

Paul Gustafson

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<https://github.com/PaulGustafson>

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Work Experience

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| Texas A&M University | 2013 – Present |
| PhD Candidate, Department of Mathematics | |
| Knowledge Based Systems, Inc. | 2011 – 2012 |
| Programmer Analyst | Summer 2008, Summer 2010 |

Education

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|---|---------------------|
| Texas A&M University | 2013 – Present |
| Doctor of Philosophy in Mathematics | May 2018 (Expected) |
| Dissertation: <i>On the Property F Conjecture</i> | |
| Advisor: Eric Rowell | |
| Texas A&M University | 2012–2013 |
| Bachelor of Science in Mathematics | 2013 |
| Princeton University | 2007 – 2011 |

Programming Languages

Haskell, Agda, Coq, Python, C, Java, MATLAB, NetLogo

Code Repository

stringnet

<https://github.com/PaulGustafson/stringnet>

A Haskell library for calculating with quantum mapping class group representations

Research Interests

Topological quantum computation, functional programming, machine learning

Publications and Preprints

P. Bruillard, P. Gustafson, J. Plavnik, E. C. Rowell, Categorical Dimension as a Quantum Statistic and Applications, arXiv:1710.10284, submitted.

P. Gustafson, Finiteness for Mapping Class Group Representations from Twisted Dijkgraaf-Witten Theory, arXiv:1610.06069, submitted.

R. Fernandes, B. Li, K. Vadakkeveedu, A. Verma, P. Gustafson, et al., Agent-based analysis of trustworthiness in wireless sensor networks, *Proc. SPIE* **8407**, Multisensor, Multisource Information Fusion: Architectures, Algorithms, and Applications 2012, 84070W (May 1, 2012); doi:10.1117/12.920781.

P. Gustafson, N. Savir, E. Spears, A Characterization of Refinable Rational Functions, *Am. J. Undergrad. Res.* **5** (3): 11-20 (Nov. 11, 2006).

Conference Presentations

AMS Special Session on Quantum Symmetries, The Ohio State University, Columbus, OH, March 2018.

AMS Special Session on Tensor Categories: Bridging Algebra, Topology, and Physics, U. C. Riverside, CA, November 2017.

AMS Special Session on Invariants of Links and 3-Manifolds, U. North Texas, Denton, TX, September 2017.

AMS Special Session on Fusion Categories and Applications, Indiana University, Bloomington, IN, April 2017.

AMS Special Session on Fusion Categories and Topological Phases of Matter, University of Utah, Salt Lake City, UT, April 2016.

Teaching Experience (Texas A&M University)

Mentor

REU on Mathematics of Topological Quantum Computation Summer 2017

Instructor of Record

Mathematical Concepts – Calculus (M131) Spring 2017

Teaching Assistant

Engineering Mathematics II (M152) Fall 2015, Spring 2018

Engineering Mathematics I (M151) Spring 2016, Fall 2017

Grader

Algebraic Topology I (M643) Fall 2016

Counselor

SMaRT High School Math Camp Summer 2009, Summer 2010

Workshop Participation

School and Workshop on Univalent Mathematics, University of Birmingham, UK, December 2017.

AMS Mathematical Research Community on Homotopy Type Theory, Snowbird, UT, June 2017.

Agda Implementors' Meeting XXV, Gothenburg, Sweden, May 2017.

Graduate Workshop on Topological Quantum Field Theory, Simons Center for Geometry and Physics, Stony Brook, NY, August 2015.

Oregon Programming Languages Summer School, University of Oregon, July 2013.