CURRICULUM VITAE.

Matteo Spadetto. Born in Conegliano (Italy) on the 11$^{\text{th}}$ of July 1995. Italian citizen.
Click here to see my webpage ∘ **Click here to see my research statement** ∘ **Orcid**
Click here to see my PhD thesis ∘ **Google scholar account** ∘ **Research gate account**
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APPOINTMENTS.

Apr 2025 - Currently. **Postdoc**, *Gallinette, LS2N, University of Nantes*, France.
Research project. **RECIPROG**. Supervisor. Guilhem Jaber.

Mar 2024 - Mar 2025. **Postdoc**, *DMIF, University of Udine*, Italy.
Research project. **STENDHAL**. Supervisor. Marino Miculan.

EDUCATION.

Oct 2020 - Sept 2024. **PhD in Mathematics**, *University of Leeds*, UK.
Research area. Mathematical logic, dependent type theory, category theory, semantics.
Thesis. *On the syntax and the semantics of propositional dependent type theories*, defended on the 18$^{\text{th}}$ of September 2024. Passed with editorial (i.e. less than minor) revision.
Supervisors. Nicola Gambino, Federico Olimpieri, Michael Rathjen. Examiners. Andrew Brooke-Taylor, Eric Finster.

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. *Generalised gluing and exact completion of path categories*, defended on the 19$^{\text{th}}$ of December 2019. Cum laude.
Supervisor. Jaap van Oosten. Examiner. Roberto Zunino.

Sept 2014 - Sept 2017. **BSc in Mathematics**, *University of Trento*, Italy.
Thesis. *Elements of category theory*, defended on the 25$^{\text{th}}$ of September 2017. Cum laude.
Supervisor. Stefano Baratella. Examiners. Edoardo Ballico, Claudio Fontanari.

PUBLICATIONS AND PREPRINTS.

Preprints.

1. *Higher dimensional semantics of axiomatic dependent type theory.* 2507.07208
   Jan 2025. Reviewed 1,2,1 in LICS 2025.
2. *Towards propositional dependent sums in intensional and propositional dependent type theory.*
   Jan 2024. **Submitted.**
3. *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.
4. *Quantifier completions, choice principles and applications.* 2010.09111v3
   Oct 2020. **Submitted.** Together with Davide Trotta.

Papers in journals.

5. *Relating homotopy equivalences to conservativity in dependent type theories with computation axioms.* **LMCS Link**
   Sept 2025. **Logical Methods in Computer Science.**
6. *Dialectica principles via Gödel doctrines.* **ScienceDirect Link** ; 2205.07093v1
   Feb 2023. **Theoretical Computer Science.** Together with Davide Trotta and Valeria de Paiva.
7. *Dialectica logical principles: not only rules.* **JLC Link**
   Dec 2022. **Journal of Logic and Computation.** Together with Davide Trotta and Valeria de Paiva.

Papers in refereed conference proceedings.

8. *The biequivalence of path categories and axiomatic Martin-Löf type theories.* 2503.15431
   Oct 2024. Accepted for **Computer Science Logic 2026.** Together with Daniël Otten.
9. *Dialectica logical principles.* **Springer Link** ; 2109.08064v1
   Dec 2021. **Logical Foundations of Computer Science 2022.** Together with Davide Trotta and Valeria de Paiva.
10. *The Gödel fibration.* **LIPIcs Link**
    Aug 2021. **Mathematical Foundations of Computer Science 2021.** Together with Davide Trotta and Valeria de Paiva.

MSc Thesis.

11. *Generalised gluing and exact completion of path categories.*
    Dec 2019. **Submitted. Click here**

PhD Thesis.

12. *On the syntax and the semantics of propositional dependent type theories.*
    July 2024. **Submitted. Click here**

Notes with no intention of publication

13. *Elements of topological quantum field theory.*
    Aug 2019. **Click here**

COLLABORATIONS. 1. *Weak monads and weak adjunction*, together with Andrew Slattery. **2.** *Directed type theory within intensional type theory*, together with Andrea Laretto. **3.** *Circular proofs in natural deduction and dependent types*, together with Guilhem Jaber. **4.** *Dialectica type theories*, together with Davide Trotta, Jonathan Weinberger, and Valeria de Paiva. **5.** *Syntax and semantics of spatio-temporal logic*, together with Davide Castelnovo and Marino Miculan. **6.** *Torsion theories and dependent types*, together with Federico Campanini. **7.** *Modular correspondence and coherence properties for path categories,* together with Benno van den Berg and Daniël Otten, **YouTube presentation here**. **8.** *Canonicity results via à la Freyd methods*, together with Emanuele Frittaion. **9.** *On the dialectica construction*, together with Davide Trotta and Valeria de Paiva, **YouTube presentation here**.

TALKS IN CONFERENCES AND WORKSHOPS. 1. July 2025. The Dialectica construction for dependent type theories (or for comprehension categories). *Category Theory 2025 (**link here**).* **2.** Apr 2025. A categorical approach to the semantics of axiomatic type theory. **Slides**. *EuroProofNet WG6 2025 (**link here**).* **3.** Dec 2024. Higher dimensional

semantics of axiomatic theories of dependent types. *ItaCa 2024 (**link here**).* **4.** Nov 2024. Higher dimensional semantics of axiomatic theories of dependent types. *PSSL 109 (**link here**).* **5.** Nov 2024. Syntax and semantics of continuous quantified spatio-temporal logic. *PRIN 2022 STENDHAL meeting.* **6.** Sept 2024. Higher dimensional semantics of propositional theories of dependent types, *Paul Levy speaking. British Logic Colloquium (**link here**).* **7.** Sept 2024. Higher dimensional semantics of propositional theories of dependent types. *XVIII Incontro di Logica AILA (**link here**).* **8.** June 2023. What is a dependent type theory? *Leeds School of Maths PGR Conference 2023 (**link here**).* **9.** June 2023. Strictifying path categories. **YouTube Recording** ; **Slides**. *Workshop on Doctrines & Fibrations (**link here**).* **10.** May 2023. Propositional dependent type theories: a conservativity result for homotopy elementary types. **Slides**. *Homotopy Type Theory 2023 (**link here**).* **11.** May 2023, **invited**. Weak type theories: a conservativity result for homotopy elementary types. **Slides**. *DutchCATS (**link here**).* **12.** Dec 2022. A conservativity-like result for a propositional type theory. **YouTube Recording**. *3rd ItaCa Workshop (**link here**).* **13.** July 2022. Dialectica: fibrations and logical principles. **YouTube Recording** ; **Slides**. *Applied Category Theory 2022 (**link here**).* **14.** June 2022. *Propositional* in dependent type theory. *Leeds School of Mathematics PGR Conference 2022 (**link here**).* **15.** Jan 2022, **invited**. Dialectica completion & dialectica logical principles. **Slides**. *26^{th} Yorkshire and Midlands Category Theory Seminar (**link here**).* **16.** Dec 2021. Dialectica completion & Gödel fibrations. *2nd ItaCa Workshop (**link here**).* **17.** Dec 2021. Dialectica logical principles. *Eighth Symposium on Compositional Structures (**link here**).* **18.** July 2021. The Gödel Fibration. **Poster**. *Applied Category Theory 2021 (**link here**). Poster presentation.* **19.** June 2021. Quantifier completions of doctrines. **YouTube Recording**. *Categories and Companions Symposium 2021 (**link here**).*

TALKS IN SEMINARS. 1. Dec 2025, **invited**. HoTTEST. **2.** Feb 2024, **invited**. Towards the coherence of the semantics of propositional identities. *Nottingham Functional Programming Lunch (**link here**).* **3.** Oct 2023. Quantification and adjunction. *Leeds Pure Postgraduate Seminar 2023/24.* **4.** June 2023. Coherence in the semantics of dependent types. *Leeds Postgraduate Logic Seminar 2022/23.* **5.** June 2023. Coherence for Extensional, Intensional and Propositional Identities. *Leeds & Manchester Category Theory Lunch.* **6.** May 2023. Propositional dependent type theories: a conservativity result for homotopy elementary types. *Leeds & Manchester Category Theory Lunch.* **7.** Apr 2023. Left & right adjoint fibration splittings. *Leeds & Manchester Category Theory Lunch.* **8.** Feb 2022. Towards the notion of propositional dependent sum types. *Proofs, Constructions, Computations and Categories.* **9.** Nov 2021. On the notion of exact completion. *Leeds Postgraduate Logic Seminar 2021/22.* **10.** Nov 2021. Existential, universal and dialectica completion. *Proofs, Constructions, Computations and Categories.* **11.** Oct 2021, **invited**. Regular (first-order) logic symbols & doctrines. *Groningen Mathematics PhD Seminar.* **12.** May 2021. Regular logic symbols & doctrines. *Leeds Pure Postgraduate Seminar 2020/21.* **13.** Apr 2019. On the strong conceptual completeness. *Student Seminar Ultracategories 2019 (**link here**).* **14.** Feb 2019. On ultraproducts and ultrafunctors. *Student Seminar Ultracategories 2019 (**link here**).*

REVIEWER FOR THE FOLLOWING JOURNALS AND CONFERENCES. 1. Spring 2025, Annals of Pure and Applied Logic. **2.** Summer 2024, Communications

of the Korean Mathematical Society. **3.** June 2024, Principles and Practice of Declarative Programming 2024. **4.** Spring 2024, Logic in Computer Science 2024. **5.** Fall 2023, Theory and Application of Categories. **6.** Spring 2023, Logical Methods in Computer Science. **7.** Spring 2022, Logic Journal of the IGPL 2022 Volume 30. **8.** July 2021, Workshop on Logic, Language, Information and Computation 2021. **9.** June 2021, Mathematical Foundations of Computer Science 2021.

CONFERENCE AND SEMINAR ORGANISATION. 1. Sept 2025, organiser of the *SZŐGÁTS reading group* at the University of Nantes — on second-order generalised algebraic theories and related topics — attended by five PhD students, three postdoctoral researchers, and one permanent faculty member. **2.** Jan 2025, member of the local organising committee of the events at the University of Udine related to the *World Logic Day 2025*. **3.** June 2023, member of the organising committee of *Leeds School of Mathematics PGR Conference 2023*, **link here**. **4.** July 2022, member of the local organising committee of *Research School on Bicategories, Categorification and Quantum Theory*, **link here**. **5.** 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 Birmigham. **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 AND MENTORING. Since the beginning of Fall 2024 to I have been teaching part of a two semester 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, for a total of 50 hours + other hours of preparation). **Click here** to see some of the exercises (in italian) that I use to teach young students how to make proofs. Additionally, **click here**, **here**, **here**, **here**, **here**, or **here** to experience the enthusiasm (in this case, in Italian) that I feel when I help others understand and appreciate the science of mathematics. These videos are from some of my last classes, which I had to deliver remotely after moving from Udine to Nantes.

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 the latin translation of this verb, *insignare* — 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.

I am committed to helping students from different science and engineering disciplines develop important skills that go beyond specific subjects. My goal as a teacher with a background in foundations of mathematics will be to guide students in learning how to think critically, solve problems, work in teams, and communicate effectively. These skills are essential for addressing complex real-world challenges. I am eager to mentor students as they work on interdisciplinary projects, helping them turn their ideas into practical solutions. I also believe in creating a supportive and encouraging learning environment where students feel confident to explore new ideas.

Here are the **comments from students about my teaching style** during Fall 2022 and Spring 2023: • *Offered us extra time to go through thingl 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 2hour 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 explanation 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.*

Here is a piece of an email in italian, that I am very happy and proud about, recently received by a student of the University of Udine, after they passed their exam for their real analysis module in which I taught: • *ci tenevo a ringraziarla per averci aiutato con questa*

materia, che a molti risulta ostica. In particolare penso che, senza le sue lezioni, non sarei riuscito a passare le due prove parziali. Volevo quindi dirle grazie, da parte mia e penso anche da parte di molti miei colleghi, perché si vede che mette passione in quello che fa e che ci tiene veramente a farci capire i concetti, anche a distanza, dalla Francia!

I also enjoy assisting people understand 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. Category Theory 2025 • Advances in Interactive and Quantitative Semantics, CIRM Marseille, May 2025 • EPIT 2025, Aussois, May 2025 • EuroProofNet WG6 2025, University of Genoa, April 2025 • ItaCa 2024, University of Padua, Dec 2024 • PSSL 109, University of Leiden, November 2024 • PRIN 2022 STENDHAL meeting, University of Pisa, Nov 2024 • 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, 3nd 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 Bicategories, 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^{th} 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), native.
Italian, native.

REFEREES.

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Nantes, France, the 24th of September 2025

Matteo Spadetto,