Dr. Anna Vershynina

Curriculum Vitae

February 2025

Associate Professor
Department of Mathematics
University of Houston
anna@math.uh.edu
www.math.uh.edu/∼anna/
Date of Birth: April 01, 1986

EDUCATION

Ph.D. University of California, Davis, CA, USA — June 2012
Department of Mathematics
Thesis: *Existence of the thermodynamic limit and asymptotic behavior of some irreversible quantum dynamical systems*
Advisor: Prof. Bruno Nachtergaele

M.A. University of California, Davis, CA, USA — March 2012
Department of Mathematics
Advisor: Prof. Bruno Nachtergaele

PROFESSIONAL EXPERIENCE

Associate Professor 2023 - present
Department of Mathematics, University of Houston, TX, USA

Assistant Professor 2017 - 2023
Department of Mathematics, University of Houston, TX, USA

BCAM Researcher in prof. Jean-Bernard Bru's group 2016 - 2017
Quantum Mechanics research line, Mathematical Physics Research Area,
Basque Center for Applied Mathematics (BCAM), Bilbao, Spain

Postdoctoral researcher with prof. Michael Wolf 2015 - 2016
Mathematics Department, TU Munich, Germany

Postdoctoral researcher with prof. Barbara Terhal 2013 - 2015
Physics Department, RWTH Aachen University, Germany

Postdoctoral research associate with prof. Elliott H. Lieb 2012 - 2013
Physics Department, Princeton University, Princeton, NJ, USA

Associate Instructor, Lead Teaching Assistant, Teaching Assistant, Reader 2007 - 2012
University of California Davis, CA, USA

GRANTS

At the UH

- NSF DMS-2105583, *"Quantum correlations in information theory, their interplay and limitations"*, $215,000, 07/01/2021-06/31/2025.
- NSF DMS-1812734, *"Dynamical Systems in Quantum Information Theory"*, $159,997, 06/01/2018-05/31/2021.
- AIM workshop, *"Non-local games in quantum information theory"* with M. Brannan (Texas A&M), V. Paulsen (U of Waterloo), I. Todorov (U of Delaware), 05/17-24/2021.

Before UH

- Mathematics Block Grant Fellowship, University of California, Davis: Winter 2011, Fall 2010, Spring 2010, Winter 2010, Fall 2009, Spring 2009, Fall 2008.
- Various Travel Grants to attend conferences/schools/workshops: 2009-2016

Participated in grant conceptualization workshops - at the UH

- Project Scoping Workshop sponsored by NSF for a "National Virtual Laboratory" for quantum information science and engineering, December 14-15, 2020 (online)
- Texas Quantum Institute in response to the NSF Quantum Leap Challenge Institutes (QLCI), College Station, October 17-19, 2019

AWARDS

Global Challenges for Women in Mathematical Sciences Award 2015
Technical University of Munich, Germany

University of California, Davis and Humanities Graduate Research Award 2011
(for the demonstrated excellence in research) *UC Davis, CA, USA*

William K. Schwarze Scholarship in Mathematics ($10,000), 2011
UC Davis (for research and teaching achievements), *CA, USA*

PUBLICATIONS

Papers - authors are listed in alphabetical order

At the UH

21. A. Vershynina, *Coherence as entropy increment for Tsallis and Renyi entropies*, **Quantum Information Processing**, 22: 127, (2023)
20. E. Evert, S. McCullough, T. Strekelj, A. Vershynina, *Convexity of a certain operator trace functional*, **Linear Algebra and Applications**, 643: 218-234, (2022)

19. A. Vershynina, *Measure of genuine coherence based of quasi-relative entropy*, **Quantum Information Processing**, 21:184, (2022)

18. A. Vershynina, *"Closest separable state when measured by a quasi-relative entropy"*, **Journal of Physics A: Mathematical and Theoretical**, 54:105301, (2021)

17. A. Vershynina, *"Quantum coherence, discord and correlation measures based on Tsallis relative entropy",* **Quantum Information and Computation**, 20(7&8):553, (2020)

16. A. Vershynina, *"Upper continuity bound on the quantum quasi-relative entropy",* **Journal of Mathematical Physics**, 60 (10), (2019)

15. E. A. Carlen, A. Vershynina, *"Recovery map stability for the Data Processing Inequality"*, **Journal of Physics A: Mathematical and Theoretical**, 53(3):035204, (2019)

14. A. Vershynina, *"On quantum quasi-relative entropy"*, **Reviews in Mathematical Physics** (as an original research paper), 31(7):1950022, (2019)

13. A. Vershynina, *"Entanglement rates for Rényi, Tsallis and other entropies"*, **Journal of Mathematical Physics**, 60(2):022201, (2019)

12. E. A. Carlen, A. Vershynina, *"Recovery and the Data Processing Inequality for quasi-entropies"*, **IEEE Transactions on Information Theory**, 64(10):1, (2018)

Before UH

11. S. Huber, R. Koenig, A. Vershynina, *"Geometric inequalities from phase space translations"*, **Journal of Mathematical Physics**, 58(1):012206, (2017)

10. A. Vershynina, *"Entanglement rates for bipartite open systems"*, **Physical Review A**, 92(2):022311, (2015)

9. A. Vershynina, *"Complete criterion for convex-Gaussian state detection"*, **Physical Review A**, 90(6): 062329, (2014)

8. D. Gosset, B. M. Terhal, A. Vershynina, *"Universal adiabatic quantum computation via the space-time circuit-to-Hamiltonian construction"*, **Physical Review Letters**, 114:140501, (2015)

7. E. H. Lieb, A. Vershynina, *"Upper bound on mixing rates"*, **Quantum Information and Computation**, 13(11&12):0986, (2013)

6. A.Vershynina, *"Existence of the thermodynamic limit and asymptotic behavior of some irreversible quantum dynamical systems"*, arXiv:1207.5763. This is a modified version of my UC Davis PhD dissertation. (2012)

5. B. Nachtergaele, A. Vershynina, V. A. Zagrebnov, "Non-equilibrium states of a photon cavity pumped by an atomic beam", **Annales Henri Poincaré**, 15(2):213, (2014)

4. B. Nachtergaele, A. Vershynina, V. A. Zagrebnov, *"Lieb-Robinson bound and the existence of the thermodynamic limit for the class of irreversible dynamics"*, **AMS Contemporary Mathematics**, 552:161, (2011)

3. Q. Xia, A. Vershynina, *"On the transport dimension of measures"*, **SIAM Journal on Mathematical Analysis**, 41(6):2407, (2009)

2. S. Gefter, A. Vershynina, *"On analytic solutions of the heat equation with an operator coefficient"* (translated from Russian), **Journal of Mathematical Sciences**, 156(5):799, (2009). Russian version in Zapiski Nauchnyh Seminarov POMI, 355:139, (2008)

1. S. Gefter, A. Vershynina, *"On holomorphic solutions of the heat equation with a Volterra operator coefficient"*, **Methods of Functional Analysis and Topology**, 13(4):329, (2007)

Review articles (peer-reviewed) - authors are listed in the contributing order

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At the UH

4. S. Chehade, A. Vershynina, *"Quantum entropies"*, doi:10.4249/scholarpedia.53131, Scholarpedia, 14(2):53131, (2019)

Before UH

3. A. Vershynina, E. H. Lieb, *"Lieb-Robinson bounds"*, doi:10.4249/scholarpedia.31267, Scholarpedia, 8(9):31267, (2013)

2. A. Vershynina, E. A. Carlen, E. H. Lieb, *"Strong subadditivity of quantum entropy"*, doi:10.4249/scholarpedia.30920, Scholarpedia, 8(4):30920, (2013)

1. A. Vershynina, E. A. Carlen, E. H. Lieb, *"Matrix and operator trace inequalities"*, doi:10.4249/scholarpedia.30919, Scholarpedia, 8(4):30919, (2013)

PRESENTATIONS

INVITED SPEAKER

Conferences

24. Beyond IID, University of Illinois Urbana-Champaign, IL, July-August 2024

23. AMS Special Session "Complex Analysis, Operator Theory, and Real Algebraic Geometry", 2024 JMM, San Francisco, January 2024

22. 125th Statistical Mechanics Conference, Rutgers University, NJ, December 2023

21. Analytical and combinatorial methods in quantum information theory II, International Centre for Mathematical Sciences (ICMS), Edinburgh, UK, July 2023

20. Non-commutative Harmonic Analysis and Quantum Information, Institut Mittag-Leffler, Stockholm, Sweden, June 2023

19. Workshop on Operator Algebras and Quantum Information, University of Delaware, Newark, DE, May 2023

18. Brazos Analysis Conference, Houston TX, October 2022

17. International Conference on Physics and its Applications (online), July 2022
16. IWOTA, Special Session "Operator algebras in quantum theory" (online), August 2021
15. AIM workshop "Noncommutative inequalities" (online), June 2021
14. AIM workshop, "Non-local games in quantum information theory" (online), May 2021
13. Entropy Inequalities, Quantum Information and Quantum Physics workshop (online), February 2021
12. Joint Mathematical Meeting, Special Session on Advances in Operator Algebras (online), January 2021
11. TSRC Workshop on Exciton/photon interactions in Quantum Systems, Telluride, CO, June 2019
10. JMM Special Session: Localization and delocalization for disordered quantum systems. Baltimore, MD, January 2019
9. Texas Women in Mathematics Symposium, University of Houston, TX, November 2018
8. Quantum Innovators in Computer Science and Mathematics, Institute for Quantum Computing, University of Waterloo, Canada, October 2018
7. AMS Special Session on Ergodic and Topological Quantum Systems, University of Michigan, Ann Arbor, MI, October 2018
6. Brazos Analysis Seminar, Texas A&M University, College Station, TX, September 2018
5. Quantum Computation and Information Workshop, Texas A&M University, College Station, TX, September 2018
4. Great Lakes Mathematical Physics Meeting, Lansing, MI, June 2018
3. 4-hour lecture at Houston Dynamics Summer School, University of Houston, TX, May 2018
2. (plenary talk) 7th International Conference on Computational Harmonic Analysis, Vanderbilt University, Nashville, TN, May 2018
1. Arizona School of Analysis and Mathematical Physics, University of Arizona, Tucson, AZ, March 2018
0. Spectral Days 2017, Stuttgart, Germany, April 2017
0. Mathematical Many-Body Theory and its Applications Workshop, Bilbao, Spain, June 2016
0. NSF/CBMS Conference on Quantum Spin Systems, University of Alabama at Birmingham, AL, June 2014

Colloquiums/Seminars

23. Sam Houston State University, colloquium on Physics department, September 2024
22. University of Nevada, NV (online), March 2023
21. Troy University, Troy, AL, (online) September 2022
20. Quantum Computation Seminar, University of Texas, Austin (online), October 2020

19. Probability Seminar, Harvard University, March 2019
18. Mathematical Physics Seminar, Purdue University, February 2019
17. Graduate Student Seminar, Sam Houston University, Huntsville, TX, April 2018
16. Seminar, Baylor University, April 2018
15. Seminar, Department of Mathematics, Rutgers University, NJ, October 2017
14. Colloquium, Department of Mathematics, Rice University, Houston, TX, October 2017
13. Seminar, Department of Mathematics, Rutgers University, NJ, January 2017
12. Colloquium, Department of Mathematics, University of Houston, TX, January 2017
11. BCAM (Basque Center for Applied Mathematics) Scientific seminar, Bilbao, Spain, April 2016
10. Department of Mathematics, California State University, Northridge, CA, April 2016
9. Colloquium, Department of Mathematical Sciences, Clemson University, SC, February 2016
8. Analysis seminar, Department of Mathematics, Technical University of Munich, Germany, November 2015
7. Colloquium, Department of Mathematics, University of Bristol, United Kingdom, July 2015
6. Mathematical Physics seminar, Department of Mathematics, TU Munich, Germany, March 2015
5. Center for Quantum Information and Foundations seminar, Department of Mathematics, University of Cambridge, UK, February 2015
4. Colloquium, Department of Mathematics, Georgia Institute of Technology, Atlanta, GA, November 2014
3. Colloquium, Department of Mathematics, University of Alabama at Birmingham, AL, June 2014
2. J. Eisert group seminar, Free University of Berlin, Berlin, Germany, December 2011
1. I. Cirac Theory Division seminar, Max-Planck Institute for Quantum Optics, Garching, Germany, December 2011
0. Institute for Quantum Information, Physics department, RWTH Aachen University, Aachen, Germany, November 2011

CONTRIBUTED TALKS

Conferences

19. Brazos Analysis Conference, Houston, TX, October 2022
18. International Congress on Mathematical Physics, Montreal, Canada, July 2018

17. Quantum Information Processing 2017, Seattle, WA, January 2017
16. QMATH13: Mathematical Results in Quantum Physics, Atlanta, GA, October 2016
15. Mathematical Challenges in Quantum Mechanics, Bressanone, Italy, February 2016
14. 2016 Joint Mathematical Meeting: AMS Special Session on Quantum Walks, Quantum Markov Chains, Quantum Computation and Related Topics, Seattle, WA, January 2016
13. International Congress on Mathematical Physics, Santiago de Chile, July 2015
12. Young Researchers Symposium, Santiago de Chile, July 2015
11. Device Independent Quantum Information Processing & Quantum Algorithms Joint Meeting, Brussels, Belgium, May 2014
10. Young Researchers Symposium, Aalborg, Denmark, August 2012
9. Arizona School of Analysis and Mathematical Physics, Tucson, AZ, March 2012
8. Second Davis Mathematical Conference, University of California Davis, CA, September 2011
7. Focus Research Group workshop "Quantum Spin Systems and Quantum Computation", Harvard University, Cambridge, MA, May 2011
6. AMS 2009 Spring Central Sectional Meeting, University of Illinois at Urbana-Champaign, IL, March 2009
5. Entire and Subharmonic Functions and Related Topics, international conference dedicated to the centennial of B.Ya.Levin, Kharkov, Ukraine, August 2006
4. Analysis and Partial Differential Equations conference, in honor of Professor Bogdan Bojarski, Bedlewo, Poland, June 2006
3. XI International Scientific Kravchuk Conference, Kiev, Ukraine, May 2006
2. International Science conference in Pure and Applied Mathematics for graduate students and post doctorate researchers, Kharkov, Ukraine, April 2006
1. National Mathematical science conference for graduate students and post doctorate researchers, Kharkov, Ukraine, May 2005

Poster & short talks

5. 2016 Joint Mathematical Meeting: AMS Contributed Paper Session on Mathematical Physics, short talk, Seattle, WA, January 2016
4. 106th Statistical Mechanics conference, short talk, Rutgers University, NJ, December 2011
3. Quantum Information Processing 2012, poster, Montreal, Canada, December 2011
2. CRM 11th Canadian summer school "Quantum Information and Computation", poster, Quebec, Canada, June 2011

1. 105th Statistical Mechanics conference, short talk, Rutgers University, NJ, May 2011

Seminars

10. Analysis Seminar, Department of Mathematics, University of Houston, TX, October 2021, September 2019, March 2018, November 2017
9. Women's Lunch Seminar, Department of Mathematics, University of Houston, TX, September 2017
8. Special Mathematical Physics seminar, Physics department, Princeton University, Princeton, NJ, October 2016
7. Institute for Quantum Information, Physics department, RWTH Aachen University, Aachen, Germany, May 2015
6. "Open-problems" workshop, Center for Mathematical Sciences, TU Munich, Garching, Germany, April 2015
5. "Mathematical Aspects of Quantum Theory" seminar, RWTH Aachen University, Aachen, Germany, September 2014
4. Institute for Quantum Information, Physics department, RWTH Aachen University, Aachen, Germany, April 2013
3. Brown Bag Lunch seminar of Mathematical Physics group, Princeton University, Princeton, NJ, November, October 2012
2. VIGRE Research Focus Group "Quantum Phase transitions", University of California Davis, CA, April-May 2012
1. Mathematical Physics seminar, University of California Davis, CA, April 2010

PARTICIPATED IN CONFERENCES

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13. International Congress on Mathematical Physics (online), August 2021
12. Quantum Programming in Theory, Experiment and the Classroom Workshop (online), Sep 16-18, 2020
11. The Women in Quantum Summit (online), Jul 28-30, 2020
10. Master class in Quantum Mathematics, University of Copenhagen, Copenhagen, Denmark, May 2015
9. Quantum Information Processing 2014, Barcelona, Spain, February 2014
8. Frontiers of Quantum Information Science, The 31st Jerusalem Winter School in Theoretical Physics, Jerusalem, Israel, January 2014
7. International Congress on Mathematical Physics, Aalborg, Denmark, August 2012

6. CRM summer school "Non-Equilibrium Statistical Mechanics", University of Montreal, Montreal, Canada, July 2011
5. CRM 11th Canadian summer school "Quantum Information and Computation", Quebec, Canada, June 2011
4. École de Physique des Houches summer school "Quantum Theory from Small to Large Scales", Les Houches, France, August 2010
3. Focus Research Group Workshop in Quantum Spin Systems and Quantum Information Theory, Rochester, NY, May, 2010
2. Arizona School of Analysis with Applications, Tucson, AZ, March 2010
1. 16th Southern California Geometric Analysis Seminar, San Diego, CA, February 2009

SUPERVISIONS

Ph.D. Students

- **Sarah Chehade**, graduated in Spring 2021, dissertation: *"Saturating Quantum Relative Entropy Inequalities"*, position after graduation: postdoc at Oak Ridge National Laboratory, Quantum Information Science group.

Dissertation/APE Committee Member for

Name	*Department*	*Dates*
Fernanda Torres	Physics	Fall 2024-present
Prachi Garella	Physics	Fall 2024-present
Siddharth Jindal	Physics	Spring 2024-present
Hitansh Shah	Physics	Spring 2023-present
Stephen Thacker	Mathematics	Spring 2022-Spring 2023
Aymen Nomani	Physics	August 2021-Spring 2024
Homayoon Shobeiri	Mathematics	Spring 2021-Spring 2024
Alek Hutson	Physics	Spring 2021-Spring 2024
Pablo Lopez	Physics	Spring 2021-Fall 2024
Francesco Bernardini	Physics	Fall 2020-Spring 2022
Abhijit Chakraborty	Physics	Spring 2020-Fall 2022
Dylan Domel-White	Math	Spring 2020
Nosheen Younas	Chemistry	Fall 2019 - Spring 2020

PROFESSIONAL AFFILIATIONS

American Women in Mathematics
International Association of Mathematical Physics (IAMP)

TEACHING EXPERIENCE

At the University of Houston

Instructor

MATH 3333: Intermediate Analysis (24 students) Spring 2025
MATH 2318: Linear Algebra (25 students) Fall 2024
MATH 6397: Special Topics: Quantum Information and Computation Theory (16 students)
MATH 2318: Linear Algebra (41 students) Spring 2024
MATH 3325: Transition to Advanced Mathematics (24 students)
MATH 6321: Theory of Functions of Real Variables II (8 students)
MATH 6320: Theory of Functions of Real Variables (13 students)
MATH 3325: Transition to Advanced Mathematics (21 students)
MATH 6398: Special Problems (1 student)
MATH 3325: Transition to Advanced Mathematics (25 students)
MATH 4332/6313: Introduction to Real Analysis II (13+5 students)
MATH 4331/6312: Introduction to Real Analysis(22+8 students)
MATH 4332/6313: Introduction to Real Analysis II (9+1 students)
MATH 4331/6312: Introduction to Real Analysis (12+1 students)
MATH 2331: Linear Algebra (80 studnets)
MATH 6397: Quantum Computation Theory (9 students)
MATH 4377/6308: Advanced Linear Algebra (30+2 students)
MATH 3338: Probability (43 students)
MATH 6398: Special Problems (2 students)
MATH 6395: Quantum Information Theory (9 students)
MATH 1451: Accelerated Honors Calculus
MATH 1450: Accelerated Honors Calculus

Prior to the UH

Instructor

Quantum Information Theory March 2017
(short course - BCAM, Spain)
16A Short Calculus Summer session II, 2011
(Associate Instructor - UC Davis)

Lead Teaching Assistant *(UC Davis)*

Short Calculus C Spring quarter 2010

Teaching Assistant
Graduate courses

Functional Analysis (TUM, Germany) Fall semester 2015
Quantum Information (RWTH, Germany) Spring semester 2015
Quantum Optics (RWTH, Germany) Fall semester 2014
Analysis A (UC Davis) Fall quarter 2008

Undergraduate courses (UC Davis)

Calculus for Bio Sciences C	Spring quarter 2012
Calculus B	Winter quarter 2011
Calculus for Bio SciencesA	Fall quarter 2010
Calculus D	Winter quarter 2010
Calculus A	Fall quarter 2009
Calculus for Bio Sciences C	Spring quarter 2009
Calculus B	Winter quarter 2009
Calculus D	Spring quarter 2008
Calculus B	Winter quarter 2008
Calculus A	Fall quarter 2007

Reader/Grader *(UC Davis)*

Short Calculus A	Summer session I, 2009
Differential equations B	Summer session II, 2009
Short Calculus A	Summer session I, 2008
Short Calculus B	Summer session II, 2008

TEACHING GRANTS at the UH

Successful

- UH Alternative Textbook Incentive Program for Fall 2020 in the amount of $500. The purpose of the program is to use only open-source textbooks and resources in the classroom.
- 2020 OER Champion from Lyryx, $1500, 03/10/2020 (`https://lyryx.com/oer_c/`)
- UH Alternative Textbook Incentive Program for Spring 2020 in the amount of $500. The purpose of the program is to use only open-source textbooks and resources in the classroom.

Unsuccessful

- NSM Butler Excellence in Teaching Award, applied on 02/26/2020
- UH Alternative Textbook Incentive Program for Fall 2018, applied on 02/26/2018, declined on 05/15/2018

INVOLVEMENT WITH UNDERGRADUATES

- Houston Early Research Experience (HERE) program, May 13-24, 2019. I supervised 6 students, who developed 2 research proposals in two groups and made presentations at the end of the program.
- April 2019 - March 2020 I was a Director of outreach program Cougars and Houston Area Mathematic Program (CHAMP). The program consisted of two intertwined lines:
  - outreach to local middle and high school students (described in the next section);
  - enrichment for the UH students.

  Program description. Personnel wise, as a part of the program we had:
  - 3 student workers (Fall), 4-5 student workers (Spring): two School Leaders, one Academic Facilitator (until February) and, in Spring, two UH Math circle Leaders;
  - 7 School Mentors, UH students, who regularly volunteer;
  - 16 UH students in total, who are a part of an enrichment program.

  As a combination of both community outreach and learning experience,
  - I develop curriculum that is of benefit to both UH students and school students;
  - students collaborate on developing weekly lesson plans under my guidance;
  - CHAMP staff meets weekly to learn and discuss the material;
  - School Leaders and Math Circle Leader write extensive Teaching notes after each weekly meeting, which influences my curriculum development, their lesson plan creation, and their future teaching style.

ACADEMIC SERVICE TO THE UH

2024-2025 a.y.

1. Faculty Engagement and Development Advisory Board

2023- 2024 a.y.

1. Chair of UH Graduate and Professional Studies Committee of the UH Faculty Senate
2. Executive committee of the UH Faculty Senate
3. Faculty Engagement and Development Advisory Board
4. Elected member of the UH Faculty Senate
5. Member of a NSM Academic Honesty grievance committee

2022-2023 a.y.

1. Vice-Chair of UH Graduate and Professional Studies Committee, Academic Program Evaluation subcommittee
2. Faculty Engagement and Development Advisory Board
3. UH Faculty Senate

2021-2022 a.y.

1. UH Graduate and Professional Studies Committee, Academic Program Evaluation subcommittee
2. UH Faculty Senate

2020-2021 a.y.

1. UH Graduate and Professional Studies Committee, Academic Program Evaluation subcommittee
2. UH Faculty Senate

SERVICE TO THE DEPARTMENT

2024-2025 a.y.

1. Prelim oversight committee (Functions of Real Variables)
2. Graduate Studies Committee
3. Faculty mentor for the American Women in Mathematics (AWM) graduate student chapter
4. Worked with Follett UH to secure TA's access to textbooks through BryteWave Course Material in Canvas.

2023-2024 a.y.

1. Hiring committee 1 (tenure-track position, filled)
2. Hiring committee 2 (tenure-track position, filled)
3. Chair of a hiring committee (3 full-time lecturer positions, filled)
4. Graduate Studies Committee
5. Faculty mentor for the American Women in Mathematics (AWM) graduate student chapter

2022-2023 a.y.

1. Graduate Studies Committee
2. Faculty mentor for the American Women in Mathematics (AWM) graduate student chapter

2021-2022 a.y.

1. Executive committee
2. Hiring committee (tenure-track position)
3. Colloquium committee
4. Faculty mentor for the American Women in Mathematics (AWM) graduate student chapter
5. Undergraduate Studies Subcommittee for Improving Relations with Math Majors

2020-2021 a.y.

1. Executive committee
2. Hiring committee (tenure-track position)
3. Subcommittee regarding 4331 course
4. (on modified schedule) Colloquium committee

2019-2020 a.y.

1. Executive committee
2. Hiring committee (tenured position)
3. Colloquium committee

2018-2019 a.y.

1. Hiring committee (tenure-track position)
2. Colloquium committee

SERVICE TO GRANT AGENCIES

NSF Panel

- 2 days, June 2024 (in-person), NSF Quantum Leap Challenge Institutes (QLCI) site visit
- 3 days, February 2024 (online) (reviewed 6 proposals)
- 2 days, August 2023 (in-person), NSF Quantum Leap Challenge Institutes (QLCI) site visit
- 2 days, April 2023 (online) (reviewed 5 proposals)
- 2 days, March 2023 (online) (reviewed 6 proposals)
- 2 days, August 2022 (online) Quantum Leap Challenge Institute site visit
- *(cancelled due to health reasons) 2 days, March 2022 (online) (6 proposals; 2 proposals reviewed before cancellation)*
- 2 days, October 2020 (online) (5 proposals)
- 3 days, February 2020 (9 proposals)
- 3 days, March 2019 (9 proposals)

Reviewed for grant agencies

- NSF: 02/22, 02/21, 11/20
- Natural Sciences and Engineering Research Council of Canada, Discovery grant: 01/23
- Nebraska EPSCoR FIRST Award Grant Competition (external reviewer): 11/20

SERVICE TO SCIENCE COMMUNITY

Conference organization

- 2021: Member of a Program Committee for Theory of Quantum Computation, Communication, and Cryptography (TQC), July 5 - 8, 2021 (online) (reviewed and wrote reports for 23 papers)
- 2020-2021: Co-organized AIM workshop "Non-local games in quantum information theory" with M. Brannan (Texas A&M), V. Paulsen (U of Waterloo), I. Todorov (U of Delaware) in May 17 - 21, 2021 (online)
- 2021: Led a Mentoring Session during Quantum Information Processing (QIP) conference (online), February 3, 2021
- Chair during: TQC (2021), AIM workshop (2021), Entropy Inequalities, Quantum Information and Quantum Physics workshop (2021)

Seminars Organized

- 2019-2020: As a part of CHAMP enrichment program for the UH students I delivered the following:
  - Organized 2 CHAMP Seminars in the Fall semester, and CHAMP has sponsored a public talk by Ben Orlin in Spring 2020. The total of 3 hours of Seminars will have been delivered this year. (Due to COVID-19 all other seminars are canceled)
  - Organized a two-hour Winter Conference on November 22, 2019, which brought 22-25 students, 6 faculty, and 5 grad students.
- 2017-2019: Co-organized the Analysis seminar
- 2014-2015: Organized and led a seminar "*Mathematical Aspects of Quantum Theory*" for graduate students and postdocs at RWTH Aachen University, Germany
- Spring 2012: Co-organized the Special Lecture Series "*Bose-Einstein Condensation*" given by V. Zagrebnov as a part of VIGRE Research Focus Group "Quantum Phase transitions", UC Davis
- Fall 2011-Winter 2012: As a graduate student, led a special course "*Quantum Information Theory*" as a part of VIGRE Research Focus Group "Quantum Phase transitions", UC Davis

Reviewed for

- Physical Review Letters
- Physical Review A
- Annales Henri Poincare
- Journal of Mathematical Physics
- Letters in Mathematical Physics
- Quantum Information Processing
- Physical Review B
- Physical Review E
- Reviews in Mathematical Physics
- Operators and Matrices
- Results in Physics
- CRC Press (book)
- AMS Surveys and Monographs series (book)
- AMS Graduate Studies in Mathematics series (book)

DEPARTMENTAL VISITORS

I have invited and hosted the following departmental visitors:

Name	*from*	*dates*	*capacity*
Michael Loss	Georgia Institute of Technology	October 13, 2021 (online)	Colloquium speaker
Scott Aaronson	University of Texas, Austin	February 19, 2020	Colloquium speaker
Federico Bonneto	Georgia Institute of Technology	November 09, 2019	Colloquium speaker
Kevin Lin	University of Arizona, Tucson	September 25, 2019	Colloquium speaker
Martin Kliesch	Dusseldorf University	September 09-17, 2019	Professional visitor and Analysis seminar speaker

SERVICE TO GRADUATE STUDENTS

- Panelist for the UH Grad School Math Panel, November 2024
- Panelist for the Career Panel during Beyond IID conference, August 2024
- I was a judge at the 3 Minute Thesis Graduate Student competition: November 2021, 2022, 2023
- I was a judge at the Graduate Student Paper Presentation on April 2018, 2019, 2022.
- Judge for the UH Outstanding Dissertation Award committee, June 2022

SERVICE TO MIDDLE/HIGH SCHOOL STUDENTS

- I proof read Math and Physics exams for the UH Math Contest, February 2021
- I volunteered at the Math Contest, organized by the Math Department for the high- and middle-school students on February 1, 2020.
- I served as a Place Award judge at the Science and Engineering Fair of Houston, February 24, 2018.
- I volunteered at the Math Contest, organized by the Math Department for the high- and middle-school students on February 2, 2019.
- April 2019 - March 2020: I was a Director of outreach program Cougars and Houston Area Mathematic Program (CHAMP). The outreach line of CHAMP consists of the following programs:
  - outreach to local middle schools;
  - regular outreach to middle school students;
  - outreach to girls and general public;