

# Ivan Di Liberti

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## Research keywords

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LOGIC, FOUNDATIONS OF MATHEMATICS, CATEGORY THEORY

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

## Appointments

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### Assistant Professor (biträdande lektor)

UNIVERSITY OF GOTHENBURG, DEPARTMENT OF PHILOSOPHY, LINGUISTICS AND THEORY OF SCIENCE

Coordinator of the [Master in Logic](#) at Gothenburg University

Gothenburg, Sweden

since Jan 2025

### Postdoc

UNIVERSITY OF GOTHENBURG, DEPARTMENT OF PHILOSOPHY, LINGUISTICS AND THEORY OF SCIENCE

Project: [Logical Foundations of Circularity](#)

Supervisor: [Graham Leigh](#)

Gothenburg, Sweden

Oct 2023 - Dec 2024

### Postdoc

STOCKHOLM UNIVERSITY, DEPARTMENT OF MATHEMATICS

Project: Cubical methods for computer formalization of mathematics

Supervisor: [Anders Mortberg](#)

Stockholm, Sweden

Jan 2022 - Sept 2023

### Postdoc

CZECH ACADEMY OF SCIENCES, INSTITUTE OF MATHEMATICS

Project: [Abstract Convergence Schemes And Their Complexities](#)

Coordinator: [Wiesław Kubiś](#)

Prague, Czech Republic

Jul 2020 - Dec 2021

## Education

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### Ph.D. in Mathematics

MASARYK UNIVERSITY

Dissertation: [The Scott Adjunction](#)

Advisor: [Jiří Rosický](#)

Brno, Czech Republic

Feb. 2017 - Sept. 2020

### MSc in Mathematics

UNIVERSITÀ DI PISA

Dissertation: A Survey on Barr's Theorem

Advisors: Nicola Gambino, Alessandro Berarducci

Pisa, Italy

Mar. 2015 - Dec. 2016

### BSc in Mathematics

UNIVERSITÀ DI PISA

Dissertation: Definable groups in o-minimal structures

Advisor: Alessandro Berarducci

Pisa, Italy

Sept. 2011 - Mar. 2015

## Publications

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2024 **Bi-accessible and bipresentable 2-categories**,  
Applied Categorical Structures. [arXiv:2203.07046](https://arxiv.org/abs/2203.07046).

j/w Axel Osmond

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

j/w Arkor, Loreanian

2024 **Context, Judgement, Deduction**,  
Accepted by Proceedings of CatMi 2023. [arXiv:2111.09438](https://arxiv.org/abs/2111.09438).

j/w Greta Coraglia

2024 **Coalgebras for Vietoris and monadicity**,  
The Journal of Symbolic Logic. [10.1017/jsl.2024.14](https://doi.org/10.1017/jsl.2024.14).

j/w Marco Abbadini

2024 **The geometry of coherent topoi and Ultrastructures**,  
Conditionally accepted by The Journal of Symbolic Logic. [arXiv:2211.03104](https://arxiv.org/abs/2211.03104).

2023 **Formal Model Theory & Higher Topology**,  
Mathematical Logic Quarterly. [10.1002/malq.202300006](https://doi.org/10.1002/malq.202300006).

2023 **KZ-pseudomonads and Kan Injectivity**,  
Theory and Applications of Categories, [arXiv:2211.00380](https://arxiv.org/abs/2211.00380).

j/w Lobbia, Sousa

2022 **Accessibility and Presentability in 2-categories**,  
Journal of Pure and Applied Algebra, [10.1016/j.jpaa.2022.107155](https://doi.org/10.1016/j.jpaa.2022.107155).

j/w Fosco Loregian

- 2022 **Exponentiable Grothendieck categories in flat Algebraic Geometry**,  
Journal of Algebra, [10.1016/j.jalgebra.2022.03.040](https://doi.org/10.1016/j.jalgebra.2022.03.040). j/w Julia Ramos González
- 2022 **Enriched locally generated categories**,  
Theory and Applications of Categories, Vol. 38, 2022, No. 17, pp 661-683. j/w Jiří Rosický
- 2021 **General facts on the Scott Adjunction**,  
Applied Categorical Structures, [10.1007/s10485-021-09666-6](https://doi.org/10.1007/s10485-021-09666-6).
- 2021 **Towards Higher Topology**,  
Journal of Pure and Applied Algebra, [10.1016/j.jpaa.2021.106838](https://doi.org/10.1016/j.jpaa.2021.106838).
- 2021 **Functorial Semantics for Partial Theories**,  
Symposium on Principles of Programming Languages (POPL21), [10.1145/3434338](https://doi.org/10.1145/3434338). j/w Loreanian, Nester, Sobociński
- 2020 **Codensity: Isbell duality, pro-objects, compactness and accessibility**,  
Journal of Pure and Applied Algebra, [10.1016/j.jpaa.2020.106379](https://doi.org/10.1016/j.jpaa.2020.106379)
- 2020 **Gabriel-Ulmer duality for topoi and its relation with site presentations**,  
Applied Categorical Structures, [10.1007/s10485-020-09605-x](https://doi.org/10.1007/s10485-020-09605-x) j/w Julia Ramos González
- 2019 **Weak saturation and weak amalgamation property**,  
Journal of Symbolic Logic, [10.1017/jsl.2019.45](https://doi.org/10.1017/jsl.2019.45)
- 2018 **Homotopical Algebra is not concrete**,  
Journal of Homotopy and Related Structures, [10.1007/s40062-018-0197-3](https://doi.org/10.1007/s40062-018-0197-3) j/w Fosco Loregian

## Preprints

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- 2026 **Craig interpolation for for subgeometric logics.**,  
[arXiv:2601.11221](https://arxiv.org/abs/2601.11221) New. j/w Ye
- 2025 **Classifying infinity Topoi via weighted limits**,  
[arXiv:2512.15613](https://arxiv.org/abs/2512.15613). New. j/w Meadows
- 2025 **Logics and Concepts in the 2-category of Topoi**,  
[arXiv:2504.16690](https://arxiv.org/abs/2504.16690). Submitted to Annals of Pure and Applied Logic. j/w Ye
- 2024 **Topoi with enough points**,  
[arXiv:2403.15338](https://arxiv.org/abs/2403.15338). Working on resubmission. j/w Rogers
- 2024 **Sketches and Classifying Logoi**,  
[arXiv:2403.09264](https://arxiv.org/abs/2403.09264). Submitted to Advances in Mathematics. j/w Lobbia

## Teaching

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- Introduction to Categorical Logic**,  
Lecturer, Tsinghua Logic Summer School, Tsinghua University, Beijing, China. j/w Lingyuan Ye 2025
- Semantics of (dependent) type theory**,  
Lecturer, Master in Logic, Gothenburg University, Gothenburg, Sweden. 2025
- Set Theory**,  
Lecturer, Master in Logic, Gothenburg University, Gothenburg, Sweden. 2025
- Model Theory**,  
Lecturer, Master in Logic, Gothenburg University, Gothenburg, Sweden. 2024, 2025
- Category Theory**,  
Lecturer, Master in Logic, Gothenburg University, Gothenburg, Sweden. 2024, 2025, 2026
- Functorial Semantics**,  
Lecturer, Master in Logic, Gothenburg University, Gothenburg, Sweden. 2024, 2025
- Introduction to Topos Theory**,  
Lecturer, PhD course, Gothenburg University, Gothenburg, Sweden. 2024
- Categorical Logic**,  
Lecturer, PhD course, Stockholm University, Stockholm, Sweden. 2023
- Sheaves, Manifolds and Cohomology**,  
Lecturer, Master in Mathematics, Charles University, Prague, Czechia. j/w Andrea Gagna. 2021
- Category Theory**,  
Lecturer, Excellence course for researchers, Institute of Mathematics, Czech Academy of Sciences, Prague, Czechia. 2020
- Topology**,  
Teaching Assistant, Bachelor in Mathematics, Masaryk University, Brno, Czechia. 2019, 2020
- Topics in Category Theory**,  
Lecturer, Master in Mathematics, Masaryk University, Brno, Czechia. j/w John Bourke. 2018, 2019

## Supervision

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**PhD students,**

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

**Master students,**

- Donglai Xie, Functorial Semantics of Type Coercion. Master in Logic. Gothenburg University. *Ongoing*.
- Aditya Prakash, Axiomatic Mal'cev conditions. Master in Logic. Gothenburg University. *Ongoing*.
- Yiannis Hadjicharalambous, Databases, provenance, and semirings. Master in Logic. Gothenburg University. Cosupervised with Phokion Kolaitis. *Ongoing*.
- Jonathan Osser, *A 2-Sketchy Approach to Type Theory*. Master in Logic. University of Amsterdam.
- Alessio Zaninotto, *Boolean-valued models of Set Theory*. Master in Logic. Gothenburg University.
- Guido Boccali, *Classifying topoi, generic semantics, and Morita theory*. MSc (Philosophy). University of Torino.

**Bachelor students,**

- Vít Jelínek: *Categorical View of Monads in Computer Science*, Computer Science, Masaryk University.
- Kento Okura: Sheaf Semantics over the Étale Site, Mathematics, Vienna University.
- Jonathan Osser: *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,**

- Adam Donadille: ENS internship for six months on topos theoretic approaches to forcing. MSc (CS). ENS de Lyon. *Ongoing*.
- Lingyuan Ye: 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

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**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

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**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](#)
- [Bulletin de la Société Mathématique de France](#)
- [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**

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### **2026 University of Ljubljana, Ljubljana,**

Invited speaker at local research seminar by Andrej Bauer.

### **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 recherche et informatique fondamentale (IRIF), Paris,**

Collaboration with prof. Paul-André Mellies and Axel Osmond.

### **2019 Institute de recherche 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**

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### **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 recherche et informatique fondamentale, Paris, France.
- 2018 **The shape of water: Homotopical algebra and set functors**,  
Seminar Lecture, Max Plank institut, Bonn, Germany.

## Selected Talks at recent conferences

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- 2025 **Call doctrines by your name**,  
Masaryk University, CT2025. Plenary speaker.
- 2024 **Topoi with enough points**,  
University of Gothenburg, Logic Colloquium 2024.
- 2023 **The geometry of coherent topoi & ultrastructures**,  
UCLouvain, CT2023.
- 2022 **Bi-accessible and bipresentable 2-categories**,  
Masaryk University, Peripatetic Seminar on Sheaves and Logic 106.
- 2021 **Enriched Locally Generated Categories**,  
University of Genova, Category Theory 2020->2021.
- 2021 **Formal Model Theory and Higher Topology**,  
Online, Logic Colloquium 2021.
- 2021 **Towards higher Topology**,  
Online, Toposes Online.

## Administrative Duties

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- 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.*

## **Training and Development**

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### **PIL101 at Gothenburg University,**

Teaching and Learning in Higher Education 1: Basic Course (PIL101). The mandatory modules offer an introduction to the pedagogical context in higher education and students' learning in higher education settings. They also address key aspects shaping higher education in Sweden, such as equality, ethics, and the laws, regulations, and local policy documents that govern university teachers' work. The elective modules have specific focuses. For instance, they may concentrate on a particular teaching method or be tailored to the needs of a specific faculty. [Ongoing](#).

### **PIL102 at Gothenburg University,**

Teaching and Learning in Higher Education 2: Subject Field Pedagogy (PIL102). The focus is on the organisation and planning of courses and modules. Contextual factors, goals, content, learning activities, teaching, evaluation, assessment methods and university students' independent studies as well as the impact of the choice of course design are included in the course. These topics are highlighted from different perspectives and the relationships between these are debated. Particular attention is devoted to the course syllabus document. [Ongoing](#).