

CURRICULUM VITAE

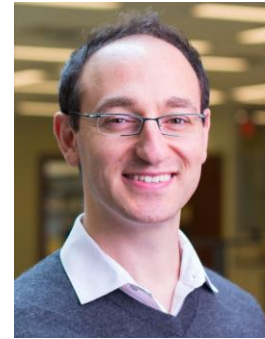
Sevag Gharibian

Junior Professor (W1)

Department of Computer Science
Universität Paderborn, 33098 Paderborn, Germany

Email: sevag.gharibian@upb.de

Web: groups.uni-paderborn.de/fg-qi/index.html



RESEARCH INTERESTS

Theoretical computer science

- Algorithms: Exact algorithms, approximation algorithms, quantum algorithms
- Complexity theory: Quantum complexity theory, proof systems, constraint satisfaction

EMPLOYMENT

Junior Professor (W1) Department of Computer Science, Universität Paderborn (UPB), Germany	Jan 2018 – present
Assistant Professor Department of Computer Science, Virginia Commonwealth University (VCU), USA	2014 – 2018
Simons Postdoctoral Fellow Simons Institute for the Theory of Computing, University of California, Berkeley, USA Adviser: Dr. Umesh Vazirani	Jan – May 2014
NSERC Banting Postdoctoral Fellow Computer Science Division, University of California, Berkeley, USA Adviser: Dr. Umesh Vazirani	2013 – 2014
Visiting Lecturer Department of Computer Science, University of Illinois, Chicago, USA	Aug – Dec 2012
Research and Teaching Assistant Department of Computer Science, University of Waterloo, Canada	2006 – 2012
Software developer Embarcadero Technologies, Toronto, Canada Developed database management software using C++, Java, SQL	2005 – 2006
Software developer Positions with 5 software companies as co-op student (see Industry Experience)	2001 – 2004

EDUCATION

- Ph.D. in Computer Science, University of Waterloo, Canada 2008 – 2012
Thesis: “Approximation, proof systems, and correlations in a quantum world”
Supervisor: Dr. Richard Cleve
- Master of Mathematics, University of Waterloo, Canada 2006 – 2008
Thesis: “On the hardness of the quantum separability problem and the global power of locally invariant unitary operations”
Supervisor: Dr. Richard Cleve
- Bachelor of Computer Science, Co-op, University of Waterloo, Canada 2000 – 2005

GRANTS

Total grant funding (since starting as Assistant/Junior Professor in 2014): 845,342 EUR

Grants awarded:

- Deutsche Forschungsgemeinschaft (DFG) – 432788384 2020 – 2023
Title: “The Quantum Satisfiability Problem: Algorithms & Complexity-Theoretic Hardness”
Role: Single PI
Amount: 273,790 EUR
- U.S. Department of Energy (DOE) 2017 – 2018
Title: “Quantum Algorithms from the Interplay of Simulation, Optimization, and Machine Learning”
Role: Lead PI at VCU (multi-institution grant, led by PI O. Parekh at Sandia Labs)
Amount: 4,500,000 USD total (my share: 36,389 USD)
- National Science Foundation (NSF) CCF-1745134 2017 – 2018
Title: “QIP 2018 Student and Postdoctoral Fellow Travel Funding Support”
Role: Single PI
Amount: 10,000 USD
- National Science Foundation (NSF) CCF-1617710 2016 – 2019
Title: “AF: Small: Approximation algorithms for quantum mechanical problems.”
Role: Single PI
Amount: 380,754 USD
- National Science Foundation (NSF) CCF-1526189 2015 – 2018
Title: “AF: Small: Exact algorithms for the quantum satisfiability problem.”
Role: Single PI
Amount: 196,593 USD

- Dean's Undergraduate Research Initiative, VCU School of Engineering 2015
 Role: Single PI
 Details: 5000 USD. Funding for undergrad research assistant, Aidan Collins.

FELLOWSHIPS AND SCHOLARSHIPS

Total fellowship/scholarship funding (Undergrad, Grad, Postdoc): 414,500 CAD (283,667 EUR)

Fellowships/scholarships awarded:

- NSERC Banting Postdoctoral Fellowship 2013 – 2015
 Details: 140,000 CAD. NSERC's top postdoctoral fellowship. Only 23 awarded annually, 6 of which can be taken up outside of Canada (as in my case).
- NSERC Postdoctoral Fellowship, 80,000 CAD, declined 2013 – 2015
- NSERC CGS Michael Smith Foreign Study Supplement, 6000 CAD 2010 – 2011
- European Union-Canada Exchange Scholarship, 10,000 CAD 2010 – 2011
- NSERC Alexander Graham Bell Canada Graduate Scholarship, 70,000 CAD 2010 – 2012
- President's Graduate Scholarship, University of Waterloo, 20,000 CAD 2010 – 2012
- Ontario Graduate Scholarship, 30,000 CAD, declined 2010 – 2012
- David R. Cheriton Graduate Scholarship, 40,000 CAD 2009 – 2011
- Graduate Entrance Scholarship, University of Waterloo, 4000 CAD 2006
- Ontario Graduate Scholarship in Science and Technology, 10,000 CAD 2006 – 2007
- Tro Najarian Memorial Scholarship, Armenian Relief Society, 500 CAD 2005
- Cognos Scholarship, Cognos Inc., 4000 CAD 2001 – 2002

AWARDS/DISTINCTIONS

- Good Practices Digital Teaching Distinction 2020
 Details: Via faculty or student nomination for excellent online course delivery practices
- Undergraduate Research Opportunities Faculty Mentor Award, VCU 2017
 Details: Awarded for undergraduate research mentoring, based on student nominations
- Student Choice Award for Computer Science Faculty of the Year, VCU 2017
 Details: Awarded by Engineering Student Council, based on votes from student body
- Teaching Excellence Award, Department of Computer Science, VCU 2016, 2017
- Achievement Award, Institute for Quantum Computing, University of Waterloo 2012
 Details: 5000 CAD. Awarded for "exceptional achievement in research".

- Best Poster Award, 14th Workshop on Quantum Information Processing (QIP) 2011
Details: Awarded for the “founding of a new research area”, as stated by award committee.
- 2nd Place for Best Speaker, 5th Canadian Quantum Information Students' Conference, 2008
Université de Montréal, Canada

RESEARCH

Statistics (Google Scholar, July 1, 2020): Citations: 965, h-index: 13, i10-index: 15.

Peer-Reviewed Journal Publications (in reverse chronological order)

1. M. Aldi, N. de Beaudrap, S. Gharibian and S. Saeedi. On efficiently solvable cases of Quantum k-SAT. To appear in *Communications in Mathematical Physics*, 2020.
1. S. Gharibian and J. Yirka. The complexity of simulating local measurements on quantum systems. *Quantum*, 3:189, 2019.
2. S. Gharibian, J. Sikora. Ground state connectivity of local Hamiltonians. *ACM Transactions on Computation Theory*, 10 (2), 2018.
3. S. Gharibian, Y. Huang, Z. Landau, S. W. Shin. Quantum Hamiltonian Complexity. *Foundations and Trends in Theoretical Computer Science*, 10 (3):159-282, 2015.
4. S. Gharibian, Z. Landau, S. W. Shin, and G. Wang. Tensor network non-zero testing. *Quantum Information & Computation* 15 (9 & 10):885-899, 2015.
5. S. Gharibian and J. Kempe. Hardness of approximation for quantum problems. *Quantum Information & Computation* 14 (5 & 6): 517-540, 2014.
6. D. Berry, R. Cleve and S. Gharibian. Gate-efficient discrete simulations of continuous-time quantum query algorithms. *Quantum Information & Computation* 14 (1 & 2): 1-30, 2014.
7. S. Gharibian, J. Sikora, and S. Upadhyay. QMA variants with polynomially many provers. *Quantum Information & Computation* 13(1 & 2):0135-0157, 2013.
8. S. Gharibian and J. Kempe. Approximation algorithms for QMA-complete problems. *SIAM Journal on Computing* 41(4): 1028-1050, 2012.
9. S. Gharibian. Quantifying non-classicality with local unitary operations. *Physical Review A* 86:042106, 2012.
10. M. Piani, S. Gharibian, G. Adesso, J. Calsamiglia, P. Horodecki and A. Winter. All non-classical correlations can be activated into distillable entanglement. *Physical Review Letters* 106: 220403, 2011.
11. S. Gharibian, M. Piani, G. Adesso, J. Calsamiglia, P. Horodecki. Characterizing quantumness via entanglement creation. *International Journal of Quantum Information* 9(7 & 8):1701-1713, 2011.

12. S. Gharibian. Strong NP-hardness of the quantum separability problem. *Quantum Information & Computation* 10(3 & 4): 343-360, 2010.
13. S. Gharibian, H. Kampermann, and D. Bruß. On global effects caused by locally noneffective unitary operations. *Quantum Information & Computation* 9(11 & 12): 1013-1029, 2009.
14. A. Datta and S. Gharibian. Signatures of non-classicality in mixed-state quantum computation. *Physical Review A* 79:042325, 2009.

Peer-Reviewed Conference Proceedings (in reverse chronological order)

1. A. Broadbent, S. Gharibian and H.-S. Zhou. Towards quantum one-time memories from stateless hardware. *Proceedings of the 15th Conference on the Theory of Quantum Computation, Communication and Cryptography (TQC)*, volume 158 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 6:1-6:25, 2020.
2. S. Gharibian, S. Piddock and J. Yirka. Oracle complexity classes and local measurements on physical Hamiltonians. *Proceedings of the 37th Symposium on Theoretical Aspects of Computer Science (STACS)*, volume 154 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 20:1-20:37, 2020.
3. S. Gharibian and O. Parekh. Almost optimal classical approximation algorithms for a quantum generalization of Max-Cut. *Proceedings of the 22nd International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX)*, volume 145 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 31:1-31:17, 2019.
4. S. Gharibian, M. Santha, J. Sikora, A. Sundaram and J. Yirka. Quantum generalizations of the polynomial hierarchy with applications to QMA(2). *Proceedings of 43rd International Symposium on Mathematical Foundations of Computer Science (MFCS)*, volume 117 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 58:1-58:16, 2018.
5. M. Aldi, N. de Beaudrap, S. Gharibian and S. Saedi. On efficiently solvable cases of Quantum k-SAT. *Proceedings of 43rd International Symposium on Mathematical Foundations of Computer Science (MFCS)*, volume 117 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 38:1-38:16, 2018.
6. S. Gharibian and J. Yirka. The complexity of simulating local measurements on quantum systems. *Proceedings of the 12th Conference on the Theory of Quantum Computation, Communication and Cryptography (TQC 2017)*, volume 73 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 2:1-2:17, 2018.
7. N. de Beaudrap and S. Gharibian. A linear time algorithm for quantum 2-SAT. *Proceedings of the 31st Conference on Computational Complexity (CCC)*, volume 50 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 27:1-27:21, 2016.
8. S. Gharibian, J. Sikora. Ground state connectivity of local Hamiltonians. *Proceedings of the 42nd International Colloquium on Automata, Languages and Programming (ICALP)*, volume 9134 of *Lecture Notes in Computer Science*, pages 617 – 628, 2015.

9. S. Gharibian and J. Kempe. Hardness of approximation for quantum problems. *Proceedings of the 39th International Colloquium on Automata, Languages and Programming (ICALP)*, pages 387-398, Springer, 2012.
10. S. Gharibian and J. Kempe. Approximation algorithms for QMA-complete problems. *Proceedings of the 26th IEEE Conference on Computational Complexity (CCC)*, 178-188, 2011.
11. D. Bruß, S. Gharibian, and H. Kampermann. Revealing quantum entanglement via locally noneffective operations. *Proceedings of 3rd International Symposium on Quantum Interaction (QI)*, pages 3-5, Springer, 2009.

Invited Talks (in reverse chronological order)

1. S. Gharibian. Use cases for quantum computers. 2021 German-American Frontiers of Engineering Symposium, Oak Ridge National Laboratory, USA, 2021.
2. S. Gharibian. The Quantum Approximate Optimization Algorithm. Mini-Workshop on Mixers for QAOA, Chalmers University of Technology, Sweden, 2020.
3. S. Gharibian, M. Santha, J. Sikora, A. Sundaram and J. Yirka. Quantum generalizations of the polynomial hierarchy with applications to QMA(2). Quantum Innovators Workshop, Institute for Quantum Computing, University of Waterloo, Canada, 2018. Presented by A. Sundaram.
4. M. Aldi, N. de Beaudrap, S. Gharibian and S. Saeeedi. On efficiently solvable cases of Quantum k-SAT. Dagstuhl Seminar 18391, “Algebraic Methods in Computational Complexity”. Schloss Dagstuhl, Germany, 2018.
5. A. Broadbent, S. Gharibian, and H.-S. Zhou. Towards quantum one-time memories from stateless hardware. 18th Asian Quantum Information Science Conference (AQIS 2018) Satellite Workshop on Quantum Computing, Kyoto University, Japan, 2018.
6. (Declined due to scheduling conflicts) A. Broadbent, S. Gharibian, and H.-S. Zhou. Towards quantum one-time memories from stateless hardware. Trustworthy Quantum Information Workshop (TQI), Shanghai, China, 2016
7. S. Gharibian, Y.-K. Liu. Classical approximation algorithms for quantum constraint satisfaction problems. SIAM Conference on Optimization, Vancouver, Canada, 2017.
8. S. Gharibian, Y.-K. Liu. Classical approximation algorithms for quantum constraint satisfaction problems. Canadian Mathematical Society (CMS) Winter Meeting, Canada, 2016.
9. S. Gharibian, Y.-K. Liu. Classical approximation algorithms for quantum constraint satisfaction problems. Semidefinite and Matrix Methods for Optimization and Communication, National University of Singapore, Singapore, 2016.
10. S. Gharibian, J. Sikora. Ground state connectivity of local Hamiltonians. Workshop around BQP, Tokyo Institute of Technology (Tamachi Campus), Japan, 2015. Presented by J. Sikora.

11. S. Gharibian, J. Sikora. Ground state connectivity of local Hamiltonians. Quantum Hamiltonian Complexity Reunion Workshop, Simons Institute for the Theory of Computing, University of California, Berkeley, 2015.
12. S. Gharibian, J. Kempe. Hardness of approximation for quantum problems. ELC Workshop on Inapproximability, University of Electro-Communications, Chofu, Japan, 2014.
13. S. Gharibian. Quantifying non-classicality with local unitary operations. Mini-Workshop on the General Quantumness of Correlations, University of Waterloo, Canada, 2012.
14. S. Gharibian and J. Kempe. Approximation algorithms for QMA-complete problems. Canadian Institute for Advanced Research (CIFAR) Quantum Information Processing meeting, Hot Topics Session, 2011.
15. D. Bruß, S. Gharibian, and H. Kampermann. Revealing quantum entanglement via locally noneffective operations. 3rd International Symposium on Quantum Interaction (QI), 2009. Presented by D. Bruß.

Contributed Talks (in reverse chronological order)

1. A. Broadbent, S. Gharibian and H.-S. Zhou. Towards quantum one-time memories from stateless hardware. *15th Conference on the Theory of Quantum Computation, Communication and Cryptography (TQC 2020)*.
2. S. Gharibian, S. Piddock and J. Yirka. Oracle complexity classes and local measurements on physical Hamiltonians. 37th Symposium on Theoretical Aspects of Computer Science (STACS 2020). Presented by S. Piddock.
3. S. Gharibian, S. Piddock and J. Yirka. Oracle complexity classes and local measurements on physical Hamiltonians. 23rd Annual Conference on Quantum Information Processing (QIP 2020). Presented by J. Yirka.
4. S. Gharibian and O. Parekh. Almost optimal classical approximation algorithms for a quantum generalization of Max-Cut. 23rd Annual Conference on Quantum Information Processing (QIP 2020). Presented by O. Parekh.
5. S. Gharibian and O. Parekh. Almost optimal classical approximation algorithms for a quantum generalization of Max-Cut. Colloquium on Combinatorics (KOLKOM 2019).
6. S. Gharibian and O. Parekh. Almost optimal classical approximation algorithms for a quantum generalization of Max-Cut. 22nd International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX 2019, presented by O. Parekh).
7. (Plenary talk, top 7% of submissions) S. Gharibian, M. Santha, J. Sikora, A. Sundaram and J. Yirka. Quantum generalizations of the polynomial hierarchy with applications to QMA(2). 18th Asian Quantum Information Science Conference (AQIS 2018). Presented by A. Sundaram.

8. S. Gharibian, M. Santha, J. Sikora, A. Sundaram and J. Yirka. Quantum generalizations of the polynomial hierarchy with applications to QMA(2). 43rd International Symposium on Mathematical Foundations of Computer Science (MFCS 2018). Presented by A. Sundaram.
9. (Plenary talk, top 7% of submissions) M. Aldi, N. de Beaudrap, S. Gharibian and S. Saedi. On efficiently solvable cases of Quantum k-SAT. 18th Asian Quantum Information Science Conference (AQIS 2018).
10. M. Aldi, N. de Beaudrap, S. Gharibian and S. Saedi. On efficiently solvable cases of Quantum k-SAT. 43rd International Symposium on Mathematical Foundations of Computer Science (MFCS 2018).
11. S. Gharibian, S. Piddock and J. Yirka. Oracle complexity classes and local measurements on physical Hamiltonians (preliminary version). 18th Asian Quantum Information Science Conference (AQIS 2018). Presented by J. Yirka
12. M. Aldi, N. de Beaudrap, S. Gharibian and S. Saedi. On efficiently solvable cases of Quantum k-SAT. Colloquium on Combinatorics (KOLKOM 2018).
13. S. Gharibian and J. Yirka. The complexity of estimating local physical quantities. Conference on the Theory of Quantum Computation, Communication and Cryptography (TQC 2017).
14. N. de Beaudrap and S. Gharibian. A linear time algorithm for quantum 2-SAT. 31st Conference on Computational Complexity (CCC 2016). Presented by N. de Beaudrap.
15. N. de Beaudrap and S. Gharibian. A linear time algorithm for quantum 2-SAT. 19th Conference on Quantum Information Processing (QIP 2016).
16. S. Gharibian and J. Sikora. Ground state connectivity of local Hamiltonians. 42nd International Colloquium on Automata, Languages, and Programming (ICALP 2015). Presented by J. Sikora.
17. S. Gharibian, Z. Landau, S. W. Shin, and G. Wang. Tensor network non-zero testing. 14th Asian Quantum Information Science Conference (AQIS 2014). Long talk. Presented by S. W. Shin.
18. S. Gharibian and J. Kempe. Hardness of approximation for quantum problems. 39th International Colloquium on Automata, Languages and Programming (ICALP 2012).
19. S. Gharibian and J. Kempe. Hardness of approximation for quantum problems. 15th Workshop on Quantum Information Processing (QIP 2012).
20. D. Berry, R. Cleve and S. Gharibian. Gate-efficient discrete simulations of continuous-time quantum query algorithms. 12th Asian Quantum Information Science Conference (AQIS 2012). Presented by D. Berry.
21. D. Berry, R. Cleve and S. Gharibian. Gate-efficient discrete simulations of continuous-time quantum query algorithms. 15th Workshop on Quantum Information Processing (QIP 2012). Presented by R. Cleve.
22. S. Gharibian and J. Kempe. Approximation algorithms for QMA-complete problems. 26th IEEE Conference on Computational Complexity (CCC 2011).

23. S. Gharibian. Strong NP-hardness of the quantum separability problem. 11th Annual Southwest Quantum Information and Technology Workshop (SQuInT 2009).
24. S. Gharibian. Strong NP-hardness of the quantum separability problem. 5th Canadian Quantum Information Students' Conference (CQISC 2008).

Research Poster Presentations (in reverse chronological order)

1. S. Gharibian, M. Santha, J. Sikora, A. Sundaram and J. Yirka. Quantum generalizations of the polynomial hierarchy with applications to QMA(2). 22nd Annual Conference on Quantum Information Processing (QIP 2019). Presented by A. Sundaram.
2. A. Broadbent, S. Gharibian, and H.-S. Zhou. Towards quantum one-time memories from stateless hardware. 22nd Annual Conference on Quantum Information Processing (QIP 2019).
3. S. Gharibian, S. Piddock and J. Yirka. Oracle complexity classes and local measurements on physical Hamiltonians. 22nd Annual Conference on Quantum Information Processing (QIP 2019). Presented by J. Yirka. Also presented at 14th Conference on the Theory of Quantum Computation, Communication and Cryptography (TQC 2019), by Stephen Piddock.
4. M. Aldi, N. de Beaudrap, S. Gharibian, and S. Saeedi. On efficiently solvable cases of Quantum k -SAT. CRA-W Grad Cohort for Women 2018. Presented by S. Saeedi.
5. M. Aldi, N. de Beaudrap, S. Gharibian, and S. Saeedi. On efficiently solvable cases of Quantum k -SAT. IBM ThinkQ Workshop, Yorktown Heights, NY, 2017. Presented by S. Saeedi.
6. M. Aldi, N. de Beaudrap, S. Gharibian, and S. Saeedi. On efficiently solvable cases of Quantum k -SAT. 21st Conference on Quantum Information Processing (QIP 2018). Presented by N. de Beaudrap.
7. M. Aldi, N. de Beaudrap, S. Gharibian, and S. Saeedi. On efficiently solvable cases of Quantum k -SAT. 50th Annual ACM Symposium on the Theory of Computing (STOC 2018). Presented by S. Saeedi.
8. S. Gharibian and J. Yirka. The complexity of estimating local physical quantities. 20th Conference on Quantum Information Processing (QIP 2017). Presented by J. Yirka.
9. S. Gharibian and J. Sikora, Ground state connectivity of local Hamiltonians. 18th Workshop on Quantum Information Processing (QIP 2015). Presented by J. Sikora.
10. D. Berry, R. Cleve, S. Gharibian. Gate-efficient discrete simulations of continuous-time query algorithms. 16th Workshop on Quantum Information Processing (QIP 2013). Presented by D. Berry.
11. S. Gharibian, J. Sikora, and S. Upadhyay. QMA variants with polynomially many provers. 15th Workshop on Quantum Information Processing (QIP 2012).
12. S. Gharibian and J. Kempe. Approximation algorithms for QMA-complete problems. 14th Workshop on Quantum Information Processing (QIP 2011), and Quantum Information in Many-Body Physics, 2011.

13. M. Piani, S. Gharibian, G. Adesso, J. Calsamiglia, P. Horodecki and A. Winter. All non-classical correlations can be activated into distillable entanglement. 14th Workshop on Quantum Information Processing (QIP 2011). Presented by M. Piani.
14. S. Gharibian. The computational complexity of detecting quantum entanglement. Cheriton Research Symposium, University of Waterloo, 2010.

STUDENT SUPERVISION

Ph.D. Students:

- Jianqiang Li, Virginia Commonwealth University (VCU) 2016 – 2018
- Topic: Approximation algorithms for quantum mechanical problems
 - Funded by: NSF grant CCF-1617710
 - Currently: PhD under Sean Hallgren, Pennsylvania State Univ. (due to my move to UPB)
- Seyran Saeedi, Virginia Commonwealth University (VCU) 2015 – 2018
- Topic: Exact algorithms for quantum satisfiability problems
 - Funded by: NSF grant CCF-1526189
 - Currently: PhD under Tomasz Arodz, VCU (due to my move to UPB)

Masters Students:

- Dorian Rudolph, Universität Paderborn (UPB) 2020 – present
- Topic: Quantum oracle complexity classes
- Daniel Warkentin, Universität Paderborn (UPB) 2020 – present
- Topic: Quantum dynamic programming algorithms
- Jannes Stubbemann, Universität Paderborn (UPB) 2018 – present
- Topic: Machine learning for simulation of quantum circuits

Undergraduate Research Assistants:

- Justin Yirka, VCU 2015 – 2018
- Topic: Quantum computational complexity of physical problems
 - Currently: PhD under Scott Aaronson, University of Texas at Austin
- Aidan Collins, VCU 2014 – 2015
- Topic: Computational complexity in entanglement theory
 - Funded by: VCU SoEgr Dean's Undergraduate Research Initiative grant

Thesis Committee/Panel Member:

- Libor Caha, Ph.D. (Physics), Slovak Academy of Sciences 2020
- Ali Karaarslan, Bachelors (CS), Universität Paderborn 2020

Rafael Kurek, Ph.D. (CS), Universität Paderborn	2018 – 2020
Björn Felklord, Ph.D. (CS), Universität Paderborn	2019
Alexander Mäcker, Ph.D. (CS), Universität Paderborn	2019
Swante Scholz, Masters (CS), Universität Paderborn	2019
Laurens Alexander Porzenheim, Masters (CS), Universität Paderborn	2019
Jakob Juhnke, Ph.D. (CS), Universität Paderborn	2018
Robert Jaeger, Masters (Math), Virginia Commonwealth University	2015

TEACHING

Teaching Experience

Note on course evaluation grading systems referenced below:

- Germany: Scale from 1 to 5, with 1,0 being perfect score.
 U.S.A.: Scale from 1 to 5, with 5 being perfect score (i.e. backwards w.r.t. Germany).

Course Instructor:

- Introduction to Quantum Computation, Universität Paderborn 2020, 2018
 - Graduate course. Average class size: 50. Average course evaluation rating: 1,75.
- Advanced Seminar in Quantum Computation, Universität Paderborn 2019
 - Grad course, joint with Prof. Dr. Johannes Blömer. Class size: 10.
- Quantum Complexity Theory, Universität Paderborn 2019
 - Graduate course. Class size: 11. Course evaluation rating: 1,3.
- Fundamental Algorithms, Universität Paderborn 2018, 2019
 - 3rd year course. Class size: 63. Average course evaluation rating: 1,65.
- CMSC 303 Introduction to the Theory of Computation, VCU 2015, 2016, 2017
 - 2nd year course. Average class size: 85. Average course evaluation rating: 4.5 / 5.
- CMSC 691 Convex Optimization, VCU 2016
 - Graduate course. Class size: 21. Course evaluation rating: 4.4 / 5.
- CMSC 491 Introduction to Quantum Computation and Information, VCU 2015
 - 4th year course. Class size: 12. Course evaluation rating: 4.7 / 5.
- CS 401 Computer Algorithms I, University of Illinois, Chicago 2012
 - 4th year course. Class size: 45. Course evaluation rating: 4.8 / 5.
- CS 301 Languages and Automata, University of Illinois, Chicago 2012
 - 3rd year course. Class size: 42. Course evaluation rating: 4.8 / 5.

Head Teaching Assistant:

- Algorithms, University of Waterloo, 3rd year course 2010

Teaching Assistant:

- Developing Programming Principles, University of Waterloo 2010
- 1st year Java course. 80 students per lab.
- Algorithm Design and Analysis, University of Waterloo, 4th year course 2009

Instructional Assistant:

- Principles of Computer Science, University of Waterloo 2008 – 2009
- 1st year algorithms course. Class size: 30-60. Delivered two tutorials per week.

Teaching Certifications

Certificate in University Teaching, University of Waterloo 2012

- Three course program involving workshops, lecturing, and higher education research.
- Authored a response paper for workshop “Understanding the Learner”, which was judged in a written review by the program coordinator as “exceptionally well written”, and made publicly available as a model response for future students in the program.

SERVICE**International and National Service***Newspaper article interviews*

Die Zeit, “*Die Mathematiker der Tafelrunde*” 2020
Major German national weekly newspaper, interviewed on quantum complexity theory

Conference Committees and Related Service

Board of Trustees, Secretary 2016 – 2018
Computational Complexity Conference (CCC, and its organizing body, CCF)

Organizing Committee

Dagstuhl Seminar 20311: Quantum Complexity: Theory and Application, Germany 2020
Mini-Workshop on Cryptography, Virginia Commonwealth University, USA 2014
9th Canadian Quantum Information Students' Conference (CQISC), Canada 2012

Program Committee

International Symposium on Algorithms and Computation (ISAAC) 2017
Asian Quantum Information Science Conference (AQIS) 2017
Conference on Theory of Quantum Computation, Communication and Cryptography (TQC) 2015, 2016

Student Travel Awards Committee	2016 – 2018
Annual Conference on Quantum Information Processing (QIP)	
Proceedings, Record Keeping, and Registration Subcommittees	2014
IEEE Conference on Computational Complexity (CCC)	

Journal Editorial Boards

Founding Editor	2016 - present
<i>Quantum</i> , open access journal for quantum physics, computation, and related areas.	
Selected from among 136 applicants (acceptance ratio: 25%) to act as one of the	
Founding Editors, URL: quantum-journal.org/	

Scholarly Reviewer

Conferences

ACM Symposium on Theory of Computing (STOC)
 ACM-SIAM Symposium on Discrete Algorithms (SODA)
 Annual Conference on Quantum Information Processing (QIP)
 Conference on Computational Complexity (CCC)
 Innovations in Theoretical Computer Science (ITCS)
 International Colloquium on Automata, Languages, and Programming (ICALP)
 International Computer Science Symposium in Russia (CSR)
 International Symposium on Mathematical Foundations of Computer Science (MFCS)
 Workshop on Approximation and Online Algorithms (WAOA)
 Conference on Theory of Quantum Computation, Communication and Cryptography (TQC)

Journals

Algorithms
 Communications in Mathematical Physics
 Entropy
 Nature Physics
 npj Quantum Information
 Physical Review A
 Physical Review Letters
 Quantum Information & Computing
 Quantum Information Processing
 SIAM Journal on Computing
 Scientific Reports, Nature Publishing Group

Funding Agencies

Deutscher Akademischer Austauschdienst (DAAD)	2019
National Science Foundation (NSF) Panel Service	2017
National Science Foundation (NSF) CAREER award subreviewer	2016

Other

Zentralblatt (zbMATH)

University Service*Chair*

- PhoQS Quantum Seminar Series, Universität Paderborn 2019 – 2020
Details: Organize, host international guests for cross-departmental seminar
- Master Teacher Task Force, VCU School of Engineering 2017
Details: Appointed chair by Dean to improve quality of undergraduate education
- Computer Science Day, VCU 2014 – 2017
Details: Outreach event for high school students, 68 attendees from Virginia in 2017
- Invited workshop on NSF Funding, VCU 2016
Details: Organized, delivered workshop on strategies for obtaining NSF funding
- Weekly Research Seminar, Department of Computer Science, VCU 2014 – 2017

Coordinator

- International Student Exchange Programs, Faculty of Computer Science, Electrical Engineering, and Mathematics, Universität Paderborn 2019 – present
- Quantum Computing Reading Group, University of California, Berkeley 2013
- Weekly Lunch Seminar, Institute for Quantum Computing, Univ. of Waterloo 2008 – 2012

Committee member

- Hiring Committee, Department of Computer Science, VCU 2016 – 2017
- High School Programming Contest, VCU 2014 – 2015

INDUSTRY EXPERIENCE

- Software developer (C++, Java, SQL), Embarcadero Technologies, Toronto, Canada 2005 – 2006
- 3D software developer, co-op (C++), Side Effects Software, Toronto, Canada Jan – Aug 2004
- Senior PC server developer, co-op, Canadian Imperial Bank of Commerce, Toronto, Canada May – Aug 2003
- Software developer, co-op (C++), Cedara Software Corp, Mississauga, Canada Sep – Dec 2002
- Software developer, co-op (Java), Third Eye Solutions Inc., Mississauga, Canada Jan – Apr 2002
- Software developer, co-op (Java, Javascript), Sun Microsystems, Inc. May – Aug 2001