Ivan **Di Liberti**

University of Gothenburg, Renströmsgatan 6, Göteborg

✉ diliberti.math@gmail.com | ⌂ diliberti.github.io

Research keywords

Logic, Foundations of Mathematics, Category theory

Doctrines, (2-)toposes, sketches, accessible and locally presentable (2-)categories, semantics of type theory, formal category theory.

Appointments

Assistant Professor (biträdande lektor) — *Gothenburg, Sweden*

University of Gothenburg, Department of Philosophy, Linguistics and Theory of Science — *since Jan 2025*

Coordinator of the Master in Logic at Gothenburg University

Postdoc — *Gothenburg, Sweden*

University of Gothenburg, Department of Philosophy, Linguistics and Theory of Science — *Oct 2023 - Dec 2024*

Project: Logical Foundations of Circularity

Supervisor: Graham Leigh

Postdoc — *Stockholm, Sweden*

Stockholm University, Department of Mathematics — *Jan 2022 - Sept 2023*

Project: Cubical methods for computer formalization of mathematics

Supervisor: Anders Mortberg

Postdoc — *Prague, Czech Republic*

Czech Academy of Sciences, Institute of Mathematics — *Jul 2020 - Dec 2021*

Project: Abstract Convergence Schemes And Their Complexities

Coordinator: Wiesław Kubiś

Education

Ph.D. in Mathematics — *Brno, Czech Republic*

Masaryk University — *Feb. 2017 - Sept. 2020*

Dissertation: The Scott Adjunction

Advisor: Jiří Rosický

MSc in Mathematics — *Pisa, Italy*

Università di Pisa — *Mar. 2015 - Dec. 2016*

Dissertation: A survey on Barr's Theorem

Advisors: Nicola Gambino, Alessandro Berarducci

BSc in Mathematics — *Pisa, Italy*

Università di Pisa — *Sept. 2011 - Mar. 2015*

Dissertation: Definable groups in o-minimal structures

Advisor: Alessandro Berarducci

Publications

2024 **Bi-accessible and bipresentable 2-categories**, — *j/w Axel Osmond*
Applied Categorical Structures. arXiv:2203.07046.

2024 **Adjoint functor theorems for lax-idempotent pseudomonads**, — *j/w Arkor, Loregian*
Theory and Application of Categories. Vol. 41, 2024, No. 20, pp 667-685.

2024 **Context, Judgement, Deduction**, — *j/w Greta Coraglia*
Accepted by Proceedings of CatMi 2023. arXiv:2111.09438.

2024 **Coalgebras for Vietoris and monadicity**, — *j/w Marco Abbadini*
The Journal of Symbolic Logic. 10.1017/jsl.2024.14.

2024 **The geometry of coherent topoi and Ultrastructures**,
Conditionally accepted by The Journal of Symbolic Logic. arXiv:2211.03104.

2023 **Formal Model Theory & Higher Topology**,
Mathematical Logic Quarterly. 10.1002/malq.202300006.

2023 **KZ-pseudomonads and Kan Injectivity**, — *j/w Lobbia, Sousa*
Theory and Applications of Categories, arXiv:2211.00380.

2022 **Accessibility and Presentability in 2-categories**, — *j/w Fosco Loregian*
Journal of Pure and Applied Algebra, 10.1016/j.jpaa.2022.107155.

2022	**Exponentiable Grothendieck categories in flat Algebraic Geometry**,	*j/w Julia Ramos González*

2022 **Exponentiable Grothendieck categories in flat Algebraic Geometry**, *j/w Julia Ramos González*
Journal of Algebra, 10.1016/j.jalgebra.2022.03.040.

2022 **Enriched locally generated categories**, *j/w Jiří Rosický*
Theory and Applications of Categories, Vol. 38, 2022, No. 17, pp 661-683.

2021 **General facts on the Scott Adjunction**,
Applied Categorical Structures, 10.1007/s10485-021-09666-6.

2021 **Towards Higher Topology**,
Journal of Pure and Applied Algebra, 10.1016/j.jpaa.2021.106838.

2021 **Functorial Semantics for Partial Theories**, *j/w Loregian, Nester, Sobocinski*
Symposium on Principles of Programming Languages (POPL21), 10.1145/3434338.

2020 **Codensity: Isbell duality, pro-objects, compactness and accessibility**,
Journal of Pure and Applied Algebra, 10.1016/j.jpaa.2020.106379

2020 **Gabriel-Ulmer duality for topoi and its relation with site presentations**, *j/w Julia Ramos González*
Applied Categorical Structures, 10.1007/s10485-020-09605-x

2019 **Weak saturation and weak amalgamation property**,
Journal of Symbolic Logic, 10.1017/jsl.2019.45

2018 **Homotopical Algebra is not concrete**, *j/w Fosco Loregian*
Journal of Homotopy and Related Structures, 10.1007/s40062-018-0197-3

Preprints

2025 **Logics and Concepts in the 2-category of Topoi**, *j/w Ye*
arXiv:2504.16690. Submitted.

2024 **Topoi with enough points**, *j/w Rogers*
arXiv:2403.15338.

2024 **Sketches and Classifying Logoi**, *j/w Lobbia*
arXiv:2403.09264. Submitted to Advances in Mathematics.

Teaching

Introduction to Categorical Logic, *2025*
Lecturer, Tsinghua Logic Summer School, Tsinghua University, Beijing, China. j/w Lingyuan Ye

Denotational semantics of (dependent) type theory, *2025*
Lecturer, Master in Logic, Gothenburg University, Gothenburg, Sweden.

Set Theory, *2025*
Lecturer, Master in Logic, Gothenburg University, Gothenburg, Sweden.

Model Theory, *2024, 2025*
Lecturer, Master in Logic, Gothenburg University, Gothenburg, Sweden.

Category Theory, *2024, 2025*
Lecturer, Master in Logic, Gothenburg University, Gothenburg, Sweden.

Functorial Semantics, *2024, 2025*
Lecturer, Master in Logic, Gothenburg University, Gothenburg, Sweden.

Introduction to Topos Theory, *2024*
Lecturer, PhD course, Gothenburg University, Gothenburg, Sweden.

Categorical Logic, *2023*
Lecturer, PhD course, Stockholm University, Stockholm, Sweden.

Sheaves, Manifolds and Cohomology, *2021*
Lecturer, Master in Mathematics, Charles University, Prague, Czechia. j/w Andrea Gagna.

Category Theory, *2020*
Lecturer, Excellence course for researchers, Institute of Mathematics, Czech Academy of Sciences, Prague, Czechia.

Topology, *2019, 2020*
Teaching Assistant, Bachelor in Mathematics, Masaryk University, Brno, Czechia.

Topics in Category Theory, *2018, 2019*
Lecturer, Master in Mathematics, Masaryk University, Brno, Czechia. j/w John Bourke.

Rings and Modules, *2017*
Teaching Assistant, Bachelor in Mathematics, Masaryk University, Brno, Czechia.

Supervision

PhD students,

- <u>Robin Jourde</u>: cosupervision of his PhD studies on Mathematical fondations of Skeletal semantics. Savoie Mont Blanc University. *Ongoing*.
- <u>Xiao Hu</u>: supervision for a project on topos-theoretic approaches to dividing lines, Sichuan University. *Ongoing*.
- <u>Errol Yuksel</u>: supervision for a project on topos-theoretic Galois theory, Stockholm University. *Ongoing*.

Master students,

- <u>Jonathan Osser</u>, A 2-Sketchy Approach to Type Theory. Master in Logic. University of Amsterdam.
- <u>Alessio Zaninotto</u>, Boolean-valued models of Set Theory. Master in Logic. Gothenburg University.
- <u>Guido Boccali</u>, Classifying topoi, generic semantics, and Morita theory. MSc (Philosophy). University of Torino.

Bachelor students,

- <u>Vít Jelínek</u>: Categorical View of Monads in Computer Science, Computer Science, Masaryk University.
- <u>Kento Okura</u>: Sheaf Semantics over the Étale Site, Mathematics, Vienna University.
- <u>Jonathan Osser</u>: Exploring the Mathematical Multiverse, a brief overview of Elementary Topoi and their Internal Language, Mathematics, Stockholm University cosupervised with Anders Mortberg.

Other forms of supervision,

- <u>Lingyuan Ye</u>: project for his Master studies on Givant categoricity theorem. MSc (M). Institute of Logic, Language and Computation, Amsterdam.

SIGPLAN long-term mentorship program,

The SIGPLAN long-term mentorship program. helps junior researchers and master students to form long-term connections in the programming languages community, and to access the perspectives of researchers from other institutions. From Summer 2021 to Summer 2025 I mentored in this project.

Organising roles and Scientific Committees

Programme and Scientific Committees,

- **Types 2026**
- ItaCa 2025 (chair)
- Bohemian Logical & Philosophical Café (2021)
- ItaCa Fest (2020-now)
- ItaCa 2019
- Peripatetic Seminar on Sheaves and Logic 103 (2018)

Organising Roles,

- Gothenburg Cyclothon 2025
- **Logic Colloquium 2024**
- Bohemian Logical & Philosophical Café (2021)
- Masaryk University Algebra Webinar (2020)
- Peripatetic Seminar on Sheaves and Logic 103 (2018)

2025-2029 **Supervisory committee member for the Ph.D of Laura Stéphy Constant**,

Responsibilities include evaluating annual progress reports and thesis presentations, participating in committee meetings (initially online, later in person), and contributing to the final thesis evaluation and defense at Louvain-la-Neuve. The role also involves potential research visits and academic exchanges between institutions during the doctoral period.

2025 **Reviewer for Grant evaluation for the Czech Science Foundation (GAČR)**,

I served as a *foreign* reviewer for the Czech Science Foundation (GAČR) in evaluating a Standard three-year GAČR grant.

Community

ItaCa, Promoting Committee,

ItaCa is the Italian community of category theory. The project was founded by Giuseppe Metere in 2019.

- (2019) I was invited to join the **Scientific Committee** of ItaCa 2019 (University of Milano), the first official meeting of the community. Since this invitation I have been an active member of ItaCa.
- (2019 - now) I joined the **Program Committee** of ItaCa Fest. ItaCa Fest is a webinar aimed to gather the community of ItaCa.
- (2021 - now) I am one of the members of the Promoting Committee, this is the coordinating committee of the entire project.
- (2025) Chair of the **Scientific Committee** of ItaCa 2025 (University of Milano).
- (2025 - now) Co-chair of the **Mentorship program** of ItaCa.

Referee Activity,

- Advances in Mathematics
- The Journal of Symbolic Logic
- Annals of Pure and Applied Logic
- Journal of Pure and Applied Algebra
- Canadian Journal of Mathematics
- Theory and Applications of Categories
- Applied Categorical Structures
- Mathematical Structures in Computer Science
- Algebra Universalis
- Compositionality
- Symposium on Logic in Computer Science
- Conference on Mathematical Foundations of Programming Semantics
- International Conference on Formal Structures for Computation and Deduction
- Annual Conference on Computer Science Logic.

MathOverflow, top 0.1 % user,
MathOverflow is a mathematics question-and-answer (Q&A) website, which serves as an online community of researchers in mathematics. It allows users to ask questions, submit answers, and rate both, all while getting merit points for their activities. It is a part of the Stack Exchange Network and has an internal rating system based on the reputation gained by the users within the website. Here is my profile webpage.

The Scandinavian Logic Society, Member,
Since late 2024 I am a member of the Scandinavian Logic Society.

Invited Visits

2025 **University of Stockholm, Stockholm**,
Invited speaker at local research seminar by Peter Lumsdaine.

2025 **Tsinghua University, Beijing**,
Guest Lecturer for the Tsinghua Logic Summer School.

2025 **University of Milan, Milan**,
Invited speaker at local research seminar by Luca Reggio.

2025 **University of Bologna, Bologna**,
Invited speaker at local research seminar by Martino Lupini.

2024 **Tallinn University of Technology, Tallin**,
Collaboration with Loregian and Arkor.

2024 **University of Bologna, Bologna**,
Invited speaker at local research seminar by Martino Lupini. Cancelled because of health issues.

2022 **Manchester University, Manchester**,
Collaboration with Nicola Gambino.

2022 **Université catholique de Louvain, Louvain**,
Collaboration with Julia Ramos Gonzalez.

2022 **Université Paris Nord, Paris**,
Collaboration with Morhan Rogers.

2021 **Institute de recerche et informatique fondamentale (IRIF), Paris**,
Collaboration with prof. Paul-André Mellies and Axel Osmond.

2019 **Institute de recerche et informatique fondamentale (IRIF), Paris**,
Collaboration with prof. Sam van Gool.

2019 **Antwerp University**,
Collaboration with Julia Ramos Gonzalez.

2018 **Max Plank Institute, Bonn**,
Collaboration with Fosco Loregian.

Selected Invited Talks

2025 **From Tarski to Lawvere, algebraic aspects of predicate logic**,
16th Tsinghua Logic Colloquium, Beijing, China.

2024 **Logics in the 2-category of topoi**,
Categorical Logic and Higher Categories, Manchester, UK.

2023 **2-Sketches of Deduction**,
Category Theory at Work in Computational Mathematics and Theoretical Informatics, Bergen, Norway.

2022 **The geometry of coherent topoi and ultrastructures**,
Invited speaker, YaMCATS, Manchester, UK.

2022 **Bi-accessible and bipresentable 2-categories**,
Invited speaker, WG6 kick-off meeting: Syntax and Semantics of Type Theories, Stockholm, Sweden.

2021 **Formal Model Theory and Higher Topology**,
Seminar Lecture, Yorkshire and Midlands Category Theory Seminar (YaMCATS), online.

2020 **Formal Model Theory and Higher Topology**,
HoTT Seminar, Carnegie Mellon University, Pittsburgh, USA.

2019 **Topos theoretic approaches to formal model theory**,
Seminar Lecture, Institute de recerche et informatique fondamentale, Paris, France.

2018 **The shape of water: Homotopical algebra and set functors**,
Seminar Lecture, Max Plank institut, Bonn, Germany.

Administrative Duties

2025/now **Coordinator of the Master's program in logic at Gothenburg University**,
The Coordinator oversees curriculum design, faculty coordination, and academic quality. They support students with advising, admissions, and research while ensuring compliance with university policies. Additionally, they act as the program's main representative, managing communications and external collaborations. *Since March 2025 I coordinate the Master in Logic.*

2025/now **Member of the Program Council for the Master in Logic (Programrådet)**,
This Council oversees curriculum development, quality assurance, and academic policies to ensure the program meets educational standards. *I serve in the Program Council for the Master in Logic since March 2025.*

2025/now **Member of the Education Group (Utbildningsgrupp)**,
The Education Group oversees teaching quality, curriculum development, and pedagogical innovation across the department. It focuses on broader educational strategies, faculty support, and accreditation, distinct from program-specific councils. *I serve in the Education Group since March 2025.*

2024/2025 **Member of the Postgraduate Education Group (FUG) at Gothenburg University**,
The Postgraduate Education Group (FUG) is an advisory body for postgraduate (third cycle) education at the department. FUG consists of representatives of the active supervisory boards, two representatives of the doctoral student board, and the responsible education administrator. Representatives are appointed by the Associate Head of Department for Doctoral Studies. *I served between 2024 and 2025.*

Thesis Reader (Granskare) at Stockholm University,
Stockholm University evaluation process for Bachelor and Master thesis is based on a double review system. A part of the evaluation comes from an opponent and another one comes from a reader (granskare). The granskare must assess whether the thesis is solid enough to be defended. During my stay in Stockholm I was granskare few times. 2022: Thea Li, The internal logic of a topos. 2023: Caroline Roos, Agda formalization of Lindenbaum-Tarski algebras. *I served between 2022 and 2023.*

Thesis Reader at Masaryk University,
Masaryk University evaluation process for Bachelor and Master thesis is based on a double review system. One review comes from the advisor of the student and another one comes from an internal opponent. Both the reviews must describe, discuss and finally score the thesis from A to F. During my PhD studies I was three times opponent for bachelor theses. 2019: Yuriy Dupyn, Algebraic Structures. 2018: Jan Jurka, Locally presentable categories. 2018: Vladislav Demenchuk, Elements of nonstandard analysis. *I served between 2017 and 2020.*