

Kirsti Wash

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Education and Qualifications

- 2014 **Ph.D.** Clemson University, Clemson, SC
Advisors: Wayne Goddard (Clemson) & Douglas Rall (Furman)
- 2009 **MS** Texas State University, San Marcos, TX
Advisor: Diana Gu
- 2005 **BS** University of Texas at Austin, Austin, TX

Appointments

- Aug 2017 - **Assistant Professor of Mathematics**
Present *Western New England University*
- July 2014 - **Harold L. Dorwart Visiting Assistant Professor**
June 2017 *Trinity College, Hartford, CT*
- May 2014 - **Postdoctoral Researcher**
Aug 2014 *University of Johannesburg, South Africa*

Publications

18. B. Brešar, B. Hartnell, M.A. Henning, D.F. Rall, and K. Wash. A new framework to approach Vizing's conjecture, submitted (2018)
17. B.L. Hartnell, D.F. Rall, and K. Wash. On well-covered Cartesian products, *Graphs and Combin.*, accepted (2018)
16. S.E. Anderson, S. Nagpal, and K. Wash. Domination in the hierarchical product and Vizing's conjecture, *Discrete Math.*, **341**(1): 20-24 (2018)
15. B. Brešar, S. Klavžar, D.F. Rall, and K. Wash. Packing chromatic number versus chromatic and clique number, *Aequat. Math.*, **92**(3): 497-513 (2017)
14. B. Brešar, S. Klavžar, D.F. Rall, and K. Wash. Packing chromatic number, $(1, 1, 2, 2)$ -colorings, and characterizing the Petersen graphs, *Aequat. Math.*, **91**(1):169-184(2017)
13. B. Brešar, S. Klavžar, D.F. Rall, and K. Wash. Packing chromatic number under local changes in a graph, *Discrete Math.*, **340**(5): 1110-1115 (2017)
12. M. Henning and K. Wash. Matchings, path covers and domination, *Discrete Math.*, **340**(1):3207-3216 (2017)
11. D.F. Rall and K. Wash. On minimum identifying codes in some Cartesian product graphs, *Graphs and Combin.* **33**(4):1037-1053 (2017)
10. J.P. Georges, D. Mauro, and K. Wash. On zero-sum \mathbb{Z}_{2j}^k -magic graphs, *J. Comb. Optim.*, **34**(1): 94-113 (2017)
9. S.E. Anderson, Y. Guo, A. Tenney, and K. Wash. Prime factorization and domination in the generalized hierarchical product, *Discuss. Math. Graph Theory*, **37**(4): 873-890 (2017)

8. P.S. Skardal and K. Wash. Spectral properties of the hierarchical product of graphs, *Physical Review E* **94**, 052311 (2016)
7. M. Henning and K. Wash. Trees with large neighborhood total domination number, *Discrete Applied Math*, **187**: 96-102 (2015)
6. W. Goddard, K. Wash, and H. Xu. WORM Colorings, *Discuss. Math. Graph Theory*, **35**:571-584 (2015)
5. W. Goddard, K. Wash, and H. Xu. WORM colorings Forbidding Cycles or Cliques, *Congressus Numerantium* (2014)
4. K. Wash. Edgeless graphs are the only universal fixers, *Czech. Math.*, **64**(139):833-843 (2014)
3. D. Rall and K. Wash. Identifying codes of the direct product of two cliques. *European Journal of Combinatorics*, **36**:159-171 (2014)
2. W. Goddard and K. Wash. ID Codes in Cartesian Products of Cliques. *Journal of Combinatorial Mathematics and Combinatorial Computing*, **85**: 97-106 (2013)
1. W. Gu and K. Wash. Bounds on the domination number of permutation graphs. *Journal of Interconnection Networks*, **10**(3): 205-217 (2009)

Publications with Students

4. C. Cooper and K. Wash. t -tone colorings in the Cartesian product, *Congressus Numerantium* (2017)
3. A. Fong, J.P. Georges, D. Mauro, D. Spagnuolo, J. Wallace, S. Wang, and K. Wash. On the zero-sum group-magicness of Cartesian products, submitted (2017)
2. J. Loe, D. Middlebrooks, A. Morris, K. Wash. 2-tone colorings in graph products, *Discuss. Math. Graph Theory*, **35**: 55 - 72 (2015)
1. J. Brown, A. Hasmani, L. Hiltner, A. Kraft, D. Scofield, K. Wash. On the computation of all characteristic p extensions of a p -adic field of a given degree, *Rocky Mountain Math Journal*, **45** No. 1 (2015)

Courses Taught

- **Graph Theory** - Spring 2017 and Fall 2018
- **Abstract Algebra** - Fall 2015
- **Linear Algebra** - Fall 2015
- **Differential Equations** - Spring 2015
- **Introductory Statistics** - Fall 2014
- **Calculus 1** - Fall 2016, Fall 2014, Fall 2013, Fall 2017, Fall 2018
- **Calculus 2** - Fall 2015, Spring 2015, Spring 2016, Spring 2018
- **Business Calculus 2** - Spring 2013, Fall 2012, Spring 2012, Fall 2011, Spring 2011
- **Business Calculus 1** - Fall 2010
- **Pre-Calculus** - Spring 2017
- **College Algebra** - Spring 2010
- **Math Business & Economics 1** - Spring 2010, Fall 2009
- **Pre-College Algebra** - Spring 2009, Fall 2008
- **Basic Math** - Spring 2008, Fall 2007

Undergraduate Research Advising

- 2018/2019: Henry Wix is studying applications of graph theory in Engineering.
- 2016/2017: Jack Wallace did an independent study on Algebraic Geometry and formulating combinatorial problems in the context of Algebraic Geometry. I also advised Catherine Cooper's senior thesis on t -tone colorings in the Cartesian product of graphs.
- Summer 2016 research advisees: Jacqueline Kromasch and Shriya Nagpal
Jacqueline's Project: Using PCA, LDA, and k -means clustering to identify common manufacturing sources among 82 counterfeit pharmaceutical pills
Shriya's Project: Improving upon the class of graphs that satisfy Vizing's Conjecture
Shriya presented her work at MathFest and won the Cur Award for her presentation.
- Summer 2015 research advisees: Yaoqi Guo and Asa Tenney
Project: Domination in the hierarchical product of graphs
This project resulted in a publication. Asa presented his work at MathFest and won an Outstanding Presentation Award.
- Research Advisor: Clemson REU in Combinatorics, Computational Algebraic Geometry, and Number Theory (Summer 2013)
Project: 2-tone colorings in graph products
Student presentation at Southeast REU Conference
- Summer 2012 Clemson REU in Combinatorics, Computational Algebraic Geometry, and Number Theory Research Advisor
Project: Classifying local fields of characteristic p
Student presentation at Southeast REU Conference

Invited Talks

- "2-Tone Colorings in Graphs", Guy Jacobson Memorial Mathematics Colloquium Series at Converse College (November 2013)
- "Prime Factorization in the Generalized Hierarchical Product", Texas State Discrete Math Seminar (October 2013)
- "Edgeless Graphs Are The Only Universal Fixers", Clemson Mini-Conference (October 2013)
- "Identifying Codes in Graph Products", AMS Special Session on Graph Theory IV, Spring Southeastern Section Meeting (March 2013)

Service

- Organized a department colloquium for the math majors at Trinity
- Program Chair for the MAA Northeastern Section meeting hosted at Trinity Fall 2016
- Advised one senior thesis and one independent study in the 2018/2018 academic year at Trinity and currently advising a senior thesis Fall 2018 at Western New England
- Volunteered for all curriculum meetings regarding the Calculus sequence.

Presentations

- "Well-covered Cartesian products", Discrete Seminar at University of Maribor (June 2017)
- "The packing chromatic number of subdivisions of subcubic graphs", Joint Mathematics Meetings (January 2017)
- "Edgeless graphs are the only universal fixers", 8th Slovenian Conference on Graph Theory (June 2015)
- "On a distance constrained labeling to model cooperation", 46th Southeastern International Conference on Combinatorics, Graph Theory, and Computing (March 2015)

- “WORM Colorings of Graphs”, 45th Southeastern International Conference on Combinatorics, Graph Theory, and Computing (March 2014)
- “Prime factorization in the generalized hierarchical product”, AMS Special Session on Trends in Graph Theory, Joint Mathematics Meetings (January 2014)
- S. Anderson and K. Wash, “Topology, Cantor sets, and t -tone colorings. Oh my!”, Clemson Algebra and Discrete Math Seminar (September 2013)
- “Identifying Codes in Graphs”, Furman Graph Theory Seminar (February 2013)
- “Identifying Codes in the Product of Cliques”, AMS Session on Graph Theory II, Joint Mathematics Meetings (January 2013)
- “Domination, Identifying Codes, and Independence in Graph Products”, Clemson Number Theory Seminar (November 2012)
- N. Calkin, K. James, and K. Wash, “How we spent our summer: The 2012 Clemson REU”, Clemson Algebra and Discrete Math Seminar (September 2012)
- “Bounds on the Domination Number of Permutation Graphs”, Furman Graph Theory Seminar (October 2010)
- “On the Domination Number of Permutation Graphs”, CombinaTexas Conference (April 2009)

Honors and Awards

- Slovenia/USA Bilateral Research Grant 2016 - Present
- Waitlisted for an AMS-Simons Travel Grant 2015
- AWM Travel Grant, March 2015 and June 2017
- Professional Enrichment Grant, Clemson University, April 2013
- AMS Travel Grant, March 2013
- Professional Enrichment Grant, Clemson University, January 2013
- Excellence in Teaching Award, Department of Mathematical Sciences, Clemson University, May 2012