

## EDUCATION

- 2013 – present  
expected 2019 **Massachusetts Institute of Technology** Cambridge, MA.  
PhD in Computer Science  
Masters Thesis: *A Classification of Reversible Bit and Stabilizer Operations*  
Advisor: Scott Aaronson
- 2009 – 2013 **University of South Carolina** Columbia, SC.  
B.S. in Computer Science and Mathematics, GPA: 4.0  
Honors Thesis: *On the Theory of Poset Games*  
Advisor: Stephen Fenner

## PUBLICATIONS

- S. Aaronson, D. Grier, and L. Schaeffer. A Quantum Query Complexity Trichotomy for Regular Languages. To appear at *Conference on Quantum Information Processing*, 2019.
- D. Grier, and L. Schaeffer. New Hardness Results for the Permanent Using Linear Optics. *Computational Complexity Conference*, 2018.
- D. Grier, and L. Schaeffer. The Classification of Stabilizer Operations over Qubits. *Conference on Quantum Information Processing*, 2018.
- S. Aaronson, D. Grier, and L. Schaeffer. The Classification of Reversible Bit Operations. *Proceedings of the 2017 ACM Conference on Innovations in Theoretical Computer Science*.
- I. Arad, A. Bouland, D. Grier, M. Santha, A. Sundaram, and S. Zhang. On the Complexity of Probabilistic Trials for Hidden Satisfiability Problems. *Mathematical Foundations of Computer Science*, 12:1–12:14, 2016.
- S. Fenner, D. Grier, J. Messner, L. Schaeffer, and T. Thierauf. Game Values and Computational Complexity: An Analysis via Black-White Combinatorial Games. *Algorithms and Computation*. Springer Berlin Heidelberg, 689–699, 2015.
- D. Grier. Deciding the Winner of an Arbitrary Finite Poset Game is PSPACE-complete. *Automata, Languages, and Programming*. Springer Berlin Heidelberg, 497–503, 2013.
- D. Grier. On the Cyclic Van der Waerden Numbers. *Geombinatorics*, 21:129–131, 2012.

## RESEARCH

- 2013 – present **Graduate Research Assistant** MIT.
- Studied quantum computation in restricted settings, especially when only non-universal gate sets are available.
  - Investigated connections between classical computer science and quantum mechanics, such as quantum proofs of classical theorems.

- Summer 2018 **IQC Visiting Student** Waterloo, Ontario.
- o Worked with John Watrous on statistical zero knowledge and the robustness of complete problems for the complexity class SZK.
- January 2018 **IBM Research Intern** Cambridge, MA.
- o Worked with Ramis Movassagh on the role of entanglement in quantum many-body systems through classical simulation of quantum circuits using matrix product states.

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## PRESENTATIONS

- June 2018 **New Hardness Results for the Permanent Using Linear Optics**  
Computation Complexity Conference
- December 2017 **The classification of reversible bit operations**  
Innovations in Theoretical Computer Science
- December 2015 **Game Values and Computational Complexity: An Analysis via Black-White Combinatorial Games**  
International Symposium on Algorithms and Computation
- July 2013 **Deciding the Winner of an Arbitrary Finite Poset Game is PSPACE-Complete**  
International Colloquium on Automata, Languages and Programming

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## TEACHING

- 2017 – present **Communications Lab Advisor** MIT.
- o Coach peers to improve their manuscripts, posters, presentations, etc.
  - o Developed workshop for students preparing for oral qualifying exam.
- Fall 2017, 2018 **Design and Analysis of Algorithms** Teaching Assistant, MIT.
- o Developed course materials such as problem sets, exams, and recitation topics.
  - o Taught weekly recitation.
- Spring 2018 **Automata, Computability, and Complexity** Teaching Assistant, MIT.

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## AWARDS

- April 2013 **NSF Graduate Research Fellow**
- April 2013 **CRA Outstanding Undergraduate Researcher Award – Finalist**
- April 2013 **Outstanding Undergraduate Student in Mathematics**
- April 2013 **Outstanding Senior in Computer Science**
- March 2012 **Barry M. Goldwater Scholarship**