Jason Rosenhouse

CONTACT
INFORMATION

James Madison University   *Voice:* (540) 568-6459
Dept. of Mathematics and Stats.   *Fax:* (540) 568-6857
121 Roop Hall, MSC 1911   *E-mail:* rosenhjd@jmu.edu
Harrisonburg, VA 22807   *Web:* educ.jmu.edu/~rosenhjd

EDUCATION

Dartmouth College, Ph.D. in Mathematics, 2000.
Thesis: *Isoperimetric Numbers of Certain*
  Cayley Graphs Associated to $PSL(2, \mathbb{Z}_n)$.
Advisor: Dorothy Wallace

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,
Analytic Number Theory, Mathematics of Biological Evolution.

EDITORIAL
EXPERIENCE

Mathematics Magazine. Editor Elect, 2019-2020. Editor, 2020-2025.

Mathematics Magazine, a journal of the Mathematical Association of America, publishes high-level expository articles in all areas of pure and applied mathematics. The magazine is directed toward a broad mathematical audience that includes strong undergraduate students. The magazine is peer-reviewed and typically receives around 300 submissions every year.

AUTHORED
BOOKS

1. *The Failures of Mathematical Anti-Evolutionism.*
   Cambridge University Press, May 2022

2. *Games for Your Mind: The History and Future Of Logic Puzzles.*
   Princeton University Press, November 2020

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

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

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

EDITED
BOOKS

1. *The Mathematics of Various Entertaining Subjects, Vol. III: The Magic of Mathematics*, (with J. Beineke), Princeton University Press, August 2019.

2. *The Mathematics of Various Entertaining Subjects, Vol. II: Research in Games, Graphs, Counting, and Complexity,* (with J. Beineke), Princeton University Press, August 2017.

3. *The Mathematics of Various Entertaining Subjects: Research in Recreational Math,* (with J. Beineke), Princeton University Press, December 2015. A *Choice* Outstanding Academic Title for 2016.

4. *Four Lives: A Celebration of Raymond Smullyan,* Dover Publications, 2014.

TEACHING
EXPERIENCE

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

- Mathematics for Elementary School Teachers I, II and III.
- Principles of Algebra, directed at future middle-school teachers.
- Calculus I and II, specifically for people with weak math backgrounds.
- Calculus I, II, and III, the standard sequence.
- Linear Algebra, both a proof-oriented course for honors students, and a more computational course for beginning students.
- Introduction to 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.
- Complex Analysis.
- 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.

RESEARCH
PAPERS

1. The Use and Abuse of Probability Theory in Evolutionary Biology. Forthcoming in the anthology *Handbook of the History and Philosophy of Mathematical Practice*. Springer.

2. The History and Future of Logic Puzzles. Chapter 3 in *The Mathematics of Various Entertaining Subjects, Vol. II: Research in Recreational Math*, Princeton University Press, 2017, 23-51.

3. Thermodynamical Arguments Against Evolution. *Science and Education*, Vol. 26, No. 1-2, March 2017, 3-25.

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

5. 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.

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

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

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

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

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

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

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

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

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

15. 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.

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

EXPOSITORY
PAPERS

1. Book review of *Bicycle or Unicycle: A Collection of Intriguing Mathematical Puzzles*, by D. J. Velleman and S. Wagon. *Notices of the American Mathematical Society*, Vol. 67, No. 9, October 2020, 1382-1385.

2. Solving Puzzles Backward (with A. Levitin). *The Mathematics of Various Entertaining Subjects, Vol. III*, J. Beineke and J. Rosenhouse, eds. 11-23

3. A Survey of the Works of Raymond Smullyan. *College Mathematics Journal*, Vol. 48, No. 4, September 2017, 302-312.

4. Book reviews of *Undeniable*, by D. Axe; *Introduction to Evolutionary Informatics*, by R. Marks, W. Ewert, W. Dembski; and *Proving Darwin*, by G. Chaitin. *The American Mathematical Monthly*, Vol. 125, No. 6, June-July 2018, 571-576.

5. The Power of a Good Book. *American Mathematical Monthly*, Vol. 124, No. 1, January 2017, 92-95.

6. Fuzzy Knights and Knaves. *Mathematics Magazine*, Vol. 89, No. 4, October 2016, 268-280.

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

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

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

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

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

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

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

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

AWARDS AND HONORS

Martin Gardner Lecturer, Keynote talk at MathFest, August 2022, Philadelphia, PA.

***Choice* Outstanding Academic Title,** for the book *The Mathematics of Various Entertaining Subjects: Research in Recreational Math*, 2016.

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, Amazon.com, for the book *The Monty Hall Problem: The Remarkable Story of Math's Most Contentious Brainteaser*, 2009.

ONLINE PUBLICATIONS

Contributor to the blogs for Princeton University Press, Oxford University Press, and Cambridge University Press, 2011-present. At their invitation, I have contributed several posts to these blogs related to my books and to other mathematical topics.

Professional Science Blogger for the *National Geographic* Blog Network, 2006-2016. I maintained a regular blog for the website "ScienceBlogs," which was part of the *National Geographic* blog network. My blog was called EvolutionBlog, and focused on issues related to science and society. 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.

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

Decomposition Theorems for Cayley Graphs of Matrix Groups. November 2019. Colloquium Talk, George Mason University, Fairfax, VA.

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.

Keynote Speaker, November 2020. Kenesaw State University Undergraduate Research Conference. Unfortunately, this conference was canceled for funding reasons and the talk was not given.

Keynote Speaker, May 2017. Undergraduate Prize Lecture, Northwestern University.

Math Encounters, April 2016. 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.

Colloquium, November 2014. The 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.

The Use and Abuse of Probability Theory in Evolutionary Biology, MD-DC-VA MAA Section Meeting. Shenandoah University, Winchester, VA, November 2022. (Anticipated).

The Use and Abuse of Probability Theory in Evolutionary Biology, AMS Special Session on Quantitative Literacy and Society, Virtual Joint Mathematics Meetings, April 2022.

The Use and Abuse of Probability Theory in Evolutionary Biology, April 2022. 14th Gathering for Gardner, Atlanta, GA.

On Mathematical Anti-Evolutionism, January 2018. Joint Mathematics Meetings, MAA Session on Good Math From Bad: Crackpots, Cranks, and Progress, San Diego, CA.

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.

The History and Future of Logic Puzzles, December 2020. Virtual presentation hosted by Town Hall Seattle, Seattle, WA.

Games for Your Mind, November 2020. Virtual presentation hosted by the Princeton Public Library, Princeton, NJ, November.

The Saga of the Hardest Logic Puzzle Ever, November 2018. MAA Distinguished Lecture Series, Washington D.C.

The Many Faces of Logic, April 2018. Colloquium, Western Kentucky University, Bowling Green, KY.

Why Mathematicians Can't Write, April 2018. Keynote speaker, Spring Meeting of the MD-DC-VA Section of the MAA.

The Saga of the Hardest Logic Puzzle Ever, August 2017. MOVES III Conference, CUNY Graduate Center, New York, NY.

Question Puzzles, July 2017. MathFest, Session on Recreational Mathematics: Puzzles, Card Tricks, Games, Gambling, and Sports, Chicago, IL.

The Many Faces of Logic, November 2016. Evening Colloquium, The Johns Hopkins University, Baltimore, MD.

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 Southeastern 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.

OTHER ACTIVITIES

Section Chair, MD-DC-VA Section of the MAA. Fall 2023-Fall 2025 (anticipated). The Section Chair oversees all section operations and activities, and coordinates with the national MAA.

Program Chair, MD-DC-VA Section of the MAA. Fall 2018-Fall 2020. The Program Chair organizes all of the talks and the details of the schedule, and works with the local coordinator for each of the two annual section meetings.

Book Reviews Editor, *The American Mathematical Monthly.* 2017-2018. Since January 2017, I have edited the Reviews column for *The American Mathematical Monthly.*

Problem of the Week Coordinator, Spring 2008 and 2009, Spring 2013-Spring 2018. I ran my department's Problem of the Week competition for a total of twelve semesters.

Poster Session Coordinator and Head Poster Judge, SUMS Conference, 2007-present. The annual Shenandoah Undergraduate Mathematics and Statistics Conference (SUMS), held at James Madison University, features a poster session that I organize and coordinate.

Peer Reviewer. 2006-present. I have reviewed multiple research papers for the journals *American Mathematical Monthly, Mathematics Magazine, 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. 2004-2017 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.

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