Ivan **Di Liberti**

Department of Philosophy, Linguistics and Theory of Science,
University of Gothenburg, Renströmsgatan 6, Göteborg

✉ diliberti.math@gmail.com | 🏠 diliberti.github.io | 🐦 ivandiliberti

Research keywords

LOGIC, FOUNDATIONS OF MATHEMATICS, CATEGORY THEORY

Categorical Logic, Stone-type dualities for propositional and first order logic, interactions between logic and geometry, categorical approaches to geometry and topology, accessible and locally presentable categories, toposes, sketches, semantics for type theories.

Appointments

Postdoc *Gothenburg, Sweden*

UNIVERSITY OF GOTHENBURG, DEPARTMENT OF PHILOSOPHY, LINGUISTICS AND THEORY OF SCIENCE *Oct 2023 - Oct 2026*
 Grant: Logical Foundations of Circularity
 Supervisor: Graham Leigh

Postdoc *Stockholm, Sweden*

STOCKHOLM UNIVERSITY, DEPARTMENT OF MATHEMATICS *Jan 2022 - Sept 2023*
 Grant: SRC 2019-04545
 Supervisor: Anders Mortberg

Postdoc *Prague, Czech Republic*

CZECH ACADEMY OF SCIENCES, INSTITUTE OF MATHEMATICS *Jul 2020 - Dec 2021*
 Grant: GX20-31529X
 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

2023   **The geometry of coherent topoi and Ultrastructures**,
  Conditionally accepted by Journal of Symbolic Logic. arXiv:2211.03104.

2023   **Formal Model Theory & Higher Topology**,
  Accepted by Mathematical Logic Quarterly. arXiv:2010.00319.

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*
  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

2023	**Adjoint functor theorems for lax-idempotent pseudomonads**,	*j/w Arkor, Loregian*
	arXiv:2306.10389. Submitted.	
2023	**Coalgebras for Vietoris and monadicity**,	*j/w Marco Abbadini*
	arXiv:2302.09529. Submitted.	
2022	**Bi-accessible and bipresentable 2-categories**,	*j/w Axel Osmond*
	arXiv:2203.07046. Submitted.	
2021	**Context, Judgement, Deduction**,	*j/w Greta Coraglia*
	arXiv:2111.09438. Submitted.	

Editorial

The Reasoner,

The Reasoner is a monthly digest highlighting exciting new research on reasoning, inference and method broadly construed. I joined the editorial board in late 2023.

Supervision

PhD students,

– Errol Yuksel: supervison for a project on topos-theoretic Galois theory, Stockholm University.

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.

– Alexander Lind: Semantics for relevance logics, Mathematics, Stockholm University cosupervised with Peter Lumsdane.

– 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,

– Fabian Ruch, project for his Master studies on General theory of Kan extensions and Kan lifts in the bicategory of Topoi. MSc (Logic). Gothenburg University. 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. Since Summer 2021 I am mentor in this project. I have 3 mentees.

Teaching

2024	**Category Theory**,
	Lecturer, Gothenburg University, Gothenburg, Sweden.
2024	**Functorial Semantics**,
	Lecturer, Gothenburg University, Gothenburg, Sweden.
2024	**Introduction to Topos Theory**,
	Lecturer, Gothenburg University, Gothenburg, Sweden.
2023	**Categorical Logic**,
	Lecturer, Stockholm University, Stockholm, Sweden.

2021	**Sheaves, Manifolds and Cohomology**,	*j/w Andrea Gagna*
	Lecturer, Charles University, Prague, Czechia.	
2020	**Category Theory**,	
	Lecturer, Institute of Mathematics, Czech Academy of Sciences, Prague, Czechia.	
2020	**Topology**,	
	Teaching Assistant, Masaryk University, Brno, Czechia.	
2019	**Topics in Category Theory**,	*j/w John Bourke*
	Lecturer, Masaryk University, Brno, Czechia.	
2019	**Topology**,	
	Teaching Assistant, Masaryk University, Brno, Czechia.	
2018	**Topics in Category Theory**,	*j/w John Bourke*
	Lecturer, Masaryk University, Brno, Czechia.	
2017	**Rings and Modules**,	
	Teaching Assistant, Masaryk University, Brno, Czechia.	

Awards

2021 **Masaryk University Vice-rector's award for excellent results in doctoral studies**,
Forty graduates of doctoral programmes and their lecturers have recently accepted from Vice-rector for research and doctoral studies Šárka Popíšilová an award for excellent achievements in their doctoral studies at Masaryk University.

Invited Visits

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 Talks at conferences

2023 **The geometry of coherent topoi & ultrastructures**,
UCLouvain, CT2023.

2022 **Bi-accessible and bipresentable 2-categories**,
Masaryk Universiry, Peripatetic Seminar on Sheaves and Logic 106.

2021 **Givant, Morley, Zilber**,
University of Genova, ItaCa21.

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.

2019 **The Scott Adjunction**,
University of Edinburgh, Category Theory 2019.

2018 **An axiomatic approach to Gabriel Ulmer duality**,
University of Azores, Category Theory 2018.

2017	**Weak saturation and weak amalgamation property**,
	University of Leeds, Peripatetic Seminar on Sheaves and Logic 101.

Service

ItaCa, Promoting Committee,

ItaCa is the Italian community of category theory. The project was founded by Giuseppe Metere in 2019. I was invited by Andrea Montoli to join the Programme commettee of ItaCa 1, the first official meeting of the commutiny. The event took place at the University of Milano, the webpage of the event is still available at this link. Since this invitation I have been an active member of ItaCa. In the same year I was invited to join the Program Commetee of ItaCa Fest. ItaCa Fest is a webinar aimed to gather the community of ItaCa. Click here to visit the webpage of the Fest. Since January 2021 I am one of the members of the Promoting Committee, this is the coordinating committee of the entire project.

Logic Colloquium 2024, Organising Committee,

In 2024 I was in the Organising Committee of the Logic Colloquium.

Bohemian Logical & Philosophical Café, Founder, Scientific commettee 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.

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 directely 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.

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.

Referee,

I was a referee for Theory and Applications of Categories, Applied Categorical Structures, Compositionality, Conference on Mathematical Foundations of Programming Semantics, International Conference on Formal Structures for Computation and Deduction.

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.

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.

MathOverflow, top 5 % 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.