, No. 3, 2009, pp. 769-783.

Optimal Strategies for the Progressive Monty Hall Problem (with S. K. Lucas), *The Mathematical Gazette*, Vol. 93, No. 528, Nov. 2009, pp. 410-419.

The Deal or No Deal Problem, *Math Horizons*, September, 2008, p. 7

Constructing Cayley Graphs Via Tessellations of Riemann Surfaces, *Congressus Numerantium*, Vol. 179, 2006. pp. 209-213.

Media Coverage of Intelligent Design (with G. Branch), *BioScience*, Vol. 56, No. 3, March 2006. pp. 247-252. Reprinted in *The Reference Shelf*, Vol. 18, No. 5, "Evolution," The H. W. Wilson Company, 2006, pp. 39-50.

Expansion Properties of Levi Graphs (with D. Lanphier, C. Miller, A. Russell), *Ars Combinatoria*, Vol. 80, 2006. pp. 3-9.

Lower Bounds on the Cheeger Constants of Highly Connected Regular Graphs (with D. Lanphier), *Congressus Numerantium*, Vol. 173, 2005. pp. 65-74.

A Decomposition Theorem for Cayley Graphs of Picard Group Quotients (with D. Lanphier), *The Journal of Combinatorial Mathematics and Combinatorial Computing*, Vol. 50, 2004. pp. 95-104.

Cheeger Constants of Platonic Graphs (with D. Lanphier), Discrete Mathematics, Vol. 227, Nos. 1-3, 2004. pp. 101-113.

Sparse Polynomial Exponential Sums (with T. Cochrane, C. Pinner), Acta Arithmetica, Vol. 108, No. 1, 2003. pp. 37-52.

Leaders and Followers in the Intelligent Design Movement (Viewpoint Column), BioScience, Vol. 53, No.1 January 2003. pp. 6-7.

Bounds on Polynomial Exponential Sums and the Polynomial Waring Problem Mod p (with T. Cochrane, C. Pinner), Journal of the London Mathematical Society, Vol. 67, No. 2, 2003. pp. 319-336.

Probability, Optimization Theory and Evolution (Book Review), Evolution: The International Journal of Organic Evolution, Vol. 56, No.8, August 2002. pp. 1721-1722. Reprinted in Reports of the National Center for Science Education, Vol. 23, 2003. pp. 48-52.

Rhetorical Legerdemain in Intelligent Design Literature, in *The Single Best Idea Ever: Darwin Day Collection One*, Amanda Chesworth, ed. Tangled Bank Press, 2002. pp. 327-338.

Isoperimetric Numbers of Cayley Graphs Arising From Generalized Dihedral Groups, Journal of Combinatorial Mathematics and Combinatorial Computing, Vol. 42, 2002. pp. 127-138.

How Anti-Evolutionists Abuse Mathematics (Letter to the Editor) The Mathematical Intelligencer, Vol. 23, No. 4, Fall 2001. pp. 3-8.

ONLINE
PUBLICATIONS

Professional Science Blogger for the *National Geographic* Blog Network, 2006-present. I maintain a regular blog for the website “ScienceBlogs,” which is part of the *National Geographic* blog network. My blog is called EvolutionBlog, and focuses on issues related to science and society, especially evolution and creationism. I also write about mathematics, religion, politics and chess. You can find the blog here: <http://www.scienceblogs.com/evolutionblog>. From 2006-2011 this network was run by *Seed* magazine, a wide-circulation science magazine that ceased print publication in 2009. Starting in 2011, *National Geographic* took over daily operations.

Contributor to the Oxford University Press Blog, 2011-present. At their invitation, I have written four essays for the blog of Oxford University Press. Three of these were about mathematics, while the fourth involved issues discussed in my book *Among the Creationists*, published by Oxford. The blog can be found at <http://blog.oup.com>. My entries can then be found quickly by typing “Rosenhouse” into their search engine.

Contributor to *The Huffington Post*, 2011-present. At their invitation, I have written three essays for The Huffington Post. All three addressed issues related to my book *Among the Creationists*. The website can be found at <http://www.huffingtonpost.com>. My entries can then be found quickly by typing “Rosenhouse” into their search engine.

Columnist for the Center for Inquiry, 2006-2007. I wrote a monthly column on evolution and creationism for the Center for Inquiry, a prominent think tank devoted to issues of science and church/state separation. My columns can be found at <http://www.csicop.org/intelligentdesignwatch/rosenhouse.html>

AWARDS

PROSE Award for Popular Science and Popular Mathematics, American Association of Publishers, for the book *Taking Sudoku Seriously: The Math Behind the World's Most Popular Pencil Puzzle*, 2012.

Nomination in the Non-Fiction category of the Virginia Literary Awards, for the book *Among the Creationists: Dispatches from the Anti-Evolution Front Line*, 2012.

Distinguished Scholar Award, Department of Mathematics and Statistics, James Madison University, 2010.

Top Ten Selection Among Math and Science Books of 2009, Amazon.com, for the book *The Monty Hall Problem: The Remarkable Story of Math's Most Contentious Brainteaser*.

INVITED PRESENTATIONS ON GRAPH THEORY AND NUMBER THEORY

Cheeger Constants of Graphs and Surfaces, November 2011. Virginia Commonwealth University Discrete Mathematics Seminar, Richmond, VA.

Decomposition Theorems for Cayley Graphs of the Modular Group Over a Finite Field, April 2006. Mid-Atlantic Algebra Conference, James Madison University; Harrisonburg, VA.

Cheeger Constants in Combinatorics and Geometry, November 2005. Colloquium Talk, Middle Tennessee State University; Murfreesboro, TN.

Lower Bounds on the Cheeger Constants of Highly Connected Graphs, March 2005. Special Session on Graph Theory, Spring Southeast Section Meeting of the AMS; Western Kentucky University, Bowling Green, KY.

Bounds on Polynomial Exponential Sums, January 2003. Special Session on Modular Forms, Elliptic Curves and Related Topics, Joint Mathematics Meetings, Baltimore, MD.

INVITED PRESENTATIONS ON THE MONTY HALL PROBLEM

Math Encounters, April 2016. Math Encounters, The Museum of Mathematics, New York, NY.

Keynote Speaker, March 2016. Spring Meeting of the Indiana Section of the Mathematical Association of America, Franklin College, Franklin, IN.

Keynote Speaker, October 2015. Fall Meeting of the North-Central Section of the Mathematical Association of America, Bemidji State University, Bemidji, MN.

Presenter, August 2015. Mathematical Carnival, MathFest, MAA Centennial Celebration, Washington, D.C.

Keynote Speaker, April 2015. Ninth Annual Undergraduate Research Conference, University of Tennessee, Knoxville, TN.

Colloquium, February 2015. University of Maryland, Baltimore County, Baltimore, MD.

Evening Colloquium, November 2014. Johns Hopkins University, Baltimore, MD.

Colloquium, November 2011. Christopher Newport University, Newport News, VA.

Colloquium, April 2011. Roanoke College, Roanoke, VA.

Colloquium, March 2011. Slippery Rock University, Slippery Rock, PA.

Ninth Gathering for Gardner, March 2010. Atlanta, GA.

Keynote Speaker, October 2009. Fall Meeting of the Southern California-Nevada Section of the Mathematical Association of America, California State University, San Bernardino, CA.

Keynote Speaker, April 2007. Spring Meeting of the Virginia-Maryland-D.C. Section of the Mathematical Association of America, Roanoke College, Roanoke, VA.

Undergraduate Mathematics Symposium, November 2006. Western Kentucky University, Bowling Green, KY.

INVITED
PRESENTATIONS
ON EVOLUTION
AND CREATIONISM

Pseudomathematics in Anti-Evolutionist Literature, February 2015. Colloquium, University of Maryland, Baltimore County, Baltimore, MD.

Among the Creationists: Dispatches From the Anti-Evolutionist Front Line, February 2015. Baltimore Ethical Society, Baltimore, MD.

Among the Creationists: Dispatches From the Anti-Evolutionist Front Line, January 2014. Center for Inquiry-Long Island, Plainview, NY.

The Sociology of Creationism, May 2012. The Library of Virginia, Richmond, VA.

The Lingering Appeal of Creationism, March 2012. Tenth Gathering for Gardner, Atlanta, GA.

Among the Creationists: Dispatches From the Anti-Evolutionist Front Line, November 2011. Colloquium, Christopher Newport University, Newport News, VA.

Countering Creationism (Panelist), June 2009. Ninth North American Paleontological Convention, Cincinnati, OH.

Legal Battles Over Evolution and Creationism, A History, February 2007. Center for Inquiry, Amherst, NY.

The Scopes Trial, February 2007. Student Freethinker's Club, James Madison University, Harrisonburg, VA.

What Evolution Is, February 2006. Student Freethinker's Club, James Madison University, Harrisonburg, VA.

INVITED
PRESENTATIONS ON
RECREATIONAL
MATH AND
OTHER TOPICS

The History and Future of Logic Puzzles, August 2015. MOVES II Conference, Baruch College, New York, NY.

A Tribute to Raymond Smullyan, March 2014. Eleventh Gathering for Gardner, Atlanta, GA.

The Practical Successes of Recreational Mathematics, February 2014. Symposium on The Importance of Recreational Mathematics in Solving Practical Problems, (J. Rosenhouse and L. Taalman, organizers). Annual meeting of the American Association for the Advancement of Science, Chicago, IL.

Non-Classical Knights and Knaves, August 2013. Featured talk at the MOVES Conference on recreational mathematics, Baruch College, New York, NY.

Knights, Knaves, Normals and My Nephew, April 2013. Keynote talk at the Spring Meeting of the Virginia-DC-Maryland Section of the Mathematical Association of America, Salisbury University, Salisbury, MD.

Taking Sudoku Seriously, March 2013. Evening Colloquium Talk at Johns Hopkins University, Baltimore, MD.

A Sampler of Sudoku Studies, January 2012. Special Session on Sudoku and other Pencil Puzzles (L. Taalman and J. Rosenhouse, organizers), Joint Mathematics Meetings, Boston, MA.

How to Think About Conditional Probability, April 2010. Mathematics and Statistics Club, James Madison University, Harrisonburg, VA.

Tenure, You Know You Want It! (Panelist), January 2010. Joint Mathematics Meetings, San Francisco, CA.

A Fermat's Last Theorem Primer, September 2005. Mathematics and Statistics Club, James Madison University, Harrisonburg, VA.

Some Thoughts on the Primes April 2004. Mathematics and Statistics Club, James Madison University, Harrisonburg, VA.

CONTRIBUTED
PRESENTATIONS

Cheeger Constants of Certain Arithmetic Hyperbolic Three-Manifolds, January 2007. AMS Session on Geometry and Topology, Joint Mathematics Meetings, New Orleans, LA.

Group Actions on Arithmetic Riemann Surfaces, March 2006. 37th South-eastern Conference on Combinatorics, Graph Theory and Computing, Florida Atlantic University, Boca Raton, FL.

The Isoperimetric Numbers of Certain Cayley Graphs of the Projective Special Linear Groups, January 2006, AMS Session on Graph Theory, Joint Mathematics Meetings, San Antonio, TX.

Expansion Properties of Block Design Graphs, October 2005, 19th Midwest Conference on Combinatorics, Computing and Cryptography, Rochester, NY.

Bounding the Isoperimetric Number From Below, March 2005, 36th South-eastern Conference on Combinatorics, Graph Theory and Computing, Florida Atlantic University, Boca Raton, FL.

Hamilton Cycles in Cayley Graphs of Picard Group Quotients, October 2004, 18th Midwest Conference on Combinatorics, Computing and Cryptography, Rochester, NY.

New Bounds on the Isoperimetric Numbers of Platonic Graphs, January 2004, AMS Session on Graph Theory, Phoenix, AZ.

Cheeger Constants of Platonic Graphs, March 2003, Workshop on Automorphic Forms and Related Topics, Boulder, CO.

A Decomposition Theorem for Cayley Graphs of the Picard Group, November 2002, 16th Midwest Conference on Combinatorics, Computing and Cryptography, Carbondale, IL.

Using Evolutionary Biology to Teach Basic Concepts in Probability, March 2002, MAA Midwest Section Meeting, Kirksville, MO.

Isoperimetric Numbers of Cayley Graphs Associated With Generalized Dihedral Groups, November 2000, 14th Midwest Conference on Combinatorics, Computing and Cryptography, Wichita, KS.

The Isoperimetric Constants of Certain Cubic Cayley Graphs of $PSL(2, \mathbb{Z}_n)$, January 2000, AMS Session on Graph Theory, Joint Mathematics Meetings, Washington, D.C.

A Combinatorial Approach to Spectral Geometry, April 1999, Workshop on Elliptic Curves, Modular Forms and Related Topics, Santa Barbara, CA.

Convexification of Levi-Pseudoconvex Domains, January 1995, AMS Session on Undergraduate Research, San Francisco, CA.

TEACHING EXPERIENCE

Courses Taught (at Dartmouth, Kansas State, and James Madison):

- Mathematics for Elementary School Teachers I, II and III.
- Calculus I and II, specifically for people with weak math backgrounds.
- Calculus I, II, and III, the standard sequence.
- Linear Algebra, proof-oriented course for honors students.

- Probability and Statistics.
- Discrete Mathematics, both for math majors and computer science majors.
- Elementary Number Theory.
- Abstract Algebra I and II.
- Real Analysis I and II.
- History of Mathematics.
- Introduction to Graph Theory.
- The Real Number System, beginning with the Zermelo-Fraenkel Axioms and covering the constructions of the various number systems.
- Introduction to Combinatorics, for first-year graduate students.
- Foundations of Geometry, for math majors, covering Euclidean and non-Euclidean geometries.

Undergraduate Research Supervised:

- Two years mentoring undergraduate research projects as part of a summer REU program at James Madison University. One of the projects led to the paper “Expansion Properties of Levi graphs,” listed among the research papers.
- Seven independent studies, involving nine students in total, addressing topics in number theory and abstract algebra.

OTHER ACTIVITIES

Book Reviews Editor, *The American Mathematical Monthly*. 2017. I expect to be taking over the book reviews section of the *Monthly* starting in 2017.

Peer Reviewer. 2006-present. I have peer reviewed multiple research papers for the journals *Discrete Mathematics*, *The Journal of Combinatorial Mathematics and Combinatorial Computing*, *Networks*, *Applied Mathematics Letters*, *The Mathematical Intelligencer* and *Journal of Uncertainty Analysis and Applications*.

Contributor to Math Reviews. 2004-present I have reviewed 43 papers for the Math Reviews database.

Manuscript Reviewer. 2003-present. I have reviewed multiple book manuscripts for Oxford University Press, Houghton Mifflin, Columbia University Press, Dover Publications and Key College Publishing.

Problem of the Week Coordinator, Spring 2008 and 2009, Spring 2013-present. I organize the math department’s Problem of the Week competition. Website for spring 2015: <http://educ/jmu/edu/~rosenhjd/Spring15/homepage.html>.

Poster Session Coordinator and Head Poster Judge, SUMS Conference. The annual Shenandoah Undergraduate Mathematics and Statistics Conference (SUMS), held at James Madison University, features a poster session that I organize and coordinate.

Chess Instructor, Harrisonburg, VA. Spring 2006, (with P. Kohn). Organized and supervised an after-school chess club for elementary school students, held

at a local public library.

Kansas State University-Professional Development School Partnership. 2000-2003. Worked as part of a group of university professors and public school teachers in a multi-year, federally-funded project to reform the teacher training program at Kansas State University. Responsibilities included leading small-group sessions of mathematics educators, giving presentations to teachers in other disciplines, familiarizing myself with state teacher standards in Kansas, participating in organizational meetings and organizing data in a presentable fashion for other Partnership participants.

Participant, Teaching of Mathematics Seminar, Dartmouth College. Summer 1997. In intensive, ten-week seminar, read about and discussed many aspects of teaching mathematics, including lesson plans, group work, cooperative learning, chalkboard technique, and evaluation. Designed and co-taught two week-long mathematics seminars for high school students.

Consultant for Department of Education, Dartmouth College. Spring 1997. Analyzed data concerning the Department of Mathematics's teacher certification program and determined if the existing program was in accordance with state guidelines. Prepared a detailed report discussing my findings.

Research Experiences for Undergraduates, Oklahoma State University. Summer 1994. With two other undergraduates, conducted original research in the area of several complex variables. Advisor: Alan Noell.

Public School Volunteer, Chess Instructor. 1993-1995. Designed an original curriculum in chess instruction for elementary and middle school students. Implemented this program in two Providence, RI public schools. Organized an after-school chess club for middle school students in a low-income area of Providence.

Volunteers in Providence Schools, Mathematics Tutor. 1991-1992. Working closely with tutors in other disciplines, organized a weekly tutorial session for local students. Gave mathematics instruction to students ranging in age from eight to twenty, in subjects ranging from basic arithmetic to calculus.

MEMBERSHIPS

American Mathematical Society
Mathematical Association of America
National Center for Science Education