Jason Parker

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(Last update: October 10, 2023)

Academic Employment

Postdoctoral Scholar and Sessional Instructor   *September 2023–*
Departments of Computer Science and Mathematics, University of Calgary
Supervisors: Robin Cockett, Kristine Bauer, Carlo Maria Scandolo, Claude Laflamme

Postdoctoral Fellow and Sessional Instructor   *September 2020–August 2023*
Department of Mathematics and Computer Science, Brandon University
Supervisor: Rory Lucyshyn-Wright

Education

PhD in Mathematics and Statistics   *October 2020*
University of Ottawa, Canada
Thesis: *Isotropy groups of quasi-equational theories*
Advisors: Pieter Hofstra and Philip Scott

MSc in Logic, Computation, and Methodology   *May 2015*
Carnegie Mellon University, USA
Thesis: *Duality between cubes and bipointed sets*
Advisor: Steve Awodey

BA Honours in Philosophy   *June 2013*
Queen's University, Canada

Publications

[1] *Diagrammatic presentations of enriched monads and varieties for a subcategory of arities* (with R.B.B. Lucyshyn-Wright). *Applied Categorical Structures* 31:40, 2023.

[2] *Exponentiability in categories of relational structures. Theory and Applications of Categories*, Vol. 39, No. 16, 2023, 493–518.

[3] *Inner automorphisms of presheaves of groups. Applied Categorical Structures* 31:20, 2023.

[4] *Presentations and algebraic colimits of enriched monads for a subcategory of arities* (with R.B.B. Lucyshyn-Wright). *Theory and Applications of Categories*, Vol. 38, No. 38, 2022, 1434–1484.

[5] *Extensivity of categories of relational structures. Theory and Applications of Categories*, Vol. 38, No. 23, 2022, 898–912.

[6] *Locally bounded enriched categories* (with R.B.B. Lucyshyn-Wright). *Theory and Applications of Categories*, Vol. 38, No. 18, 2022, 684–736.

[7] *Covariant isotropy of Grothendieck toposes and extensive categories. Applied Categorical Structures* 30, 779–803, 2022.

[8] *Polymorphic automorphisms and the Picard group* (with P. Hofstra and P.J. Scott). *6th International Conference on Formal Structures for Computation and Deduction (FSCD 2021)*, N. Koyayashi, Ed. Dagstuhl Publications LIPlcs, Vol. 195, 2021.

[9] *Isotropy groups of free racks and quandles. Journal of Algebra and its Applications*, Vol. 21, No. 8, 2250163, 2022.

[10] *Isotropy of algebraic theories* (with P. Hofstra and P.J. Scott). *Electronic Notes in Theoretical Computer Science* 341: 201–217, 2018.

Preprints

[1] *Strongly finitary monads and multi-sorted varieties enriched in cartesian closed concrete categories.* Preprint, 2023. arXiv:2310.04587

[2] *Free algebras of topologically enriched multi-sorted equational theories.* Preprint, 2023. arXiv:2308.04531

[3] *Enriched structure–semantics adjunctions and monad–theory equivalences for subcategories of arities* (with R.B.B. Lucyshyn-Wright). Preprint, 2023. arXiv:2305.07076

[4] *Isotropy and combination problems.* Preprint, 2020. arXiv:2010.09821

Conference and Seminar Presentations

(Please see my website for slides and video of selected presentations.)

[1] *Enriched algebraic theories, monads, and varieties.* The Calgary Peripatetic Seminar on Logic, Mathematics, and Computer Science. University of Calgary. September 27, 2023.

[2] *Diagrammatic presentations of enriched monads and the axiomatics of enriched algebra* (poster). International Category Theory Conference. UCLouvain, Louvain-la-Neuve, Belgium. July 7, 2023.

[3] *Initial algebras for topologically enriched multi-sorted algebraic theories.*

- 6th International Conference on Applied Category Theory. University of Maryland (online). August 3, 2023.
- The 37th Summer Conference on Topology and Its Applications. Youngstown State University (online). July 18, 2023.
- 30th Foundational Methods in Computer Science Workshop. Mount Allison University, Sackville, New Brunswick. June 9, 2023.

[4] **Invited Talk:** *Isotropy groups of locally finitely presentable and extensive categories.* 2022 Category Theory Octoberfest. Online. October 29, 2022.

[5] *Enriched structure-semantics adjunctions and monad-theory equivalences for subcategories of arities.*

- Applied Category Theory International Conference. University of Strathclyde, Glasgow. July 22, 2022.
- New York City Category Theory Seminar. Online. April 6, 2022.
- University of Ottawa Logic Seminar. Online. March 18, 2022.
- Atlantic Category Theory Seminar. Online. March 8, 2022.

[6] *Locally bounded enriched categories.*

- Australian Category Theory Seminar. Online. November 10, 2021.
- The Calgary Peripatetic Seminar on Logic, Mathematics, and Computer Science. Online. October 1, 2021.
- University of Ottawa Logic Seminar. Online. September 30, 2021.
- Atlantic Category Theory Seminar. Online. September 14, 2021.

[7] *Presentations and algebraic colimits of enriched monads for a subcategory of arities.*

- 2021 Category Theory Novemberfest. Online. November 13, 2021.
- Atlantic Category Theory Seminar. Online. October 5, 2021.
- International Category Theory Conference 2021. Genoa, Italy. September 2021.
- Mathematical Congress of the Americas 2021, Categories and Topology Session. July 16, 2021.

[8] *Polymorphic automorphisms and the Picard group.*

- **Invited Talk:** Carnegie Mellon University Logic Seminar. Online. October 26, 2021.
- Logic Supergroup Early Career Researcher Workshop. Online. October 14, 2021.

- 6th International Conference on Formal Structures for Computation and Deduction. Buenos Aires, Argentina. July 21, 2021.
- **Distinguished Presentation:** Applied Category Theory 2021 Conference. University of Cambridge. July 15, 2021.

[9] *Covariant isotropy of Grothendieck toposes.*

- Open House on Category Theory 2021. Online. November 19, 2021.
- Toposes Online Conference. Online. June 30, 2021.

[10] **Invited Talk:** *Isotropy in category theory.* Brandon University Science Seminar. Online. March 25, 2021.

[11] *Isotropy groups of quasi-equational theories.*

- **Invited Talk:** TalTech Category Theory Seminar. Online. March 4, 2021.
- New York City Category Theory Seminar. Online. February 3, 2021.
- Panglobal Algebra and Logic Seminar (PALS). Online. January 26, 2021.
- Algebra|Coalgebra Seminar (Institute for Logic, Language, and Computation). Online. January 6, 2021.
- University of California, Riverside Applied Category Theory Seminar. Online. December 14, 2020.
- The Calgary Peripatetic Seminar on Logic, Mathematics, and Computer Science. Online. December 11, 2020.
- Vanderbilt University Universal Algebra and Logic Seminar. Online. December 7, 2020.
- Cambridge University Category Theory Seminar. Online. December 1, 2020.
- Atlantic Category Theory Seminar. Online. November 3, 2020.
- Australian Category Theory Seminar. Online. October 21, 2020.
- University of Ottawa Logic Seminar. University of Ottawa. October 2019.

[12] *Isotropy groups of strict monoidal categories.* University of Ottawa Logic Seminar. University of Ottawa. Spring 2020.

[13] *Isotropy of algebraic theories.*

- Université catholique de Louvain Category Theory Seminar. Université catholique de Louvain. September 11, 2018.
- Mathematical Foundations of Programming Semantics Conference. Dalhousie University. June 8, 2018.
- Canadian Mathematical Society Summer Meeting, Graduate Student Session. University of New Brunswick. June 4, 2018.
- Foundational Methods in Computer Science Conference. University of Ottawa. June 2017.

[14] *A syntactic criterion for a geometric theory to be of presheaf type.* University of Ottawa Logic Seminar. University of Ottawa. Spring 2018.

[15] *Heyting algebra structure on the quotients of a geometric theory.* University of Ottawa Logic Seminar. University of Ottawa. Spring 2018.

[16] *Duality between subtoposes of Grothendieck toposes and quotients of geometric theories.* University of Ottawa Logic Seminar. University of Ottawa. Spring 2018.

[17] *Classifying toposes of geometric theories.* University of Ottawa Logic Seminar. University of Ottawa. Spring 2018.

[18] *The classifying topos of local rings.* University of Ottawa Logic Seminar. University of Ottawa. Fall 2017.

[19] *Basic categorical logic.* University of Ottawa Logic Seminar. University of Ottawa. Fall 2017.

[20] *Categorical semantics of system F.* University of Ottawa Logic Seminar. University of Ottawa. Spring 2017.

[21] *Duality between cubes and bipointed sets.*

- University of Ottawa Logic Seminar. University of Ottawa. November 2015.
- Category Theory Octoberfest. University of Ottawa. October 2015.
- Homotopy Type Theory Seminar. Carnegie Mellon University. Spring 2015.

Teaching Experience

University of Calgary

- Course Instructor for Linear Methods I (MATH211), Fall 2023 (in-person course)

Brandon University

- Course Instructor for Contemporary Mathematics (62:152), Winter 2023 (in-person course, 75 undergraduate students)[1]

- Course Instructor for Introduction to Statistics (62:171), Winter 2023 (in-person course, 105 undergraduate students)[2]

- Course Instructor for Introduction to Statistics (62:171), Fall 2022 (in-person course, 90 undergraduate students)[3]

- Course Instructor for Logic (70:240), Fall 2021 (online course, 40 undergraduate students)[4]

- Guest Instructor for Introduction to Set Theory and Logic (62:261), October 2020

Department of Mathematics and Statistics, University of Ottawa

- Tutorial Instructor and Grader for Discrete Mathematics for Computing, Spring 2020

- Tutorial Instructor and Grader for Mathematical Reasoning and Proofs, Fall 2019

- Tutorial Instructor and Grader for Calculus for the Life Sciences, Summer 2019

- Tutorial Instructor and Grader for Discrete Mathematics for Computing, Spring 2019

- Grader for Foundations of Mathematics, Fall 2018

- Tutorial Instructor and Grader for Mathematical Reasoning and Proofs, Fall 2018

- Tutorial Instructor and Grader for Discrete Mathematics for Computing, Spring 2018

- Tutorial Instructor and Grader for Introduction to Linear Algebra, Spring 2018

- Tutorial Instructor for Mathematical Methods II, Fall 2017

- Tutorial Instructor for Calculus I, Fall 2017

- Tutorial Instructor for Calculus II, Summer 2017

- Tutorial Instructor and Grader for Discrete Mathematics for Computing, Spring 2017

- Tutorial Instructor and Grader for Introduction to Linear Algebra, Fall 2016

- Grader for Calculus for the Life Sciences, Summer 2016

- Tutorial Instructor and Grader for Discrete Mathematics for Computing, Spring 2016

- Tutorial Instructor for Introduction to Linear Algebra, Spring 2016

- Grader for Mathematical Methods, Fall 2015

- Grader for Foundations of Mathematics, Fall 2015

Department of Philosophy, Carnegie Mellon University

- Grader for Invented Languages, Spring 2015

- Tutorial Instructor and Grader for Formal Logic, Fall 2014

- Tutorial Instructor and Grader for Nature of Language, Fall 2013 and Spring 2014

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[1]See this unlisted YouTube playlist for videos of my teaching from this course.
[2]See this unlisted YouTube playlist for videos of my teaching from this course.
[3]See this unlisted YouTube playlist for videos of my teaching from this course.
[4]See this unlisted YouTube playlist for videos of my teaching from this course.

Department of Philosophy, Queen's University

- Guest Instructor for Further Studies in Logic, Spring 2013

- Tutorial Instructor and Grader for Further Studies in Logic, Spring 2013

- Tutorial Instructor and Grader for Introduction to Logic, Fall 2012

Conferences and Workshops Attended

- International Category Theory Conference. UCLouvain, Louvain-la-Neuve, Belgium. July 2–8, 2023.

- 30th Foundational Methods in Computer Science Workshop. Mount Allison University, Sackville, New Brunswick. June 8–11, 2023.

- Category Theory Octoberfest. Online. October 29–30, 2022.

- Applied Category Theory International Conference. University of Strathclyde, Glasgow. July 2022.

- Open House on Category Theory. Online. November 2021.

- Category Theory Novemberfest. Online. November 2021.

- International Category Theory Conference. Genoa, Italy (Online). September 2021.

- 6th International Conference on Formal Structures for Computation and Deduction. Buenos Aires, Argentina (Online). July 2021.

- Mathematical Congress of the Americas (Category and Topology Session). Online, July 2021.

- Applied Category Theory Conference. University of Cambridge (Online). July 2021.

- Toposes Online Conference. Online. June 2021.

- Tangent Categories and their Applications. Banff International Research Station (Online). June 2021.

- Operads and Higher Structures in Category Theory Workshop. University of Ottawa. August 2019.

- Summer School in Algebra and Topology. Université catholique de Louvain. September 2018.

- Mathematical Foundations of Programming Semantics Conference. Dalhousie University. June 2018.

- Canadian Mathematical Society Summer Meeting. University of New Brunswick. June 2018.

- Foundational Methods in Computer Science Conference. University of Ottawa. June 2017.

- Workshop on New Directions in Inverse Semigroups. University of Ottawa. Summer 2016.

- Category Theory Octoberfest. University of Ottawa. October 2015. '

- Modal Logic Workshop. Carnegie Mellon University. Spring 2014.

Awards

Postdoctoral

- Atlantic Association for Research in the Mathematical Sciences (AARMS) Postdoctoral Fellowship, 2023 (declined)

University of Ottawa

- Doctorate Admission Scholarship, 2020

- Doctorate Admission Scholarship, 2019

- Excellence Scholarship, 2019

- Ontario Graduate Scholarship, 2018–2019

- Excellence Scholarship, 2018

- Doctorate Admission Scholarship, 2018

- Swartzen Memorial Mathematics Scholarship, 2018

- Excellence Scholarship, 2017

- Doctorate Admission Scholarship, 2017

- André Dabrowski Mathematics Scholarship, 2017

- Ontario Graduate Scholarship, 2016–2017

- Excellence Scholarship, 2016

- Swartzen Memorial Mathematics Scholarship, 2016

Carnegie Mellon University

- MSc 50% Tuition Fellowship, 2013–2015

Service

- Program committee member for the 2023 Applied Category Theory International Conference

- Reviewer for the international journal *Theory and Applications of Categories*

- Co-creator and co-organizer of the Brandon University Category Theory Seminar

- Reviewer for David Kelley's *Art of Reasoning: An Introduction to Logic and Critical Thinking* for W.W. Norton & Company, ISBN-13: 978-0393930788, 2014