Ivan **Di Liberti**

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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**, 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**, Journal of Algebra, 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.
2021	**Towards Higher Topology**, Journal of Pure and Applied Algebra, 10.1016/j.jpaa.2021.106838.
2021	**Functorial Semantics for Partial Theories**, Symposium on Principles of Programming Languages (POPL21), 10.1145/3434338. *j/w Loregian, Nester, Sobocinski*
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**, Applied Categorical Structures, 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
2018	**Homotopical Algebra is not concrete**, Journal of Homotopy and Related Structures, 10.1007/s40062-018-0197-3 *j/w Fosco Loregian*

Preprints

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

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

2023	**Categorical Logic**, Lecturer, Stockholm University, Stockholm, Sweden.	
2021	**Sheaves, Manifolds and Cohomology**, Lecturer, Charles University, Prague, Czechia.	*j/w Andrea Gagna*
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**, Lecturer, Masaryk University, Brno, Czechia.	*j/w John Bourke*
2019	**Topology**, Teaching Assistant, Masaryk University, Brno, Czechia.	
2018	**Topics in Category Theory**, Lecturer, Masaryk University, Brno, Czechia.	*j/w John Bourke*
2017	**Rings and Modules**, Teaching Assistant, Masaryk University, Brno, Czechia.	

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 Compositionality (1), Conference on Mathematical Foundations of Programming Semantics (1) and Applied Categorical Structures (1), International Conference on Formal Structures for Computation and Deduction (1).

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.