

PAUL SKOUFRANIS

Associate Professor
Department of Mathematics and Statistics
York University

CURRICULUM VITAE

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ACADEMIC POSITIONS

Associate Professor, York University, July 2020 – Present

Assistant Professor, York University, July 2016 – June 2020

Visiting Assistant Professor, Texas A&M University, August 2014 – June 2016

EDUCATION

UCLA, Los Angeles, California, September 2009 – June 2014

Ph.D. (Mathematics)

Thesis Advisor: Dimitri Shlyakhtenko

University of Waterloo, Waterloo, Ontario, September 2004 – April 2009

Bachelor of Mathematics, Honours Pure Mathematics-Physics Minor,
Co-operative Program, (with Distinction – Dean's Honour List)

RESEARCH INTERESTS

Operator Theory, Free Probability, Operator Algebras, C*-Algebras, Functional Analysis

PUBLICATIONS

Accepted/Published

1. P. Skoufranis, *Non-Commutative Stochastic Processes and Bi-Free Probability*, to Indiana University Mathematics Journal, 73 (2024), no. 2, 421-444.
2. G. Katsimpas and P. Skoufranis, *Bi-Free Entropy with Respect to Completely Positive Maps*, to appear in the Canadian Journal of Mathematics, (2023), 57 pages.
3. X. Mootoo and P. Skoufranis, *Joint Majorization in Continuous Matrix Algebras*, to appear in the Journal of Operator Theory, (2023), 24 pages.
4. I. Charlesworth and P. Skoufranis, *Analogues of Entropy in Bi-Free Probability Theory: Microstates*, International Mathematics Research Notices 2023 (2023), no. 1, 636-707.
5. A. Fan, J. Montemurro, P. Motakis, N. Praveen, A. Rusonik, P. Skoufranis, and N. Tobin, *Restricted Invertibility of Continuous Matrix Functions*, Operators & Matrices, 16 (2022), no. 4, 1191-1217.
6. I. Charlesworth and P. Skoufranis, *Analogues of Entropy in Bi-Free Probability Theory: Non-Microstates*, Advances in Mathematics 375 (2020), 107367 (73 pages).

7. Y. Gu, T. Hasebe, and P. Skoufranis, *Bi-Monotone Independence for Pairs of Algebras*, Journal of Theoretical Probability 33 (2020), 533-566.
8. Y. Gu and P. Skoufranis, *Bi-Boolean Independence for Pairs of Algebras*, Complex Analysis and Operator Theory 13 (2019), no. 7, 3023-3089.
9. Y. Gu and P. Skoufranis, *Conditional Bi-Free Independence with Amalgamation*, International Mathematics Research Notices (2018), no. 23, 7359-7419.
10. S. Belinschi, H. Bercovici, Y. Gu, and P. Skoufranis, *Analytic Subordination for Bi-Free Convolution*, Journal of Functional Analysis 275 (2018), no. 4, 926-966.
11. P. W. Ng, L. Robert, and P. Skoufranis, *Majorization in C^* -Algebras*, Transactions of the American Mathematical Society 370 (2018), no. 8, 5725-5759.
12. P. Skoufranis, *A Combinatorial Approach to the Opposite Bi-Free Partial S -Transform*, Operators and Matrices 12 (2018), no. 2, 333-355.
13. K. Dykema and P. Skoufranis, *Numerical Ranges in II_1 Factors*, Proceedings of the Edinburgh Mathematical Society 61 (2018), no. 1, 31-55.
14. P. Skoufranis, *Some Bi-Matrix Models for Bi-Free Limit Distributions*, Indiana University Mathematics Journal 66 (2017), no. 5, 1755-1795.
15. P. W. Ng and P. Skoufranis, *Closed convex hulls of unitary orbits in certain simple real rank C^* -algebras*, Canadian Journal of Mathematics 69 (2017), no. 5, 1109-1142.
16. Y. Gu and P. Skoufranis, *Conditional Bi-Free Independence for Pairs of Faces*, Journal of Functional Analysis 273 (2017), no. 5, 1663-1733.
17. M. Kennedy and P. Skoufranis, *Thompson's Theorem in II_1 Factors*, Transactions of the American Mathematical Society 369 (2017), no. 2, 1495-1511.
18. P. Skoufranis, *On Operator-Valued Bi-Free Distributions*, Advances in Mathematics 203 (2016), 638-715.
19. P. Skoufranis, *Independences and Partial R -Transforms in Bi-Free Probability*, Annales de l'Institut Henri Poincaré (B) Probabilités et Statistiques 52 (2016), no. 3, 1437-1473.
20. P. Skoufranis, *A Combinatorial Approach to Voiculescu's Bi-Free Partial Transforms*, Pacific Journal of Mathematics 283 (2016), no. 2, 419-447.
21. P. Skoufranis, *Closed Convex Hulls of Unitary Orbits in C^* -Algebras of Real Rank Zero*, Journal of Functional Analysis 270 (2016), no. 4, 1319-1360.
22. I. Charlesworth, B. Nelson, and P. Skoufranis, *On Two-Faced Families of Non-Commutative Random Variables*, Canadian Journal of Mathematics 67 (2015), no. 6, 1290-1325.
23. M. Kennedy and P. Skoufranis, *The Schur-Horn Problem for Normal Operators*, Proceedings of the London Mathematical Society 111 (2015), no. 2, 354-380.

24. D. Shlyakhtenko and P. Skoufranis, *Freely Independent Random Variables with Non-Atomic Distributions*, Transactions of the American Mathematical Society 367 (2015), no. 9, 6267-6291.
25. I. Charlesworth, B. Nelson, and P. Skoufranis, *Combinatorics of Bi-Freeness with Amalgamation*, Communications in Mathematical Physics 338 (2015), no. 2, 801-847.
26. P. Skoufranis, *On a Notion of Exactness for Reduced Free Products of C^* -Algebras*, Journal für die reine und angewandte Mathematik 700 (2015), 129-153.
27. P. Skoufranis, *Normal Limits of Nilpotent Operators in C^* -Algebras*, Journal of Operator Theory, 72 (2014), no. 1, 135-158.
28. P. Skoufranis, *Normal Limits of Nilpotent Operators in von Neumann Algebras*, Integral Equations and Operator Theory, 77 (2013), no. 3, 407-439.
29. P. Skoufranis, *Closed Unitary and Similarity Orbits of Normal Operators in Purely Infinite C^* -Algebras*, Journal of Functional Analysis, 265 (2013), no. 3, 474-506.
30. K. Hare and P. Skoufranis, *The Smoothness of Orbital Measures on Exceptional Lie Groups*, Journal of Lie Theory, 21 (2011), no. 4, 987-1007.

Preprints

31. P. Skoufranis, *Central Limit Theorem for Tensor Products of Free Variables via Bi-Free Independence*, arXiv:2405.19216, 20 pages.

RESEARCH GRANTS

- NSERC Discover Grant RGPIN-2024-06269 (\$24,000 per annum), 2024-2028
- NSERC Discover Grant RGPIN-2017-05711 (\$19,000 per annum), 2017-2023
- AMS-Simons Travel Grant, July 2015 to June 2017
- NSERC PDF Postdoctoral Fellowship, February 2014 (declined)
- NSERC PGS D3 Research Scholarship, September 2010 to August 2013
- NSERC PGS M Research Scholarship, September 2009 to August 2010
- NSERC USRA Research Scholarship, April 2009
- NSERC USRA Research Scholarship, April 2008

INVITED RESEARCH PRESENTATIONS

- Noncommutative Function Theory and Free Probability, Oberwolfach Workshop, Oberwolfach, Germany (May 2024).
- CMS Winter Meetings, Advancement in Matrix Theory with Applications, Montreal (Dec. 2023).
- Analysis Seminar, University of Waterloo (Mar. 2023).
- CMS Winter Meetings, Facets of Operator Algebras, Toronto (Dec. 2022).
- Probabilistic Operator Algebra Seminar, UC Berkeley (Sept. 2022).
- CMS Summer Meetings, Advances in Operator Algebras, Memorial University (June 2022)

- Online Seminar on Free Probability and Random Matrices, Queen's University, (March 2022).
- CMS Summer Meetings, Operator Algebras and Applications, Online/University of Ottawa (June 2021).
- Functional Analysis Seminar, University of California, San Diego, Online (Oct. 2020).
- Online Seminar on Free Probability and Random Matrices, Queen's University, (June 2020).
- International Workshop on Operator Theory and its Applications, Special Session on Free Analysis and Free Probability, Lisbon, Portugal (July 2019).
- Workshop on Applications of Random Matrices and Free Probability of Free Non-Commutative Functions, Fields Institute (June 2019).
- CMS Summer Meetings, Special Session on Finite and Infinite Dimensional Structures in Non-Commutative Analysis, Regina (June 2019).
- Great Plains Operator Symposium, Texas A&M University (May 2019).
- New Developments in Free Probability and Applications, Centre de Recherches Mathematiques (March 2019).
- Canadian Operator Symposium 2018, University of Manitoba (June 2018).
- Analysis Seminar, University of Waterloo (Nov. 2017).
- Satellite Conference on Operator Algebras (MCA 2017), Fields Institute (August 2017).
- Mathematical Congress of the Americas, Special Session on Free Probability and its Applications, Montreal (July 2017).
- Mathematical Congress of the Americas, Special Session on von Neumann Algebras and their Applications, Montreal (July 2017).
- Probabilistic Operator Algebra Seminar, UC Berkeley (Feb. 2017).
- Analytic versus Combinatorial in Free Probability, Banff International Research Station for Mathematical Innovation and Discovery (Dec. 2016).
- Departmental Colloquium, University of Saskatoon (Dec. 2016).
- Analysis Seminar, University of Waterloo (Oct. 2016).
- East Coast Operator Algebra Symposium, Loyola University Chicago (Oct. 2016).
- Canadian Operator Symposium 2016, University of Montreal (June 2016).
- Non-Commutative Geometry and Operator Algebras Spring Institute, University of Bonn (May 2016).
- Wabash Modern Analysis Seminar, Wabash College (April 2016).
- Free Probability and the Large N Limit, V, UC Berkeley (March 2016).
- Analysis Seminar, University of Houston (March 2016).
- Probabilistic Operator Algebra Seminar, UC Berkeley (Feb. 2016).
- Mathematics Colloquium, University of Louisiana at Lafayette (Oct. 2015).
- AMS Fall Southeastern Sectional Meeting – Special Session on von Neumann Algebras, University of Memphis (Oct. 2015).
- AMS Central Fall Sectional Meeting – Special Session on Recent Advances in Non-Commutative Analysis, Loyola University Chicago (Oct. 2015).
- Workshop in Analysis and Probability – Concentration Week, Texas A&M University (July 2015).

- Seminar on Free Probability and Random Matrices, Queen's University, (June 2015).
- Free Probability Theory, Oberwolfach Workshop, Oberwolfach, Germany (June 2015).
- Extended Probabilistic Operator Algebra Seminar, UC Berkeley (May 2015).
- Analysis Seminar, University of Houston (Apr. 2015).
- CMS Winter Meetings, Operator Algebras and their Applications, Hamilton (Dec. 2014).
- Probabilistic Operator Algebra Seminar, UC Berkeley (Oct. 2014).
- AMS Central Fall Sectional Meeting – Special Session on von Neumann Algebras and Related Fields, University of Wisconsin-Eau Claire (Sept. 2014).
- Workshop in Analysis and Probability – Concentration Week on Free Probability, Texas A&M University (July 2014).
- Linear Analysis Seminar, Texas A&M University (April 2014).
- Free Probability and the Large N Limit, IV, UC Berkeley (March 2014).
- CMS Winter Meetings – Operator Algebras and their Applications, Ottawa (Dec. 2013).
- Analysis Seminar, Carleton University (Nov. 2013).
- Probabilistic Operator Algebra Seminar, UC Berkeley (Sept. 2013).
- Summer Informal Regional Functional Analysis Seminar, Texas A&M University (Aug. 2013).
- Workshop on Analytic, Stochastic, and Operator Algebraic Aspects of Noncommutative Distributions and Free Probability, Fields Institute (July 2013).
- 2013 Joint Mathematics Meetings – AMS Special Session on Free Probability, San Diego Conference Center (Jan. 2013).
- CMS Winter Meetings – Operator Theory and Operator Algebras, Montréal (Dec. 2012).
- Linear Analysis Seminar, Texas A&M University (Nov. 2012).

CONTRIBUTED RESEARCH PRESENTATIONS

- Canadian Operator Symposium, University of Alberta (May 2024).
- Canadian Operator Symposium, Western University (May 2023).
- Canadian Operator Symposium, University of Ottawa (May 2022).
- Canadian Operator Symposium, Online/Guelph University (June 2021).
- Canadian Operator Symposium, Regina University (June 2019).
- Free Probability Theory, Oberwolfach Workshop, Oberwolfach, Germany (Dec. 2018).
- Operator Algebra Seminar, Fields Institute (July 2018).
- 18th Workshop: Noncommutative Probability, Operator Algebras, Random Matrices and Related Topics, with Applications, Stefan Banach Conference Centre of the Polish Academy of Sciences (July 2018).
- Canadian Operator Symposium, Lakehead University (May 2017).
- Probability Seminar, York University (Oct. 2016).
- Operator Algebra Seminar, Fields Institute (Sept. 2016).
- Banach Algebras 2015, Fields Institute (Aug. 2015).
- Canadian Operator Symposium 2015, University of Waterloo (June 2015).

- Great Plains Operator Theory Symposium 2015, Purdue University (May 2015).
- Linear Analysis Seminar, Texas A&M University (Mar. 2015).
- Free Probability Seminar, Texas A&M University (Nov. 2014).
- Free Probability Seminar, Texas A&M University (Oct. 2014).
- Canadian Operator Symposium 2014, University of Toronto (June 2014).
- Great Plains Operator Theory Symposium 2014, Kansas State University (May 2014).
- Functional Analysis Seminar, UCLA (April 2014).
- Canadian Operator Symposium 2013, University of Toronto (May 2013).
- Great Plains Operator Theory Symposium 2013, UC Berkeley (May 2013).
- Functional Analysis Seminar, UCLA (Feb. 2013).
- Functional Analysis Seminar, UCLA (Oct. 2012).
- Great Plains Operator Theory Symposium 2012, University of Houston (May 2012).
- Canadian Operator Symposium 2012, Queen's University (May 2012).

OTHER CONFERENCES AND SCHOOLS ATTENDED

- Topological Quantum Groups, C^* -Tensor Categories, and Subfactors, University of Waterloo (May 2022).
- Model Theory and Operator Algebras, Banff International Research Station for Mathematical Innovation and Discovery (Nov. 2018).
- C^* -Algebras, Oberwolfach Workshop, Oberwolfach, Germany (Aug. 2016).
- 2015 Workshop in Analysis and Free Probability, Texas A&M University (July/Aug. 2015).
- Focus Program on Non-Commutative Distributions in Free Probability Theory, Fields Institute (July 2013).
- Banach Algebras 2011, University of Waterloo (Aug. 2011).
- Von Neumann Algebras and Ergodic Theory of Group Actions, Institut Henri Poincaré (April-May 2011).

ACADEMIC EVENTS ORGANIZED

- Conferences
 - Workshop on Operator Algebras and Applications: Free Probability, organized with Benoit Collins, James Mingo, and Dimitri Shlyakhtenko, Thematic Program on Operator Algebras, Fields Institute – Nov. 2023
 - Canadian Operator Symposium 2020, organized with George Elliott and Ilijas Farah, Fields Institute, online due to COVID-19, 445 registered participants – May 2020
 - CMS Winter Meetings, Session on Operator Algebras, organized with Matthew Kennedy, Toronto – Dec. 2019
 - Southern Ontario Operator Algebra Seminar, organized with Matthew Kennedy
 - Fields Institute – Feb. 2019
 - University of Waterloo – Feb. 2018
 - CMS Winter Meetings, Session on Operator Algebras, organized with Matthew Kennedy, University of Waterloo – Dec. 2017

- Seminars
 - Learning Operator and Logic Seminar, York University – Fall 2022
 - Random Matrix Learning Seminar, York University – Fall 2016

HONOURS AND AWARDS

- 2014 Pacific Journal of Mathematics Dissertation Prize, June 2014
- UCLA Math Department Distinguished Teaching Award, June 2014
- UW Alumni Gold Medalist, June 2009
- Mike Vangoch Memorial Scholarship, January 2009

TEACHING EXPERIENCE

York University, Toronto, Ontario, Canada

- *Course Instructor*, September 2016 to Present
 - MATH 1021 (Linear Algebra I) – F18
 - MATH 1200 (Problems, Conjectures, and Proofs) – F20, F21, W24, F24
 - MATH 1300 (Differential Calculus with Applications) – W18
 - MATH 2022 (Linear Algebra II) – W18, W20, W21
 - MATH 2001 (Real Analysis I) – F23
 - MATH 3001 (Real Analysis II) – W22
 - MATH 4001 (Real Analysis III) – Y16/17
 - MATH 4011 (Real Analysis IIIA) – F19
 - MATH 4011 (Real Analysis IIIB) – W25
 - MATH 4081 (Topology I) – F20
 - MATH 4300 (3.0) (Reading Course: Real Analysis III, part 1) – F17 (1 student)
 - MATH 4300 (3.0) (Reading Course: Real Analysis IV) – W19 (1 student)
 - MATH 4300 (3.0) (Reading Course: The Mathematics of QIT) – W22 (3 students)
 - MATH 4300 (6.0) (Reading Course: Real Analysis III) – Y17/18 (2 students)
 - MATH 6280 (Measure Theory) – F17, F18, F19, W25
 - MATH 6461 (Functional Analysis I) – F21, W24
 - MATH 6540 (General Topology) – W19, F20
- *Tutorial Instructor*, September 2019 to April 2021
 - MATH 1310 (Integral Calculus with Applications) – F19, W20, W21
- *Math Lab Tutor*, September 2016 to April 2021

Texas A&M University, College Station, Texas, USA

- *Course Instructor*, September 2014 to May 2016
 - MATH 409 (Advanced Calculus I) – 1 section – Spring 2016
 - MATH 304 (Linear Algebra) – 2 sections – Fall 2015
 - MATH 308 (Differential Equations) – 1 section – Spring 2015
 - MATH 308 (Differential Equations) – 2 sections – Fall 2014

University of California – Los Angeles, Los Angeles, California, USA

- *Teaching Assistant Coordinator*, September 2013 to March 2014
- *Course Instructor*, January 2013 to March 2013

- MATH 32B (Calculus of Several Variable II) – Winter 2013
- *Teaching Assistant*, January 2010 to September 2013
 - New Math Graduate Student Summer Program – Summer 2013 and Summer 2014
 - MATH 115A (Linear Algebra) – Winter 2012 and Fall 2011
 - MATH 131A (Real Analysis) – Summer 2011
 - MATH 33A (Linear Algebra with Applications) – Winter 2011 and Winter 2010
 - MATH 31B (Integration and Infinite Series) – Spring 2010
 - MATH 3C (Probability for Life Science Students) – Spring 2010

SUPERVISION

- Undergraduate Supervision
 - Joe Tran, USRA – Summer 2023
 - Muhammad Azeem, ENURA – Summer 2023
 - Xavier Mootoo, USRA – Summer 2022
 - Fields Undergraduate Summer Research Program 2021 – 4 students
Quantitative Estimates in Matrix Theory (joint with Pavlos Motakis)
 - Adrian Fan (University of California – Berkeley)
 - Jack Montemurro (University of Toronto)
 - Naina Praveen (Ashoka University)
 - Alyssa Rusonik (University of Toronto)
 - Noam Tobin, USRA – Summer 2021
 - Fields Undergraduate Summer Research Program 2018 – 6 students
Model Theory and Free Probability (joint with Ilijas Farah and Bradd Hart)
 - Hymn Chan (Imperial College)
 - Rodolfo Emlio Montes de Oca Osornio (University of Guanajuato)
 - Ronan O’Gorman (Trinity College Dublin)
 - Waleed Qaisar (University of Toronto)
 - Johnson Tan (McMaster University)
 - Huy Tran (Harvard University)
- Ph.D. Supervision
 - Kostas Konstantinos – Fall 2021 to present (joint with Pavlos Motakis)
 - Daniel Pepper – Fall 2019 to present
 - Georgios Katsimpas – Fall 2016 to Summer 2022 (joint with Ilijas Farah)
- Postdoctoral Supervision
 - Christopher Schafhauser, YSF – July 2018 to June 2019 (joint with Ilijas Farah)
 - Emily Redelmeier – Fall 2016
- MA Committees
 - Curran McConnell (Chair) – Fall 2022 to Fall 2023
 - Jiyu Wang (Chair) – Fall 2022 to Summer 2023
 - Daniel Calderon Wilches – Fall 2018 to Summer 2019
- Ph.D. Committees
 - Daniel Munoz George, Queen’s – Spring 2023
 - Mihai Alboiu, UofT – Fall 2016 to Summer 2021
 - Khulod Almontashery, YorkU – Winter 2020 to present
 - Feodor Kogan, UofT – Spring 2020 to present

DEPARTMENTAL SERVICES

- Committee Work
 - T&P File Preparation Committee – 2024
 - Chair of the Undergraduate Student Committee – 23/24 academic year
 - Member of the TA/Instructor Training and Orientation Committee - 23/24 academic year
 - Member of the Pure Mathematics Curriculum Committee – 23/24 academic year
 - Executive Committee (Elected PMath Representative) – 21/22 academic year
 - Chair of the Pure Mathematics Curriculum Committee – 19/20, 20/21, 21/22 academic years
 - Chair of the Pure Mathematics Adjudicating Committee – 21/22 academic year
 - Pure Mathematics Hiring Committee – 19/20, 21/22 academic years
 - Undergraduate Student Committee – 21/22 academic year
 - PhD Committee – Fall 2016 to Summer 2022
 - Pure Mathematics Adjudicating Committee – 18/19 academic year
 - T&P File Preparation Committee – 2018
- Coordinator Positions
 - Putnam Coordinator – Falls 2018, 2019, 2020, 2021
- Other Work
 - Volunteer for Brunch @ York Science – Apr. 2024
 - Volunteer for the Ontario University Fair – Sept. 2018, 2023
 - Created and ran the Annual Bernoulli Challenge – Jan. 2023, 2024
 - Club Infinity's Problem Seminar, York University – Jan. 2023
 - Panelist for the Science Scholars Reception – Apr. 2022
 - Club Infinity's PMATH Research Webinar, York University – Feb. 2021
 - Mentor for Pavlos Motakis – 20/21 academic year
 - Aided in the marking of the Canadian Open Mathematics Challenge - Falls 16-22
 - T&P Teaching Letters for Amenda Chow, Andrew Skelton, Iain Moyles, and Pavlos Motakis

ADDITIONAL SERVICE

- Member of the Scientific Advisory Committee for the 2023 Thematic Program on Operator Algebras at the Fields Institute
- Member of the Scientific Organizing Committee for the 2019 CMS Winter Meeting
- Canadian Mathematical Olympiad Committee – Sept. 2017 to Aug. 2019

OUTREACH SERVICES

- Volunteer for the Canadian Math Kangaroo Contest – Springs 2017, 2018, 2019
- Volunteer for the 2015 TAMU Physics and Engineering Festival – Mar. 2015
- Volunteer for the 2015 TAMU Integral Bee – Feb. 2015
- TAMU Mathematics Circle Volunteer – Fall 2014