Paul Gustafson
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Work Experience

Texas A&M University 2013 – Present
PhD Candidate, Department of Mathematics

Knowledge Based Systems, Inc. 2011 – 2012
Programmer Analyst Summer 2008, Summer 2010

Education

Texas A&M University 2013 – Present
Doctor of Philosophy in Mathematics May 2018 (Expected)
Advisor: Eric Rowell

Texas A&M University 2012–2013
Bachelor of Science in Mathematics 2013

Princeton University 2007 – 2011

Research Interests

Topological quantum computation, 3-manifold and link invariants, topological quantum field theories, fusion categories, mapping class groups, quantum groups, univalent dependent type theories

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, to appear in J. Knot Theory Ramifications (2018).

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

Code Repository

stringnet
`https://github.com/PaulGustafson/stringnet`
A Haskell library for calculating with quantum mapping class group representations

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.

Programming Languages

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