

# Jason Parker

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(Last update: September 22, 2022)

## ACADEMIC EMPLOYMENT

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### Postdoctoral Fellow

September 2020–August 2023

Department of Mathematics and Computer Science, Brandon University

Sponsor: Rory Lucyshyn-Wright

## EDUCATION

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### 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

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- [1] *Extensivity of categories of relational structures*. *Theory and Applications of Categories*, Vol. 38, No. 23, 2022, 898-912.
- [2] *Locally bounded enriched categories* (with R.B.B. Lucyshyn-Wright). *Theory and Applications of Categories*, Vol. 38, No. 18, 2022, 684-736.
- [3] *Covariant isotropy of Grothendieck toposes and extensive categories*. *Applied Categorical Structures* 30, 779-803, 2022.
- [4] *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 LIPIcs, Vol. 195, 2021.
- [5] *Isotropy groups of free racks and quandles*. *Journal of Algebra and its Applications*, Vol. 21, No. 8, 2250163, 2022.
- [6] *Isotropy of algebraic theories* (with P. Hofstra and P.J. Scott). *Electronic Notes in Theoretical Computer Science* 341: 201-217, 2018.

## PREPRINTS

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- [1] *Exponentiability in categories of relational structures*. Preprint, 2022. Submitted for publication. arXiv:2208.07350
- [2] *Diagrammatic presentations of enriched monads and varieties for a subcategory of arities* (with R.B.B. Lucyshyn-Wright). Preprint, 2022. Submitted for publication. arXiv:2207.05184
- [3] *Presentations and algebraic colimits of enriched monads for a subcategory of arities* (with R.B.B. Lucyshyn-Wright). Preprint, 2022. Submitted for publication. arXiv:2201.03466
- [4] *Inner automorphisms of presheaves of groups*. Preprint, 2021. Submitted for publication. arXiv:2107.13989
- [5] *Isotropy and combination problems*. Preprint, 2020. arXiv:2010.09821

## CONFERENCE AND SEMINAR PRESENTATIONS

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

[1] *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.

[2] *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.

[3] *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.

[4] *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.

[5] *Covariant isotropy of Grothendieck toposes.*

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

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

[7] *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.

- [8] *Isotropy groups of strict monoidal categories*. University of Ottawa Logic Seminar. University of Ottawa. Spring 2020.
- [9] *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.
- [10] *A syntactic criterion for a geometric theory to be of presheaf type*. University of Ottawa Logic Seminar. University of Ottawa. Spring 2018.
- [11] *Heyting algebra structure on the quotients of a geometric theory*. University of Ottawa Logic Seminar. University of Ottawa. Spring 2018.
- [12] *Duality between subtoposes of Grothendieck toposes and quotients of geometric theories*. University of Ottawa Logic Seminar. University of Ottawa. Spring 2018.
- [13] *Classifying toposes of geometric theories*. University of Ottawa Logic Seminar. University of Ottawa. Spring 2018.
- [14] *The classifying topos of local rings*. University of Ottawa Logic Seminar. University of Ottawa. Fall 2017.
- [15] *Basic categorical logic*. University of Ottawa Logic Seminar. University of Ottawa. Fall 2017.
- [16] *Categorical semantics of system F*. University of Ottawa Logic Seminar. University of Ottawa. Spring 2017.
- [17] *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

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### BRANDON UNIVERSITY

- Course Instructor for Contemporary Mathematics (62:152), Winter 2023
- Course Instructor for Introduction to Statistics (62:171), Winter 2023
- Course Instructor for Introduction to Statistics (62:171), Fall 2022 (in-person course, 100 undergraduate students)<sup>1</sup>
- Course Instructor for Logic (70:240), Fall 2021 (online course, 40 undergraduate students)<sup>2</sup>
- 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

<sup>1</sup>See this unlisted YouTube playlist for videos of my teaching from this course.

<sup>2</sup>See this unlisted YouTube playlist for videos of my teaching from this course.

- 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

#### 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

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- 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

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### 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

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- Reviewer for the international journal *Theory and Applications of Categories*
- Chair of hiring committee for Logic 70:240 teaching assistant at Brandon University, Fall 2021
- 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