PAUL SKOUFRANIS — CURRICULUM VITAE

Associate Professor
Department of Mathematics and Statistics
York University

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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. I. Charlesworth and P. Skoufranis, *Analogues of Entropy in Bi-Free Probability Theory: Microstates*, to appear in International Mathematical Research Notices, 2021 (72 pages).
2. I. Charlesworth and P. Skoufranis, *Analogues of Entropy in Bi-Free Probability Theory: Non-Microstates*, Advances in Mathematics 375 (2020), 107367 (73 pages).
3. Y. Gu, T. Hasebe, and P. Skoufranis, *Bi-Monotone Independence for Pairs of Algebras*, Journal of Theoretical Probability 33 (2020), 533-566.
4. Y. Gu and P. Skoufranis, *Bi-Boolean Independence for Pairs of Algebras*, Complex Analysis and Operator Theory 13 (2019), no. 7, 3023-3089.
5. Y. Gu and P. Skoufranis, *Conditional Bi-Free Independence with Amalgamation*, International Mathematics Research Notices (2018), no. 23, 7359-7419.
6. 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.

7. P. W. Ng, L. Robert, and P. Skoufranis, *Majorization in C*-Algebras*, Transactions of the American Mathematical Society 370 (2018), no. 8, 5725-5759.
8. P. Skoufranis, *A Combinatorial Approach to the Opposite Bi-Free Partial S-Transform*, Operators and Matrices 12 (2018), no. 2, 333-355.
9. K. Dykema and P. Skoufranis, *Numerical Ranges in II_1 Factors*, Proceedings of the Edinburgh Mathematical Society 61 (2018), no. 1, 31-55.
10. P. Skoufranis, *Some Bi-Matrix Models for Bi-Free Limit Distributions*, Indiana University Mathematics Journal 66 (2017), no. 5, 1755-1795.
11. 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.
12. Y. Gu and P. Skoufranis, *Conditional Bi-Free Independence for Pairs of Faces*, Journal of Functional Analysis 273 (2017), no. 5, 1663-1733.
13. M. Kennedy and P. Skoufranis, *Thompson's Theorem in II_1 Factors*, Transactions of the American Mathematical Society 369 (2017), no. 2, 1495-1511.
14. P. Skoufranis, *On Operator-Valued Bi-Free Distributions*, Advances in Mathematics 203 (2016), 638-715.
15. 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.
16. P. Skoufranis, *A Combinatorial Approach to Voiculescu's Bi-Free Partial Transforms*, Pacific Journal of Mathematics 283 (2016), no. 2, 419-447.
17. 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.
18. 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.
19. M. Kennedy and P. Skoufranis, *The Schur-Horn Problem for Normal Operators*, Proceedings of the London Mathematical Society 111 (2015), no. 2, 354-380.
20. 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.
21. I. Charlesworth, B. Nelson, and P. Skoufranis, *Combinatorics of Bi-Freeness with Amalgamation*, Communications in Mathematical Physics 338 (2015), no. 2, 801-847.
22. 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.
23. P. Skoufranis, *Normal Limits of Nilpotent Operators in C*-Algebras*, Journal of Operator Theory, 72 (2014), no. 1, 135-158.
24. P. Skoufranis, *Normal Limits of Nilpotent Operators in von Neumann Algebras*, Integral Equations and Operator Theory, 77 (2013), no. 3, 407-439.

25. 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.
26. 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 for Publication

27. P. Skoufranis, *Non-Commutative Stochastic Processes and Bi-Free Probability*, preprint at arXiv:2204.11636, 18 pages.
28. A. Fan, J. Montemurro, P. Motakis, N. Praveen, A. Rusonik, P. Skoufranis, and N. Tobin, *Restricted Invertibility of Continuous Matrix Functions*, preprint at arXiv:2201.04238, 23 pages.
29. G. Katsimpas and P. Skoufranis, *Bi-Free Entropy with Respect to Completely Positive maps*, preprint at arXiv:2106:13114, 57 pages.

RESEARCH GRANTS

- 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

- Online Seminar on Free Probability and Random Matrices, Queen's University, (March 2022).
- CMS Summer Meeting, 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 Meeting, Special Session on Finite and Infinite Dimensional Structures in Non-Commutative Analysis, Regina (June 2019).
- Great Planes 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, Online/Guelph University (June 2021).
- Club Infinity's PMATH Research Webinar, York University (Feb. 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

- 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
  - Canadian Operator Symposium 2020, organized with George Elliot 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
  - 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
  - MATH 1300 (Differential Calculus with Applications) – W18
  - MATH 2022 (Linear Algebra II) –W18, W20, W21
  - MATH 3001 (Real Analysis II) – W22
  - MATH 4001 (Real Analysis III) – Y16/17
  - MATH 4011 (Real Analysis III) – F19
  - MATH 4081 (Topology I) – F20
  - MATH 4300 (3.0) (Real Analysis III, part 1) – F17 (1 student)
  - MATH 4300 (3.0) (Real Analysis IV) – W19 (1 student)
  - MATH 4300 (3.0) (The Mathematics of QIT) – W22 (3 students)
  - MATH 4300 (6.0) (Real Analysis III) – Y17/18 (2 students)
  - MATH 6280 (Measure Theory) – F17, F18, F19
  - MATH 6461 (Functional Analyisis I) – F21
  - 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
  - Xavier Mootoo, USRA – Summer 2022
  - Fields Summer Undergraduate Research Program 2021 – 4 students
    Quantitative Estimates in Matrix Theory (joint with Pavlos Motakis)
    - Adrian Fan (University of California – Berkeley)
    - Jack Montemuro (University of Toronto)
    - Naina Praveen (Ashoka University)
    - Alyssa Rusonik (University of Toronto)
  - Noam Tobin, USRA – Summer 2021
  - Fields Summer Undergraduate Research Program 2018 – 6 students
    Model Theory and Free Probability (joint with Ilijas Farah and Bradd Hart)
    - Hymn Chan (Imerial College)
    - Rodolfo Emlio Montes de Oca Osornio (University of Guanajuato)
    - Ronan O'Gorman (Trinity College Dublin)
    - Waleed Qaisar (University of Toronto)
    - Johnson Tran (McMaster University)
    - Huy Tran (Harvard)
- Ph.D. Supervision
  - Kostas Konstantinos – Fall 2021 to present (joint with Pavlos Motakis)
  - Daniel Pepper – Fall 2019 to present
  - Georgios Katsimpas – Fall 2016 to present (joint with Ilijas Farah)
- Postdoctoral Supervision
  - Chris Schafhauser, YSF – July 2018 to June 2019 (joint with Ilijas Farah)

    - Emily Redelmeier – Fall 2016
- MA Committees
    - Daniel Calderon Wilches – Fall 2018 to Summer 2019
- Ph.D. Committees
    - Mihai Alboiu, UofT – Fall 2016 to present
    - Khulod Almontashery, YorkU – Winter 2020 to present
    - Feodor Kogan, UofT – Spring 2020 to present

DEPARTMENTAL SERVICES

- Committee Work
    - Executive Committee (Elected PMath Representative) – 21/22 academic year
    - Chair of the Pure Math Curriculum Committee – Fall 2019 to present
    - Chair of the Pure Mathematics Adjudicating Committee – 21/22 academic year
    - Pure Math Hiring Committee – 19/20, 21/22 academic years
    - Undergraduate Student Committee – 21/22 academic year
    - PhD Committee – Fall 2016 to present
    - 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
    - Panelist for the Science Scholars Reception – Apr. 2022
    - Mentor for Pavlos Motakis – 20/21 academic year
    - Volunteer for the Ontario University Fair – Sept. 2018
    - Aided in the marking of the Canadian Open Mathematics Challenge - Falls 16-21

ADDITIONAL SERVICE

- 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
- University of Waterloo Mathematics Contest Marker – April 2006, 2008, 2009