Raphaël Clouâtre

Contact Information

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Citizenship Canadian

Languages English, French (native)

Research Interests Functional analysis: operator algebras and operator theory

Education

Indiana University

Ph.D. in Mathematics, May 2013

- Dissertation title: Some similarity results for contractions of class C_0
- Advisor: Hari Bercovici

Université de Montréal

M.S. in Mathematics, August 2008

- Master's Thesis title: Universal series in $\mathbb{C}^N$ and on non-compact Riemann surfaces
- Advisor: Paul M. Gauthier

B.S. in Mathematics, May 2006

Positions held

Assistant professor, University of Manitoba (since August 2015)

Postdoctoral fellow, University of Waterloo (August 2013-July 2015)

Awards and Funding

Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Grant: $90,000 (April 1 2016–March 31 2021)

Centre de recherches mathématiques–Institut des Sciences Mathématiques (CRM–ISM) Postdoctoral Fellowship: $40,000 (2015–2017, declined)

Fonds de recherche du Québec Nature et technologies (FRQNT) Postdoctoral Fellowship: $60,000 (August 1 2013–July 31 2015)

NSERC Postgraduate Scholarship for Doctoral degree: $63,000 (September 1 2008–August 31 2011)

NSERC Alexander Graham Bell Canada Graduate Scholarship for Doctoral degree: $105,000 (2008–2011, declined)

FRQNT Master's research scholarship: $15,000 (September 1 2007–August 31 2008)

NSERC Canada Graduate Scholarship for Master's degree: $17,500 (September 1 2006–August 31 2007)

Publications

1. Clouâtre, Raphaël, Timko, Edward J., *Gelfand transforms and boundary representations of complete Nevanlinna–Pick quotients*, submitted for publication, arXiv:1912.10331
2. Clouâtre, Raphaël, Timko, Edward J., *Localizable points in the support of a multiplier ideal and spectra of constrained operators*, submitted for publication, arXiv:1911.03525
3. Clouâtre, Raphaël, Hartz, Michael, *Multipliers and operator space structure of weak product spaces*, accepted for publication in Analysis and PDE, arXiv:1909.12883
4. Clouâtre, Raphaël, Timko, Edward J., *Row contractions annihilated by interpolating vanishing ideals*, accepted for publication in International Mathematics Research Notices IMRN, arXiv:1902.06826
5. Clouâtre, Raphaël, Hartz, Michael, Schillo, Dominik, *A Beurling-Lax-Halmos theorem for spaces with a complete Nevanlinna-Pick factor*, Proc. Amer. Math. Soc. 148 (2020), no. 2, 731–740.
6. Clouâtre, Raphaël, Ramsey, Christopher, *A completely bounded non-commutative Choquet boundary for operator spaces*, Int. Math. Res. Not. IMRN (2019), no. 22, 6819–6886.
7. Clouâtre, Raphaël, Ramsey, Christopher, *Residually finite-dimensional operator algebras*, J. Funct. Anal. 277 (2019), no. 8, 2572–2616.
8. Clouâtre, Raphaël, Timko, Edward J., *Cyclic row contractions and rigidity of invariant subspaces*, J. Math. Anal. Appl. 479 (2019), no. 2, 1906–1938.
9. Clouâtre, Raphaël, Marcoux, Laurent W., *Residual finite dimensionality and representations of amenable operator algebras*, J. Math. Anal. Appl. 472 (2019), no. 2, 1346–1368.
10. Clouâtre, Raphaël, Mbacke, Diarra, *Joint similarity for commuting families of power bounded matrices*, Linear Algebra Appl. 560 (2019), 1–16.
11. Clouâtre, Raphaël, Marcoux, Laurent W., *Compact ideals and rigidity of representations for amenable operator algebras*, Studia Math. 244 (2019), no. 1, 25–41.
12. Clouâtre, Raphaël, *Non-commutative peaking phenomena and a local version of the hyperrigidity conjecture*, Proc. Lond. Math. Soc. (3) 117 (2018), no. 2, 221–245.
13. Clouâtre, Raphaël, *Unperforated pairs of operator spaces and hyperrigidity of operator systems*, Canad. J. Math. 70 (2018), no. 6, 1236–1260.
14. Clouâtre, Raphaël, Hartz, Michael, *Multiplier algebras of complete Nevanlinna-Pick spaces: dilations, boundary representations and hyperrigidity*, J. Funct. Anal. 274 (2018), no. 6, 1690–1738.
15. Clouâtre, Raphaël, Davidson, Kenneth R., *Ideals in a multiplier algebra on the ball*. Trans. Amer. Math. Soc. 370 (2018), no. 3, 1509–1527.
16. Clouâtre, Raphaël, Davidson, Kenneth R., *Absolute continuity for commuting row contractions*. J. Funct. Anal. 271 (2016), no. 3, 620–641.
17. Clouâtre, Raphaël, Davidson, Kenneth R., *Duality, convexity and peak interpolation in the Drury-Arveson space*. Adv. Math. 295, (2016), 90–149.
18. Clouâtre, Raphaël, Davidson, Kenneth R., *The unit ball of the predual of $H^\infty(\mathbb{B}_d)$ has no extreme points*. Proc. Amer. Math. Soc. 144 (2016), no. 4, 1575–1580.
19. Clouâtre, Raphaël, *Completely bounded isomorphisms of operator algebras and similarity to complete isometries*. Indiana Univ. Math. J. 64 (2015), no.3 , 825–846.

20. Clouâtre, Raphaël, *Unitary equivalence and similarity to Jordan models for weak contractions of class C_0*. Canad. J. Math. 67 (2015), no. 1, 132–151.
21. Clouâtre, Raphaël, *Spectral and homological properties of Hilbert modules over the disc algebra*. Studia Math. 222 (2014), no. 3, 262–282.
22. Clouâtre, Raphaël, *Similarity results for operators of class C_0 and the algebra $H^\infty(T)$*. Oper. Matrices 8 (2014), no. 2, 425–447.
23. Clouâtre, Raphaël, *Quasiaffine orbits of invariant subspaces for uniform Jordan operators*. J. Funct. Anal. 266 (2014), no. 7, 4101–4114.
24. Clouâtre, Raphaël, *On the Unilateral Shift as a Hilbert Module over the Disc Algebra*. Complex Anal. Oper. Theory 8 (2014), no. 1, 283–309.
25. Clouâtre, Raphaël, *Quasisimilarity of invariant subspaces for C_0 operators with multiplicity two*. J. Operator Theory **70** (2013), no. 2, 495–511.
26. Clouâtre, Raphaël, *Similarity results for operators of class C_0*. Integral Equations Operator Theory **71** (2011), no. 4, 557–573.
27. Clouâtre, Raphaël, *Universal power series in $\mathbb{C}^N$*. Canad. Math. Bull. **54** (2011), no. 2, 230–236.
28. Clouâtre, Raphaël, *Universal series on a Riemann surface*. Canad. J. Math. **63** (2011), no. 5, 1025–1037.
29. Gauthier, Paul M., Clouâtre, Raphaël, *Approximation by translates of Taylor polynomials of the Riemann zeta function*. Comput. Methods Funct. Theory **8** (2008), no. 1-2, 15–19.

Invited Talks

Contraintes holomorphes et spectre multivarié, Analysis seminar, Université Laval. (February 2020)

Non self-adjoint Exel–Loring approximations and residual finite-dimensionality, Operator Algebras session, Canadian Mathematical Society Winter meeting, Toronto. (December 2019)

When is a complete Nevanlinna–Pick quotient a function algebra?, Interpolation in Spaces of Analytic Functions, CIRM Luminy. (November 2019)

Choquet theory on state spaces of C-algebras and the hyperrigidity conjecture*, Operator algebra seminar, University of Copenhagen. (October 2019)

Residual finite-dimensionality for general operator algebras, Analysis and Synthesis for Operator Algebras, International Workshop on Operator Theory and Applications (IWOTA), Lisbon. (July 2019)

Residual finite-dimensionality for general operator algebras, Banach Algebras and Applications, Winnipeg. (July 2019)

Residual finite-dimensionality for general operator algebras, Finite and Infinite Dimensional Structures in Non-Commutative Analysis, Canadian Mathematical Society Summer meeting, Regina. (June 2019)

Uniform quotients and C**-envelopes on the Drury-Arveson space*, Functional and Complex Analysis, Canadian Mathematical Society Summer meeting, Regina. (June 2019)

Holomorphic relations and joint spectra in multivariate operator theory, Functional analysis seminar, FernUniversität in Hagen. (April 2019)

Completely bounded analogues of the Choquet and Shilov boundaries for operator spaces, Analysis seminar, University of Illinois. (March 2019)

Classifying cyclic row contractions, AMS Special Session on Recent Progress in Multivariate Operator Theory, Joint Mathematics Meetings, Baltimore. (January 2019)

Choquet theory on state spaces of C^**-algebras and the hyperrigidity conjecture*, Recent advances in operator theory and operator algebras 2018, Bangalore. (December 2018)

Cyclic row contractions and rigidity of invariant subspaces, Special Session on Operator and Function Theory, American Mathematical Society Sectional Meeting, Newark. (September 2018)

Residual finite-dimensionality for general operator algebras, Wabash conference, IUPUI, Indianapolis. (September 2018)

Hyperrigidity via non-commutative function systems on state spaces, International Workshop on Operator Theory and Applications (IWOTA), Shanghai. (July 2018)

Hyperrigidity via non-commutative function systems on state spaces, 27th International Conference in Operator Theory, West University of Timisoara. (July 2018)

Towards a classification theory for constrained row contractions, Analysis seminar, Washington University in St.Louis. (March 2018)

Completely bounded analogues of the Choquet and Shilov boundaries for operator spaces, Seminar in operator theory and operator algebras, University of Virginia. (February 2018)

Completely bounded analogues of the Choquet and Shilov boundaries for operator spaces, Operator algebras, Canadian Mathematical Society Winter meeting, Waterloo. (December 2017)

Kadison's property for representations of amenable operator algebras, Satellite Conference on Operator Algebras, Mathematical Congress of the Americas, Toronto. (August 2017)

Annihilating ideals and spectra for commuting row contractions, Special Session on Operator Theory on Function Spaces, Mathematical Congress of the Americas, Montreal. (July 2017)

Kadison's property for representations of amenable operator algebras, Wabash Modern Analysis Seminar, Crawfordsville. (April 2017)

Spectra and purity of constrained contractions, Special Session on Multivariate Operator Theory and Function Theory, American Mathematical Society Sectional Meeting, Bloomington. (April 2017)

Ideals and zero sets for multipliers on the ball, Complex analysis and application, Canadian Mathematical Society Winter meeting, Niagara Falls. (December 2016)

Kadison's property for representations of amenable operator algebras, Special Session on Operator Algebras and Applications, American Mathematical Society Sectional Meeting, Denver. (October 2016)

Representations of multiplier algebras of complete Pick spaces on the ball, International Workshop on Operator Theory and Applications (IWOTA), Washington University in Saint-Louis. (July 2016)

Absolute continuity for commuting row contractions, Special Session on Matrix and Operator Theory, American Mathematical Society Sectional Meeting, Fargo. (April 2016)

Absolute continuity for commuting row contractions, Operator Algebras, Canadian Mathematical Society Winter meeting, Montreal. (December 2015)

Absolutely continuous commuting row contractions, "From Commutators to BCP Operators", Texas A & M University. (July 2015)

Duality and peak interpolation for multipliers of the Drury-Arveson space, Operator Theory on Analytic Function Spaces, Canadian Mathematical Society Summer meeting, Charlottetown. (June 2015)

Duality and peak interpolation for multipliers of the Drury-Arveson space, Workshop on Multivariate Operator Theory, Banff International Research Station. (April 2015)

Peak interpolation for continuous multipliers of the Drury-Arveson space , Mathematics Colloquium, College of William and Mary. (February 2015)

Peak interpolation for continuous multipliers of the Drury-Arveson space , Mathematics Colloquium, Kansas State University. (February 2015)

Peak interpolation for continuous multipliers of the Drury-Arveson space , Mathematics Colloquium, University of Manitoba. (February 2015)

Duality and peak interpolation for continuous multipliers of the Drury-Arveson space, Operator Algebras and Operator Theory, Canadian Mathematical Society Winter meeting, Hamilton. (December 2014)

Henkin measures for the multiplier algebra of the Drury-Arveson space, Analysis seminar, Université Laval. (October 2014)

An operator algebraic approach to similarity problems in operator theory, Mathematics department colloquium, University of Windsor. (April 2014)

Unitary equivalence to Jordan models for weak contractions of class C_0, AMS Special Session on Classification Problems in Operator Algebras, Joint Mathematics Meetings, Baltimore. (January 2014)

Unitary equivalence to Jordan models for weak contractions of class C_0, Operator Algebras and their Applications, Canadian Mathematical Society Winter meeting, Ottawa. (December 2013)

Unitary equivalence to Jordan models for weak contractions of class C_0, Analysis seminar, Carleton University. (November 2013)

Classification of C_0 *contractions*, Analysis seminar, University of Western Ontario. (September 2013)

On the Unilateral Shift as a Hilbert Module over the Disc Algebra, Analysis seminar, University of Waterloo. (March 2013)

Similarity results for operators of class C_0 and the algebra $H^\infty(T)$, Complex Analysis and Operator Theory, Canadian Mathematical Society Winter meeting, Montreal. (December 2012)

Similarity results for operators of class C_0, Analysis seminar, Georgia Institute of Technology. (September 2012)

Similarity results for operators of class C_0, Complex Analysis seminar, Université de Montréal. (July 2012)

Supervision

Ian Thompson (master's student; September 2019–present)

Puxuan Wang (undergraduate summer researcher; May 2019–August 2019)

Brock Klippenstein (undergraduate summer researcher; May 2019–August 2019)

Babak Irandoust Azar (master's student; September 2017–present)

Edward Timko (postdoctoral fellow; August 2017–present)

Christopher Ramsey (postdoctoral fellow; June 2016–July 2018)

Diarra Mbacke (undergraduate researcher; May 2017–August 2017, May 2018–August 2019)

Alex Penner (undergraduate summer researcher; May 2017–August 2017)

Professional service

Organizer of the 46th Canadian Operator Symposium (COSy 2018) at the University of Manitoba

Teaching Experience

Vector geometry and linear algebra, University of Manitoba (Fall 2018)

Real Analysis I, University of Manitoba (Winter 2018)

Abstract Measure Theory, University of Manitoba (Fall 2017)

Multivariable Calculus, University of Manitoba (Fall 2017, Fall 2018)

Introduction to Analysis, University of Manitoba (Fall 2016)

Calculus 2, University of Manitoba (Fall 2016)

Basic Functional Analysis, University of Manitoba (Winter 2016, Winter 2017, Winter 2019)

Integral Calculus, University of Manitoba (Winter 2016)

Applied Complex Analysis, University of Waterloo (Winter 2015)

Calculus 1 for Honours Math, University of Waterloo (Fall 2014)

Calculus 2 for Engineers, University of Waterloo (Winter 2014)

Calculus 1 for the Sciences, University of Waterloo (Fall 2013)

Precalculus with Trigonometry, Indiana University (Fall 2012, Spring 2013)