

# Ivan Di Liberti

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## 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)

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

### 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

2024 **Bi-accessible and bipresentable 2-categories,**

Applied Categorical Structures. [arXiv: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, Loregian*

2024 **Context, Judgement, Deduction,**

Accepted by Proceedings of CatMi 2023. [arXiv:2111.09438](#).

*j/w Greta Coraglia*

2024 **Coalgebras for Vietoris and monadicity,**

The Journal of Symbolic Logic. [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](#).

2023 **Formal Model Theory & Higher Topology,**

Mathematical Logic Quarterly. [10.1002/malq.202300006](#).

2023 **KZ-pseudomonads and Kan Injectivity,**

Theory and Applications of Categories, [arXiv: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](#).

*j/w Fosco Loregian*

- 2022 **Exponentiable Grothendieck categories in flat Algebraic Geometry**, *j/w Julia Ramos González*  
Journal of Algebra, [10.1016/j.jalgebra.2022.03.040](https://doi.org/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](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**, *j/w Loregian, Nester, Sobocinski*  
Symposium on Principles of Programming Languages (POPL21), [10.1145/3434338](https://doi.org/10.1145/3434338).
- 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**, *j/w Julia Ramos González*  
Applied Categorical Structures, [10.1007/s10485-020-09605-x](https://doi.org/10.1007/s10485-020-09605-x)
- 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**, *j/w Fosco Loregian*  
Journal of Homotopy and Related Structures, [10.1007/s40062-018-0197-3](https://doi.org/10.1007/s40062-018-0197-3)

## Preprints

- 2025 **Logics and Concepts in the 2-category of Topoi**, *j/w Ye*  
[arXiv:2504.16690](https://arxiv.org/abs/2504.16690). Submitted.
- 2024 **Topoi with enough points**, *j/w Rogers*  
[arXiv:2403.15338](https://arxiv.org/abs/2403.15338).
- 2024 **Sketches and Classifying Logoi**, *j/w Lobbia*  
[arXiv:2403.09264](https://arxiv.org/abs/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

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### PhD students,

- [Robin Jourde](#): cosupervision of his PhD studies on Mathematical foundations 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 Yukse](#): supervision for a project on topos-theoretic Galois theory, Stockholm University. *Ongoing*.

### Master students,

- [Frank Tsai](#), TbD. Master in Logic. Gothenburg University. *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,

- [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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### 2025 Gothenburg Cyclothon, Organising Committee,

Member of the Organising Committee of the [Gothenburg Cyclothon](#).

### 2024 Logic Colloquium 2024, Organising Committee,

Member of the Organising Committee of the [Logic Colloquium](#).

### 2020/now ItaCa Fest, Scientific Committee,

[ItaCa Fest](#) is permanent online seminar of the Italian community of category theory. Since 2020 I am a member of the [Scientific Committee](#) that organizes the Fest. More information about my relationship with ItaCa is available in the Community section of the CV.

### 2021 Bohemian Logical & Philosophical Café, Founder, Scientific committee and Coordinator,

Since my arrival at the Maths Institute of the Czech Academy of Sciences I promoted and I have been the general coordinator of a new initiative of webinars in emerging topics in logic. The project has a quite broad scope and is willing to encompass a variety of subjects: theoretical computer science, category theory, mathematical logic, and philosophy. More information is available [here](#).

### 2020 Masaryk University Algebra Webinar, Founder and main organizer until July 2020,

During pandemics I promoted to transform the local Algebra permanent seminar of Masaryk University into a permanent webinar. Especially at the beginning the whole organization was upon myself, many of the first speakers were directly suggested by me. I maintained the webpage and the youtube channel until the end of my PhD studied. Nowadays the [webpage](#) and [youtube channel](#) are maintained by John Bourke.

### 2018 Peripatetic Seminar on Sheaves and Logic 103, Promoter and Coordinator,

PSSL103 is a Peripatetic event in Categorical Logic. During my first year of PhD (2018) I promoted an instance of this tradition in Masaryk University. Having the approval of my advisor and Peter Johnstone, I was in charge of the organization. I coordinated the effort of other researchers, such as John Bourke, Simon Henry, Fosco Loregian and Micheal Lieberman. The webpage of the event is not online anymore, but the event is listed in [this webpage](#).

## 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.

### Reviewer for Grant evaluation,

In Summer 2025 I served as a *foreign* reviewer for the Czech Science Foundation (GAČR) in evaluating a Standard three-year GAČR grant.

### Referee Activity,

- [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](#)
- [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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- 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.

## 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.*

## Professional Training and Development

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

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 during Fall 2025.**

### **PIL201 at Gothenburg University**,

Supervision in Postgraduate Programmes (PIL201). The course is directed to lecturers/researchers who supervise or plan to supervise in postgraduate programmes, irrespective of faculty. **Ongoing during Fall 2025.**