

# Jason Grout

Dept. of Mathematics/Computer Science  
Drake University  
2507 University Avenue  
Des Moines, IA 50311

jason.grout@drake.edu  
515-271-3113

## Education

- Ph.D. **Brigham Young University**, Mathematics, August 2007  
Advisor: Dr. Wayne Barrett; “The Minimum Rank Problem Over Finite Fields”  
Available at <http://contentdm.lib.byu.edu/ETD/image/etd1995.pdf>.
- M.S. **Brigham Young University**, Mathematics, December 2003  
Advisor: Dr. Wayne Barrett; “Ultraconnected and Critical Graphs”  
Available at <http://contentdm.lib.byu.edu/ETD/image/etd419.pdf>.
- B.S. **Missouri State University**, Math and Computer Science (double major), May 2001  
Magna Cum Laude; graduated with honors; Physics minor.

## Teaching Experience

*Assistant Professor* **2009–Present**

**Drake University, Des Moines, IA**

Taught Calculus I and III, Math Modeling, Numerical Analysis, Linear Algebra, Advanced Linear Algebra, Discrete Math. Co-organized problem-solving group and organized Sage programming group. Faculty advisor for math club.

*Postdoctoral Associate* **2007–2009**

**Iowa State University, Ames, IA**

Taught Calculus II (3 sections including 2 honors); Calculus III (2 honors sections); Linear Algebra (2 semesters); Differential Equations. Helped in graduate-level research course. Active member of a student’s graduate committee.

*Instructor/Teaching Assistant* **2001–2007**

**Brigham Young University, Provo, UT**

Taught Linear Algebra; Calculus I (3 semesters); Business Calculus; College Algebra (2 semesters), one semester lectured 6 combined sections and supervised 2 undergraduate assistants; Quantitative Reasoning (1 semester).

Assisted in: BYU NSF-funded Research Experience for Undergraduates (REU) (helped participants develop research software, maintained website, and supervised extra-curricular activities); Graduate student teaching seminar (led seminar discussions about teaching); Undergraduate Abstract Algebra; Calculus I; Business Calculus; College Algebra.

## Computer Experience

*Computer Support Representative* **Summer 2002, 2003, 2005**

**Brigham Young University, Provo, UT**

Designed and implemented online graph database; used in teaching and research. Imple-

mented ticket tracking system. Supported desktops and servers, including Mac OSX, Unix, and Windows.

**Contracted Research Programmer** **Summer 2001**  
**Innovative Quality Software, Las Vegas, NV**

Designed and implemented a CD-burning plugin and wrapped an audio-processing plugin using system-level C programming for a professional software audio editing system.

**Internet Database Systems Developer** **1996–1997**  
**OnThe.Net, LLC, Springfield, MO**

Designed, implemented, and maintained dynamic database internet solutions for clients.

## Publications

### Submitted or in-progress

- [1] Steve Butler, Jason Grout, and Tracy Hall, *Using variants of zero forcing to bound the inertia set of a graph*, 12 pages. Submitted.
- [2] David Holcomb, Eric D. Manley, Jason Grout, and Alex Hoyer, *On the Integral Coding Advantage in Unit Combination Networks*, 14 pages.

### Published

- [3] Robert Beezer, Robert Bradshaw, Jason Grout, and William Stein, *Sage, Handbook of linear algebra*, Second edition (Leslie Hogben, ed.), Discrete Mathematics and its Applications (Boca Raton), Chapman & Hall/CRC, Boca Raton, FL, pp. 1–26.
- [4] Jason Grout, *The Sage Mathematical Software System*, International Linear Algebra Society Bulletin: IMAGE (Fall 2013), 2 pages.
- [5] Luz M. DeAlba, Jason Grout, In-Jae Kim, Steve Kirkland, Judith J. McDonald, and Amy Yielding, *Minimum rank of powers of trees*, Electron. J. Linear Algebra **23** (2012), 151–163, available at [http://www.math.technion.ac.il/iic/ela//ela-articles/articles/vol23\\_pp151-163.pdf](http://www.math.technion.ac.il/iic/ela//ela-articles/articles/vol23_pp151-163.pdf).
- [6] Steve Butler and Jason Grout, *A construction of cospectral graphs for the normalized Laplacian*, Electron. J. Combin. **18** (2011), no. 1, Research Paper 231, 20, available at [http://www.combinatorics.org/Volume\\_18/PDF/v18i1p231.pdf](http://www.combinatorics.org/Volume_18/PDF/v18i1p231.pdf).
- [7] Jason Grout, *The minimum rank problem over finite fields*, Electron. J. Linear Algebra **20** (2010), 691–716, available at [http://www.math.technion.ac.il/iic/ela//ela-articles/articles/vol20\\_pp691-716.pdf](http://www.math.technion.ac.il/iic/ela//ela-articles/articles/vol20_pp691-716.pdf).
- [8] Laura DeLoss, Jason Grout, Leslie Hogben, Tracy McKay, Jason Smith, and Geoff Tims, *Techniques for determining the minimum rank of a small graph*, Linear Algebra Appl. **432** (2010), no. 11, 2995–3001, DOI 10.1016/j.laa.2010.01.008. MR2639262

- [9] Luz M. DeAlba, Jason Grout, Leslie Hogben, Rana Mikkelsen, and Kaela Rasmussen, *Universally optimal matrices and field independence of the minimum rank of a graph*, Electron. J. Linear Algebra **18** (2009), 403–419, available at [http://www.math.technion.ac.il/iic/ela/ela-articles/articles/vol18\\_pp403-419.pdf](http://www.math.technion.ac.il/iic/ela/ela-articles/articles/vol18_pp403-419.pdf). MR2530143
- [10] Wayne Barrett, Jason Grout, and Raphael Loewy, *The minimum rank problem over the finite field of order 2: minimum rank 3*, Linear Algebra Appl. **430** (2009), no. 4, 890–923, DOI 10.1016/j.laa.2008.08.025, available at <http://lanl.arxiv.org/abs/math/0612331>. MR2489366
- [11] D. Cvetković and J. Grout, *Graphs with extremal energy should have a small number of distinct eigenvalues*, Bull. Cl. Sci. Math. Nat. Sci. Math. **32** (2007), 43–57, available at <http://lanl.arxiv.org/abs/0710.5669>. MR2386171 (2008m:05172)

## Grants

- [1] Jason Grout, *Scalable Internet Interface for Sage*, Summer 2011. Fund two Drake student assistants to help design and write a scalable public Internet interface to the Sage, allowing Sage to embed in any webpage. Funded by Drake University. \$2,340.
- [2] Karl-Dieter Crisman and Jason Grout, *Sage: Using open-source mathematics software with undergraduates*, Summer 2011. Online workshop through the national Mathematical Association of America training several dozen faculty in authoring curricular materials in Sage. Funded by NSF grant DUE-0817071. \$8,500.
- [3] Rob Beezer, Jason Grout, Marja-Liisa Hassi, Tom Judson, Kiran Kedlaya, and William Stein, *UTMOST: Undergraduate Teaching in Mathematics with Open Software and Textbooks*, 2010 through 2014. NSF CCLI type 2 grant for integrating Sage and open textbooks in undergraduate mathematics curriculum. Responsibilities include implementing improvements to Sage, directing work by students, training faculty and supervising test sites, helping organize workshops, and contributing curricular materials. \$525,000.
- [4] Rob Beezer, Karl-Dieter Crisman, and Jason Grout, *Sage: Using open-source mathematics software with undergraduates*, Summer 2010. Online workshop through the national Mathematical Association of America training several dozen faculty in authoring curricular materials in Sage. Funded by NSF grant DUE-0817071. \$10,400.

## Other Activities and Projects

- Active contributor to Sage (open-source math software); <http://www.sagemath.org/>. Administer Drake Sage server, main public Sage servers (<http://sagenb.org>, over 170,000 accounts).
- Sage Cell Server (<http://sagecell.sagemath.org>)—developed and maintained with a group of Drake students.
- Consultant, Bloomberg L.P., New York, New York; 2013–2014.
- Consultant, Center for Communications Research - La Jolla, CA; 2009–2013.

- The Graph Database—An interactive online database of all small graphs and various properties. Available at <http://artsci.drake.edu/grout/graphs/>.

## Service and Organizations

- Faculty advisor for math club at Drake University (2011–present).
- Organized Drake Sage Group (2011–present).
- Co-organized weekly problem solving group at Drake University (Nov 2009, 2010–present).
- IMA summer graduate program in linear algebra—helped organize 4-week program involving around 40 student participants.
- High school math circle (6 months), elementary school math circle (2 months)
- Math Department Student Advisory Council—represented PhD students in weekly meetings with the department chair about the department vision and other matters (1 year)
- Mathematics TA training biweekly seminar—selected to assist as the senior graduate student after completing the course (1 year)
- Mathematics Graduate Student Council—weekly seminar and student events (1 year)
- Organized a discrete math seminar (2 years)
- President of university chapter MAA (1 year); Treasurer of university chapter Kappa Mu Epsilon Mathematics Honor Society (1 year)
- Member of the AMS and the MAA

## Presentations and Workshops

- Invited Participant and some invited talks—Sage Days 7, 12, 19, 27, 29, 31, 35.5, 41, 46, 48; 2008-2013
- Invited Talks—AMS/MAA Joint Meetings; 2009, 2012, 2013
- Invited Talk—International Linear Algebra Society; 2013
- Contributed Talk (teaching)—MAA Iowa section meeting; 2010, 2011
- Co-organizer—Sage workshop at MAA Iowa section meeting; 2012
- Contributed Talks (teaching)—MAA Mathfest; 2009, 2011
- Invited Talks (teaching)—Sage Education Days 1, 3, 4, 5; 2009, 2011–2013
- Co-organizer—MAA PREP Workshops on Sage; 2010, 2011
- Seminar Talk (teaching)—BYU Math Department faculty; 2010
- Invited Talks (research)—AMS Central section meeting; 2010, 2013 g

- Invited Participant and Talk (research)—Workshop on Theory and Applications of Matrices Described by Patterns, Banff, Canada; 2010
- Invited Talks (research, teaching)—University of Minnesota, Mankato; 2008
- Invited Talk (research)—International Linear Algebra Society meeting; 2008
- Invited Talk (teaching)—Drake University; 2008
- Contributed Talks (teaching, research)—AMS/MAA Joint Meetings; 2005, 2007–2009
- Invited Participant—American Institute of Mathematics Workshop; 2006
- Contributed Talks (teaching, research)—Intermountain MAA meeting; 2005, 2006
- Invited Talk (research)—AMS Central Section meeting; 2005
- Invited Talk (research)—Rocky Mountain Discrete Math Days; Laramie, WY; 2005
- Contributed Talk (teaching)—MAA Mathfest; Albuquerque, NM; 2005
- Contributed Talks (research)—BYU Spring Research Conferences; Provo, UT; 2003–2007
- Invited Participant—Mathematical Sciences Research Institute Workshops; 2002, 2003, 2004

## Other Conferences

- Rocky Mountain Discrete Math Days; Laramie, WY; 2008
- Tenth Seminar on Analysis of Algorithms; 2004

## Awards and Scholarships

- 2012 Annual Spies Sage Development Prize—\$500 annual prize, citation at <http://www.sagemath.org/development-prize.html>
- Outstanding Teaching Awards, BYU Mathematics Department—\$100 award given to one graduate student each year (2 years)
- Research Grant, BYU Mathematics Department—\$1,000 grant requiring proposal
- Presidential Scholarship, Missouri State University—tuition, room/board, books (4 years)
- National Merit Scholarship (4 years); Bright Flight Scholarship (\$2000/year, 4 years)

## Additional Information

Please visit my website at <http://artsci.drake.edu/grout/> for additional information.