

Contact Information

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Employment

1. J.L. Doob Research Assistant Professor *with Marius Junge* August 2021-May-2024
 Department of Mathematics, University of Illinois at Urbana-Champaign

Education

- Ph.D., Mathematics, Purdue University August 2015- April 2021
 Thesis: "On the abstract structure of operator systems and applications to quantum information theory"
 Advisor: Thomas J. Sinclair
- B.A., Mathematics, San Jose State University December 2014
 Advisor: Timothy Hsu

Appointments

4. J.L. Doob Research Assistant Professor August 2021-May 2024
 Department of Mathematics, University of Illinois at Urbana-Champaign
3. Andrews Fellow of Mathematics August 2015-December 2020
 Department of Mathematics, Purdue University
2. Purdue Research Foundation Fellow June 2019-June 2020
 Department of Mathematics, Purdue University
1. GAANN Fellow January 2016-January 2018
 Department of Mathematics, Purdue University

Visiting Research Positions/Long Stays

2. Thematic Research Program: Operator Algebras, Groups and Applications to Quantum Information, Instituto de Ciencias Matematicas, Madrid, Spain May 2019
1. Long Program on Quantitative Linear Algebra, Institute for Pure and Applied Mathematics, University of California, Los Angeles, California, USA March-June 2018

Research Interests

- Tensor theory of operator spaces
- Tensor theory of operator systems
- Quantum information theory
- Operator algebras

Publications and Preprints

3. A Universal Representation for Quantum Commuting Correlations (with Travis Russell and Mark Tomforde). (2021) Submitted. arXiv:2102.05827
2. An Abstract Characterization for Projections in Operator Systems (with Travis Russell). (2020) Submitted. arXiv:2006.03094
1. \mathcal{R} we living in the matrix? (with Rolando de Santiago). Notices of the American Mathematical Society. Volume 66, Number 8, (2019), Pgs. 1216-1224.

Honors and Awards

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| 6. AMS Travel Grant
American Mathematical Society | March 2020 |
| 5. Purdue Research Foundation Grant
Department of Mathematics, Purdue University | June 2019 |
| 4. GAANN Fellowship
Department of Mathematics, Purdue University | January 2016 |
| 3. Andrews Fellowship
Department of Mathematics, Purdue University | August 2015 |
| 2. Mervin L. Keedy Scholarship
Department of Mathematics, Purdue University | August 2015 |
| 1. College of Science Dean's Scholar
College of Science, San Jose State University | December 2014 |

Presentations

Invited

20. Expository Lecture Series, Groundwork for Operator Algebras Lecture Series (GOALS), Michigan State University, East Lansing, Michigan July 2021
 - (a) Lecture 1: Completely Positive Maps and Applications
 - (b) Lecture 2: Lance's Weak Expectation Property and Kirchberg's Conjecture
19. Special Session on Advances in Operator Algebras, Joint Mathematics Meeting Washington D.C. January 2021
Title: An Abstract Characterization for Projections in Operator Systems
18. Special Session: "If You Build It They Will Come": Presentations by Scholars in the National Alliance for Doctoral Studies in the Mathematical Sciences, Joint Mathematics Meeting, Washington D.C. January 2021
Title: A Look into the Abstract Theory of Operator Systems and Some Applications to Quantum Information Theory
17. Operator Theory Seminar, University of Iowa November 2020
Title: Projections in Operator Systems and Applications to Quantum Information Theory
16. East Coast Operator Algebras Symposium, University of Virginia October 2020
Title: Projections in Operator Systems and Applications to Quantum Information Theory

15. Mathematical Physics and Operator Algebras Seminar, Michigan State University September 2020
 - (a) Lecture 1: Operator Spaces and Operator Systems: An Exposition.
 - (b) Lecture 2: An Abstract Characterization for Projections in Operator Systems.
14. Rings and Wings Seminar, Algebras and Rings in Colorado Springs Center (ARCS) September 2020
 University of Colorado at Colorado Springs
 Title: An Abstract Characterization for Projections in Operator Systems
13. Oberseminar C^* -algebren, WWU Münster, June 2020
 Title: An Abstract Characterization for Projections in Operator Systems
12. 2TART Conference, University of Florida June 2020
 Title: An Abstract Characterization for Projections in Operator Systems
11. Operator Algebras Mini-Workshop, University of Virginia March 2020
 Title: On Operator Systems Containing Symmetries
10. Quantitative Linear Algebra Reunion Conference at Lake Arrowhead, Institute December 2019
 for Pure and Applied Mathematics, University of California, Los Angeles
 Title: Tensor Products and Categorical Properties of Matrix Convex Sets
9. Analysis Seminar, University of Illinois at Urbana-Champaign October 2019
 Title: Matrix Convex Sets, Tensor Products, and Noncommutative
 Choquet Boundaries
8. Operator Theory Seminar, University of Virginia October 2019
 Title: Matrix Convex Sets, Tensor Products, and Noncommutative
 Choquet Boundaries
7. Mathematics Colloquium, Sam Houston State University March 2019
 Title: On Operator Spaces and Submaximality
6. Linear Analysis Seminar, Texas A&M March 2019
 Title: On Operator Systems and Matrix Convexity
5. Graduate Research Day, Purdue University November 2018
 Title: Lance's WEP and Operator System Nuclearity
4. Quantitative Linear Algebra Culminating Workshop at Lake Arrowhead June 2018
 University of California, Los Angeles
 Title: Lance's Weak Expectation Property and The Tensor Theory of Operator Systems
3. Quantitative Linear Algebra General Seminar Series, Institute for Pure and April 2018
 Applied Mathematics, University of California, Los Angeles
 Title: Characterizations of Operator Systems Via Tensor Product Nuclearity Part II
2. Quantitative Linear Algebra General Seminar Series, Institute for Pure and April 2018
 Applied Mathematics, University of California, Los Angeles
 Title: Characterizations of Operator Systems Via Tensor Product Nuclearity Part I
1. Department of Mathematics and Statistics Colloquium, San Jose State University April 2015
 Title: C^* -Algebras and Real Operator Systems

Contributed

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| 4. Early Career Workshop in Operator Theory & Operator Algebras,
Indiana University and Purdue University
Title: A Universal Representation for Quantum Commuting Correlations | February 2021 |
| 3. Wabash Annual Mini-Conference, IUPUI, Indianapolis, IN
Title: Matrix Convex Sets, Tensor Products, and Noncommutative
Choquet Boundaries | September 2019 |
| 2. Northern California Undergraduate Mathematics Conference, Saint Mary's College
Title: A Classification of 2-Dimensional Real Operator Systems in M_n | March 2015 |
| 1. American Mathematical Society Joint Mathematics Meetings, AMS Session on
Functional Analysis
Title: A Classification of 2-Dimensional Real Operator Systems in M_n | January 2015 |

Conferences/Workshops Attended

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| 22. Groundwork for Operator Algebras Lecture Series, Michigan State University | July 2021 |
| 21. Early Career Workshop in Operator Theory & Operator Algebras
Indiana University and Purdue University | February 2021 |
| 20. Entropy Inequalities, Quantum Information and Quantum Physics
Institute for Pure and Applied Mathematics, University of California, Los Angeles | February 2021 |
| 19. Joint Mathematics Meeting, Washington D.C. | January 2021 |
| 18. East Coast Operator Algebras Symposium, University of Virginia | October 2020 |
| 17. Groundwork for Operator Algebras Lecture Series (GOALS)
Michigan State University | June-July 2020 |
| (a) Groundwork for Operator Algebras Lecture Series (GOALS)
Culminating Workshop | July 2020 |
| 16. Noncommutative Geometry and Operator Algebras Spring Institute
Vanderbilt University | May 2020 |
| 15. Operator Algebras Mini-Workshop, University of Virginia | March 2020 |
| 14. Quantitative Linear Algebra Reunion Conference at Lake Arrowhead, Institute
for Pure and Applied Mathematics, University of California, Los Angeles, USA | December 2019 |
| 13. QLA Meets QIT, Purdue University | November 2019 |
| 12. Classification Problems in von Neumann Algebras, Banff International Research
Station for Mathematical Innovation and Discovery (BIRS) | September 2019 |
| 11. Wabash Mini-Conference, IUPUI | September 2019 |
| 10. Thematic Research Program: Operator Algebras, Groups and Applications
to Quantum Information, Visiting Researcher, Instituto de
Ciencias Matematicas, Madrid, Spain | May 2019 |
| (a) Workshop II: Mathematical Aspects of Quantum Information Theory | May 2019 |
| (b) School II: Applications to Quantum Information Theory | May 2019 |
| 9. Brazos Analysis Seminar, University of Houston | March 2019 |

8. Wabash Mini-Conference, IUPUI	September 2018
7. Quantitative Linear Algebra, Visiting Scholar/Researcher, Institute for Pure and Applied Mathematics, University of California, Los Angeles	March-June 2018
(a) Workshop IV: Quantitative Linear Algebra Culminating Workshop	June 2018
(b) Workshop III: Random Matrices and Free Probability	May 2018
(c) Workshop II: Approximation Properties in Operator Algebras and Ergodic Theory	May 2018
(d) Workshop I: Expected Characteristic Polynomial Techniques and Applications	April 2018
6. Classification of Group von Neumann Algebras, American Institute of Mathematics, San Jose, California, USA	January 2018
5. Wabash Mini-Conference, IUPUI	September 2017
4. East Coast Operator Algebras Seminar, Loyola University	October 2016
3. Workshop on Non-Commutative Analysis, University of Iowa	June 2016
2. Great Plains Operator Theory Symposium, University of Illinois at Urban-Champaign	May 2016
1. East Coast Operator Algebras Seminar, University of Iowa	October 2015

Other Conferences Attended/Outreach

9. Panelist, Finding and Getting Jobs: A Panel Discussion Purdue University	April 2021
8. Q&A Moderator, Fields of Success, Stories from Math Alliance Alumni Math Alliance Field of Dreams Conference, Institute for Mathematics and its Applications, University of Minnesota (virtual)	November 2020
7. Panelist, Grad School Life, Career Paths in the Mathematical Sciences: An IMA/Math Alliance Workshop, Institute for Mathematics and its Applications, University of Minnesota, USA	July 2020
6. Panelist, Finding Your Focus in Graduate School: The Many Focuses of a Math Sciences PhD., Career Paths in the Mathematical Sciences: An IMA/Math Alliance Workshop, Institute for Mathematics and its Applications, University of Minnesota, USA	June 2019
5. Panelist, Maximizing Opportunities, Math Alliance Field of Dreams, St. Louis, USA	November 2018
4. Math Alliance Field of Dreams Conference, St. Louis, USA	November 2018
3. Latinos in the Mathematical Sciences, Institute for Pure and Applied Mathematics, University of California, Los Angeles	March 2018
2. Math Alliance Field of Dreams Conference, St. Louis, USA	November 2017
1. Math Alliance Field of Dreams Conference, St. Louis, USA	November 2016

Teaching

• Math 16200 Plane Analytic Geometry And Calculus II (Recitation)	Summer 2021
• Math 16010 Applied Calculus 1 (Instructor)	Spring 2021
• Math 26100 Multivariate Calculus (Recitation)	Fall 2017
• Math 16600 Analytic Geometry and Calculus II (Recitation)	Spring 2017

Service

- TA for Groundwork for Operator Algebras Lecture Series (GOALS) June-July 2020
Michigan State University

Conferences/Seminars Organized:

5. Co-Organizer (with Marius Dadarlat and Thomas Sinclair) August 2019-May 2021
Operator Algebras Seminar
Purdue University
4. Organizer, Junior Operator Algebras Seminar August 2018-May 2021
Purdue University
3. Co-Organizer (with Thomas Sinclair), QLA (Quantitative Linear Algebra) November 2019
Meets QIT (Quantum Information Theory) Conference
Purdue University
2. Organizer, Quantitative Linear Algebra General Seminar Series March 2018-June 2018
Institute for Pure and Applied Mathematics
University of California, Los Angeles
1. Organizer, Quantitative Linear Algebra Open Problem Session March 2018-June 2018
Institute for Pure and Applied Mathematics
University of California, Los Angeles

Other:

- Graduate Student Representative August 2017-May 2018
Department of Mathematics, Purdue University
- Chapter President, Purdue University AMS Student Chapter August 2017-May 2018
Purdue University

References

- Marius Dadarlat, Professor of Mathematics, Purdue University,
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- Marius Junge, Professor of Mathematics, University of Illinois at Urbana-Champaign,
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- Vern Paulsen, Professor of Mathematics, University of Waterloo
email: vpaulsen [at] uwaterloo [dot] ca
- Gilles Pisier, Distinguished Professor of Mathematics, Texas A&M, Professor Emeritus of Mathematics, Sorbonne Université,
email: gilles [dot] pisier [at] imj-prg [dot] fr
- Thomas J. Sinclair (Doctoral Advisor): Associate Professor of Mathematics, Purdue University,
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