

## CURRICULUM VITAE.

Matteo Spadetto. Born in Conegliano (Italy) on the 11<sup>th</sup> of July 1995. Italian citizen.

[Click here to see my webpage](#) ◦ [Click here to see my research statement](#)

[Google scholar account](#) ◦ [Research gate account](#) ◦ [Orcid](#)

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## EDUCATION.

**Oct 2020 - Sept 2024. PhD in Mathematics**, *University of Leeds*, UK.

Research area: mathematical logic, dependent type theory, category theory, semantics.

Supervisors: Nicola Gambino (Manchester), Federico Olimpieri (Leeds), Michael Rathjen (Leeds).

Examiners: Andrew Brooke-Taylor (Leeds), Eric Finster (Birmingham).

Thesis title: *On the syntax and the semantics of propositional dependent type theories*.

Thesis defense on the 18<sup>th</sup> of September 2024. Result: passed with editorial revision (which is considered less than minor revision).

**Sept 2017 - Dec 2019. MSc in Mathematics**, *University of Trento*, Italy.

A.y. 2017/18 attended at the *University of Trento*, Italy. A.y. 2018/19 attended at *Utrecht University*, the Netherlands, as Erasmus+ student. Fall 2019 attended at *Utrecht University* as holder of a thesis research scholarship.

Thesis supervisor: Jaap van Oosten (Utrecht).

Thesis examiner: Roberto Zunino (Trento).

Thesis title: *Generalised gluing and exact completion of path categories*.

Thesis defense on the 19<sup>th</sup> of December 2019. Final mark: cum laude.

**Sept 2014 - Sept 2017. BSc in Mathematics**, *University of Trento*, Italy.

Thesis supervisor: Stefano Baratella (Trento).

Thesis examiners: Edoardo Ballico (Trento), Claudio Fontanari (Trento).

Thesis title: *Elements of category theory*.

Thesis defense on the 25<sup>th</sup> of September 2017. Final mark: cum laude.

## APPOINTMENTS.

**Apr 2024 - Currently. Postdoc**, *University of Udine*, Italy.

Research project: [STENDHAL](#).

Supervisor: Marino Miculan (Udine).

## PUBLICATIONS AND PREPRINTS.

### *PhD Thesis.*

1. *On the syntax and the semantics of propositional dependent type theories*.

July 2024. [Submitted](#).

### *Preprints.*

2. *A biequivalence of path categories and axiomatic Martin L f type theories*.

Oct 2024. [Submitted](#). Together with Dani l Otten.

3. *Towards propositional dependent sums in intensional and propositional dependent type theory*.

Jan 2024. [Submitted](#).

4. *A conservativity result for homotopy elementary types in dependent type theory*. [2303.05623v1](#)

Mar 2023. Conditionally accepted for [Logical Methods in Computer Science](#).

5. *The Gödel fibration (extended version)*. [2104.14021v1](#)

Apr 2021. Some of the contents published in the [Proceedings of MFCS 2021](#). Together with Davide Trotta and Valeria de Paiva.

6. *Quantifier completions, choice principles and applications*. [2010.09111v3](#)

Oct 2020. [Submitted](#). Together with Davide Trotta.

#### *Papers in journals.*

7. *Dialectica principles via Gödel doctrines*. [ScienceDirect Link](#) ; [2205.07093v1](#)

May 2022. [Theoretical Computer Science](#). Together with Davide Trotta and Valeria de Paiva.

8. *Dialectica logical principles: not only rules (extended version)*. [JLC Link](#)

Mar 2022. [Journal of Logic and Computation \(LFCS 2022 post-conference volume\)](#). Together with Davide Trotta and Valeria de Paiva.

#### *Papers in refereed conference proceedings.*

9. *Dialectica logical principles*. [Springer Link](#) ; [2109.08064v1](#)

Sept 2021. [Logical Foundations of Computer Science 2022](#). Together with Davide Trotta and Valeria de Paiva.

10. *The Gödel fibration*. [LIPIcs Link](#)

Aug 2021. [LIPIcs, volume 202, proceedings of Mathematical Foundations of Computer Science 2021](#). Together with Davide Trotta and Valeria de Paiva.

**COLLABORATIONS.** **1.** *Syntax and semantics of spatio-temporal logic*, together with Davide Castelnovo and Marino Miculan. **2.** *Torsion theories and dependent types*, together with Federico Campanini. **3.** *Modular correspondence and coherence properties for path categories*, together with Benno van den Berg and Daniël Otten, [YouTube presentation here](#). **4.** *Canonicity results via à la Freyd methods*, together with Emanuele Frittaion. **5.** *On the dialectica construction*, together with Davide Trotta and Valeria de Paiva, [YouTube presentation here](#).

**TALKS IN CONFERENCES AND WORKSHOPS.** **1.** Sept 2024. Higher dimensional semantics of propositional theories of dependent types, *Paul Levy speaking. British Logic Colloquium*. **2.** Sept 2024. Higher dimensional semantics of propositional theories of dependent types. *XVIII Incontro di Logica AILA*. **3.** June 2023. What is a dependent type theory? *Leeds School of Maths PGR Conference 2023 (link here)*. **4.** June 2023. Strictifying path categories. [YouTube Recording](#) ; [Slides](#). *Workshop on Doctrines & Fibrations (link here)*. **5.** May 2023. Propositional dependent type theories: a conservativity result for homotopy elementary types. [Slides](#). *Homotopy Type Theory 2023 (link here)*. **6.** May 2023, [invited](#). Weak type theories: a conservativity result for homotopy elementary types. [Slides](#). *DutchCATS (link here)*. **7.** Dec 2022. A conservativity-like result for a propositional type theory. [YouTube Recording](#). *3rd ItaCa Workshop (link here)*. **8.** July 2022. Dialectica: fibrations and logical principles. [YouTube Recording](#) ; [Slides](#). *Applied Category Theory 2022 (link here)*. **9.** June 2022. Propositional in dependent type theory. *Leeds School of Mathematics PGR Conference 2022 (link here)*. **10.** Jan 2022, [invited](#). Dialectica completion & dialectica logical principles. [Slides](#). *26<sup>th</sup> Yorkshire and Midlands Category Theory Seminar (link here)*. **11.** Dec 2021. Dialectica completion & Gödel fibrations. *2nd ItaCa Workshop (link here)*. **12.** Dec 2021. Dialectica logical principles. *Eighth Symposium on Compositional Structures (link here)*. **13.** July 2021. The Gödel Fibration. [Poster](#). *Applied Category Theory 2021 (link*

[here](#)). *Poster presentation*. **14.** June 2021. Quantifier completions of doctrines. [YouTube Recording](#). *Categories and Companions Symposium 2021* ([link here](#)).

**TALKS IN SEMINARS.** **1.** Feb 2024, [invited](#). Towards the coherence of the semantics of propositional identities. *Nottingham Functional Programming Lunch* ([link here](#)). **2.** Oct 2023. Quantification and adjunction. *Leeds Pure Postgraduate Seminar 2023/24*. **3.** June 2023. Coherence in the semantics of dependent types. *Leeds Postgraduate Logic Seminar 2022/23*. **4.** June 2023. Coherence for Extensional, Intensional and Propositional Identities. *Leeds & Manchester Category Theory Lunch*. **5.** May 2023. Propositional dependent type theories: a conservativity result for homotopy elementary types. *Leeds & Manchester Category Theory Lunch*. **6.** Apr 2023. Left & right adjoint fibration splittings. *Leeds & Manchester Category Theory Lunch*. **7.** Feb 2022. Towards the notion of propositional dependent sum types. *Proofs, Constructions, Computations and Categories*. **8.** Nov 2021. On the notion of exact completion. *Leeds Postgraduate Logic Seminar 2021/22*. **9.** Nov 2021. Existential, universal and dialectica completion. *Proofs, Constructions, Computations and Categories*. **10.** Oct 2021, [invited](#). Regular (first-order) logic symbols & doctrines. *Groningen Mathematics PhD Seminar*. **11.** May 2021. Regular logic symbols & doctrines. *Leeds Pure Postgraduate Seminar 2020/21*. **12.** Apr 2019. On the strong conceptual completeness. *Student Seminar Ultracategories 2019* ([link here](#)). **13.** Feb 2019. On ultraproducts and ultrafunctors. *Student Seminar Ultracategories 2019* ([link here](#)).

**REVIEWER FOR THE FOLLOWING JOURNALS AND CONFERENCES.** **1.** Summer 2024, Communications of the Korean Mathematical Society. **2.** June 2024, Principles and Practice of Declarative Programming 2024. **3.** Spring 2024, Logic in Computer Science 2024. **4.** Fall 2023, Theory and Application of Categories. **5.** Spring 2023, Logical Methods in Computer Science. **6.** Spring 2022, Logic Journal of the IGPL 2022 Volume 30. **7.** July 2021, Workshop on Logic, Language, Information and Computation 2021. **8.** June 2021, Mathematical Foundations of Computer Science 2021.

**CONFERENCE ORGANISATION.** **1.** June 2023, member of the organising committee of *Leeds School of Mathematics PGR Conference 2023*, [link here](#). **2.** July 2022, member of the local organising committee of *Research School on Bicategories, Categorification and Quantum Theory*, [link here](#). **3.** June 2022, member of the organising committee of *Leeds School of Mathematics PGR Conference 2022*, [link here](#).

**RESEARCH VISITING.** **1.** Apr-May 2023, ILLC-University of Amsterdam, the Netherlands, host: Benno van den Berg. **2.** Dec 2022, University of Padua, Italy, host: Maria Emilia Maietti.

**AWARDS, GRANTS, AND SCHOLARSHIPS.** **1.** 2023, grant. Full funding ([link here](#)) for a EuroProofNet CA20111 STSM ([link here](#)) research visit to Amsterdam (hosted by Benno van den Berg). **2.** 2020, scholarship. Offer of a full funding (School of Maths Full-Time EPSRC Doctoral Training Partnership Studentship) for a PhD in the School of Mathematics at the University of Leeds (UK). **3.** 2020, scholarship. Offer of a full funding for a PhD in Mathematics at the University of Western Ontario (Canada). **4.** 2020, scholarship. Offer of a full funding for a PhD in the School of Computer Science at the University of Birmingham. **5.** 2019, scholarship. Funding for 4 months (from September 2019 to December 2019) of international mobility for thesis research. **6.** 2019, merit award. A merit-based money

prize (University of Trento) for my BSc. **7.** 2018, scholarship. Funding for 10 months (from September 2018 to June 2019) of international mobility in the academic year 2018/19 in partner Universities in the framework of the Erasmus+ Programme Countries.

**TEACHING.** Since the beginning of Fall 2024 I have been teaching part of a course in real analysis — the name of the course is *analisi matematica* — for about 120 computer science bachelor's students at the University of Udine, Italy (2 hours per week + other hours of preparation).

During Fall 2020, Spring 2021, Fall 2021, Spring 2022, Fall 2022, Spring 2023, and Fall 2023 I was tutorial/workshop teacher, homework marker, and exam marker contributing to some bachelor's modules at the School of Mathematics of the University of Leeds. In detail, I have been:

**tutorial/workshop teacher for six modules** - *number systems, discrete mathematics, further linear algebra, real analysis, introduction to geometry, introductory linear algebra* -,

**homework marker for nine modules** - *number systems, coding theory, real analysis (twice), discrete mathematics, further linear algebra, introduction to geometry, introductory linear algebra, logic & computation* -,

**exam marker for eight modules** - *core mathematics, elementary differential calculus, introduction to applied mathematics, real analysis, groups & vector spaces, graph theory (twice), further linear algebra* -.

Teaching -i.e. imprinting signs according to the etymology of this verb in latin- for me means helping others to find a way to learn for themselves. I live teaching as a noble and very important activity, to which I love to dedicate time and effort, and which from time to time teaches a lot first of all to myself. In fact, when I teach, I like imagining that I am a student myself, a fellow student among those in front of me. I simulate the experience of encountering the mathematics I am explaining for the first time in that precise moment. This method allows me to concretely demonstrate the journey towards discovering and mastering a theorem, exciting and involving the students in the same process. However, on the other hand, this is not merely a fiction: I genuinely embody the role of a student. Each teaching session becomes a learning experience for me as well, offering new insights and points of view. *Once a student, always a student*: a good teacher is one that knows this.

Here are the **comments from students about my teaching style** during Fall 2022 and Spring 2023: • Offered us extra time to go through things and was attentive to answering questions. • It was taught in an understandable way, and the tutor went out of his way to go over the work in other ways until you understood. He also explained why certain things were done in specific ways so that we would understand more. He also voluntarily extended our tutorial into a 2-hour session for more face to face learning. • Matteo goes through the questions really well and he would go the extra mile to help out and make sure we understand • He was patiently explaining our questions. And volunteering doing extra hours to help us. The explanations are clear and understandable. The extra hour to answer questions are really helpful. • Very clear explanation going over the notes and examples • Very helpful and went the extra mile • Very useful tutorial, help me to catch up on the missing knowledge. The teacher is also very kind and always explains in detail. • He teaches the content well and gives help when necessary.

I also enjoy assisting individuals in comprehending mathematics through the renowned university-level Q&A website, Mathematics Stack Exchange. [Click here to see my account.](#)

**PARTICIPATION IN CONFERENCES, WORKSHOPS, SEMINARS, AND SCHOOLS.**  
Structures in Foundations of Mathematics, Sept 2024, University of Padua • XVIII Incontro di Logica

AILA, Sept 2024, University of Udine • June 2024, Category Theory 2023, Santiago de Compostela • Dec 2023, 4th ItaCa, University of Turin • July 2023, Category Theory 2023, UCLouvain • June 2023, Leeds School of Mathematics PGR Conference 2023, University of Leeds • May-June 2023, Workshop on Doctrines & Fibrations, University of Padua • May 2023, Homotopy Type Theory 2023, Carnegie Mellon University • May 2023, DutchCATS, ILLC, University of Amsterdam • Dec 2022, 3rd ItaCa Workshop, University of Pisa • Oct 2022 - Currently, Leeds & Manchester Category Theory Lunch, University of Manchester • July 2022, School on Univalent Mathematics, Cortona, Scuola Matematica Interuniversitaria • July 2022, Applied Category Theory 2022, University of Strathclyde • July 2022, Research School on Bicatagories, Categorification and Quantum Theory, University of Leeds • June 2022, Leeds School of Mathematics PGR Conference 2022, University of Leeds • May 2022, WG6 kick-off meeting - Syntax and Semantics of Type Theories, Stockholm University • May - July 2022, Leeds Category Theory Lunch, University of Leeds • Apr 2022, Midlands Graduate School in the Foundations of Computer Science, University of Nottingham • Mar 2022, Workshop on Polynomial Functors, Topos Institute • Dec 2021, 2nd ItaCa Workshop, University of Genoa • Dec 2021, Eighth Symposium on Compositional Structures, Tallinn University of Technology • Sept 2021 - May 2022, Proofs, Constructions, Computations and Categories, Logic Group of the School of Mathematics, University of Leeds • Sept 2021, Unifying Themes in Geometry, Lake Como School of Advanced Studies • Sept 2021, Continuity, Computability, Constructivity 2021, University of Birmingham • Sept 2021, Category Theory 2021, University of Genoa • Aug 2021, 46<sup>th</sup> International Symposium on Mathematical Foundations of Computer Science 2021, EATCS • July 2021, Toposes Online, IHES and University of Insubria • July 2021, Logic Colloquium 2021, online conference • July 2021, Applied Category Theory 2021, online conference • June 2021, Categories and Companions Symposium, online conference • Apr 2021 - Currently, ItaCa Fest 2021, ItaCa • Mar 2021, Workshop on Polynomial Functors, Topos Institute • Mar - July 2021, Category Theory Lunch, Logic Group of the School of Mathematics, University of Leeds • Oct 2020 - Currently, Postgraduate Logic Seminar, Logic Group of the School of Mathematics, University of Leeds • Oct 2020 - Currently, Leeds Logic Seminar (before Leeds-Ghent Logic Seminar, Logic Group of the School of Mathematics, University of Leeds • Oct 2020 - Currently, Models and Sets Seminar, Logic Group of the School of Mathematics, University of Leeds • June - Dec 2020, ItaCa Fest 2020, ItaCa • Oct 2020 - Currently, Yorkshire and Midlands Category Theory Seminar, London Mathematical Society • June 2019, Higher Topos Theory and Univalent Foundations, Summer school & conference, University of Leeds • Feb - May 2019, Student Seminar Ultracategories, Utrecht University • June 2018, Toposes in Como, University of Insubria

## LANGUAGE SKILLS.

**English**, good user.

**French**, pre-intermediate user.

**Venetian** (Feltre - Valdobbiadene - Quartier del Piave variety), good user.

**Italian**, native.

## REFEREES.

**Research reference.** Nicola Gambino, University of Manchester

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2140 Shattuck Ave, Suite 610, 94704, Berkeley CA, United States  
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**Research reference.** Eric Finster, University of Birmingham  
Edgbaston, B15 2TT, Birmingham, United Kingdom  
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**Teaching reference.** Andrew Brooke-Taylor, University of Leeds  
Woodhouse, LS2 9JT, Leeds, United Kingdom  
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Udine, Italy, the 5<sup>th</sup> of November 2024

Matteo Spadetto, 