Gabriele Lobbia

Postdoctoral Researcher

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Professional Experience

- Mar 2024 **Postdoctoral Researcher (Assegnista di Ricerca)**, Universitá di Bologna (Department of Computer Science), Bologna, Italy, working with Fabio Zanasi on the project Resource Awareness in Programming.
- 2022 2024 **Postdoctoral Researcher**, *Masaryk University (Department of Mathematics)*, Brno, Czech Republic.
 - Aug-Dec **Part-Time Researcher**, *Masaryk University*, Brno, Czech Republic, working with John Bourke 2021 on skew monoidal categories, multicategories and connections with higher dimensional categories.
 - 2019–2021 Teaching Assistant, University of Leeds, UK.
 - Feb 2017 Substitute Teacher, Liceo Falcone Borsellino, Arese (MI), Italy.

Education

- 2018–2022 PhD in Mathematics, School of Mathematics, University of Leeds, UK.
 Funded by an EPSRC Scholarship, Oct 2018 Feb 2022,
 Supervisors: Dr. N. Gambino and Prof. P. Martin
 Thesis: Pseudomonads, Relative Monads and Strongly Finitary Notions of Multicategory
 Examiners: Prof. M. Fiore and Dr. J. Faria Martins
- 2016–2018 ALGANT Master Program Degree (M.S.). Università degli studi di Milano 110/110 cum laude, Universität Regensburg 1.0/1.0 Advisor: Prof. Dr. Denis-Charles Cisinski Thesis Title: Kan Complexes as a Univalent Model of Type Theory
- 2013–2016 Laurea Triennale in Matematica (B.S.), Università degli studi di Milano, 110/110.

Research Interests

Category theory, higher category theory, categorical logic, universal algebra, multicategories, monoidal categories, skew structures, sketches, categorical algebra, theoretical computer science.

Publications and Preprints

- 2024* **Sketches and Classifying Logoi**, with Ivan Di Liberti preprint, available at arXiv:2403.09264.
- 2023* A finite approach to representable multicategories and related structures preprint, available at arXiv:2312.06237.
- 2023* Some Remarks on the Interchange in Gray-categories, with Nicola Di Vittorio preprint, available at arXiv:2310.03503.
- 2024 **KZ-pseudomonads and Kan Injectivity**, with Ivan Di Liberti and Lurdes Sousa *Theory and Applications of Categories (Bunge Festschrift)*, 40 (16), pp 430-478.
- 2023 A skew approach to enrichment for Gray-categories, with John Bourke Advances in Mathematics, vol. 434:109327, preprint available at arXiv:2212.12358.
- 2023 Ditributive laws for relative monads Applied Categorical Structures, 37 (19), preprint available at arXiv:2007.12982.
- 2021 **On the formal theory of pseudomonads and pseudodistributive laws**, with Nicola Gambino *Theory and Applications of Categories*, 37 (2), pp. 14-56.

Scholarships, Awards and Grants

- 2024 **Seal of Excellence** for the project proposal 3DALG (3-Dimensional Algebra) submitted under the *Horizon Europe Marie Skłodowska-Curie Actions* call HORIZON-MSCA-2023-PF-01-01.
- 2018–2022 EPSRC PhD Scholarship
- 2017 2018 Erasmus Grant to study (10 months) in Regensburg, Germany

Conference Talks

- 2024 Sketches and Classifying Logoi, CT2024, Santiago de Compostela, contributed (plenary), June.
- 2023 **2-dimensional Aspects of the Theory of Sketches**, 4^{th} ItaCa Workshop, Turin, contributed, December.

A Skew Approach to Enrichment for Gray-categories, PSSL 107, Athens, contributed, April.

- 2022 Kan Injectivity and KZ-monads, SYCO 9, Como, contributed, September.
- 2021 Finitary Definitions of Multicategory, CT20→21, Genova, contributed, September.
- 2019 The Formal Theory of Pseudomonads, 1st ItaCa Workshop, Milano, contributed, December. The Formal Theory of Pseudomonads, Postgraduate Conference in Category Theory and its Applications, Leicester, invited, November.

Seminar Talks

2023 **Some Remarks on the Interchange in Gray-categories**, Masaryk University Algebra Seminar, contributed, November.

A skew approach to enrichment for Gray-categories, *ItaCa Fest 2023*, online, invited, October. A skew approach to enrichment for Gray-categories Part 2, Masaryk University Algebra Seminar, contributed, April.

- 2022 KZ-monads and Kan injectivity, Masaryk University Algebra Seminar, contributed, May.
- 2021 A nice picture of 2-cats, Se Mi Narri, Pavia online, invited, March.
- 2020 **Distributive laws for relative monads**, Masaryk University Algebra Seminar, Brno online, invited, December.

Monoidal Categories vs Multicategories, Postgraduate Logic seminar, Leeds online, contributed, November.

Distributive laws for relative monads, Virtual Logic Seminar, Leeds online, contributed, June. **Everything is connected, everything is Yoneda**, Pure Postgraduate seminar, Leeds, contributed, February.

A Formal Approach to Generalisations of Monads, Category Theory Seminar, Cambridge, invited, January.

2019 **The Formal Theory of Pseudomonads**, Proofs, computations and constructions, Leeds, contributed, November.

A nice picture of 2-cats, Pure Postgraduate Seminar, Leeds, contributed, March.

2018 Kan Complexes as a Univalent Model of Type Theory, Postgraduate Logic seminar, Leeds, contributed, October.

Conferences, Workshops and Summer/Winter Schools

- 2024 CT 2024, Santiago de Compostela, 23-29 June (contributed talk).
- 2023 4th ItaCa Workshop, Turin, 18-19 December (contributed talk).
 CT 2023, Louvain-la-Neuve, 2-8 July.

PSSL 107 (Peripatetic Seminar on Sheaves and Logic), Athens, 2-3 April (contributed talk).

2022 **3**rd **ItaCa Workshop**, Pisa, 21-22 December.

SYCO 9 (Symposium on Compositional Structures), Como, 8-9 September (contributed talk).
Bicategories, Categorification and Quantum Theory (Summer School), Leeds, 11-15 July.
TACL 2022 (Topology, Algebra and Categories in Logic), Coimbra, 20-24 June.
PSSL 106 (Peripatetic Seminar on Sheaves and Logic), Brno, 14-15 May.
ItaCa Fest 2022, online, April-November.

- 2021 2nd ItaCa Workshop, Genova, 20-21 December.
 CT20→21, Genova, 30 August-4 September.
 ItaCa Fest 2021, online, April-June.
- 2020 ItaCa Fest 2020, online, June-December.
- 2019 $\mathbf{1}^{st}$ ItaCa Workshop, Milano, 19-20 December (contributed talk).

SYCO 6 (Symposium on Compositional Structures), Leicester, 16-17 December.

Postgraduate Conference in Category Theory and its Applications, Leicester, 18-19 November (invited talk).

CT 2019, Edinburgh, 7-13 July.

Higher Topos Theory and Univalent Foundations (Summer School), Leeds, 24-28 June. **PSSL 105** (Peripatetic Seminar on Sheaves and Logic), Palermo, 18-19 May.

Teaching Experience

- 2024 Teaching assistant, University of Bologna, for the course Informatica Teorica.
- 2019–2021 Teaching assistant, University of Leeds
 - MATH1400 Modelling with Differential Equations, tutorials (≈ 10 students), Spring 2020;
 - MATH1060 Introductory Linear Algebra, tutorials (≈ 10 students), Spring 2020;
 - MATH2022 Groups and Vector Spaces, workshops (≈ 40 students) Autumn 2019, marking/dropin sessions Autumn 2020;
 - MATH1225 Introduction to Geometry, tutorials (≈ 10 students), Autumn 2019;
 - MATH3044 Number Theory, marking, Spring 2019;
 - MATH1026 Sets, Sequences and Series, tutorials (≈ 10 students), Spring 2019, 2021.
 - Feb 2017 **Substitute Teacher** for a first year and a second year Scientifico classes and a first year Linguistico class, Liceo Scientifico e Linguistico "G. Falcone P. Borsellino" (Arese, MI, Italy)

Other Professional Experience

- 2023– **Reviewer** for *Higher Structures*, *Applied Categorical Structures*, *Theory and Applications of Categories* and *ACT 2024*.
- May 2022 Organising Committee, PSSL 106 (Peripatetic Seminar on Sheaves and Logic), Brno.
- 2020- Social media manager of ItaCa, the Italian community of category theory.
- 2019-2021 **Co-organiser** of the Pure Postgraduate Seminar, Leeds.
- June 2019 Organising Committee, Higher Topos Theory and Univalent Foundations School, Leeds.

Professional Memberships

2018-2021 Student member of the Association for Symbolic Logic

Computer Skills

Languages LATEX, C Platforms Windows Languages

Italian Native English Fluent