Joshua Wrigley

Curriculum Vitae

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School of Mathematical Sciences, Mile End Road, London E1 4NS, UK

Research interests

Topos theory, model theory, logic, type theory, category theory.

Appointments

Apr.–Dec. 2024 **Queen Mary, University of London** – London, UK
Research Assistant,
Principal investigator: Prof. Ivan Tomašić.

Education

2020 – 2024 **Università degli Studi dell'Insubria** – Como, Italy
Dottorato di ricerca in informatica e matematica del calcolo (PhD),
Thesis: *Doctrinal and Groupoidal Representations of Classifying Topoi,*
Awarded *cum laude,*
Supervisor: Prof. Olivia Caramello.

2019 – 2020 **Lincoln College, University of Oxford** – Oxford, UK
Masters in Mathematics (MMath), Classification: First class,
Dissertation: *Aspects of Stone Duality for Boolean Algebras,*
Supervisor: Prof. Hilary Priestley.

2016 – 2019 **Lincoln College, University of Oxford** – Oxford, UK
Bachelor of Mathematics (BA), Classification: First class.

Publications

2024 **The Representing Localic Groupoid for a Geometric Theory**, with Graham Manuell,
Expositions in Theory and Applications of Categories, 2024, No. 2, pp 1-41 (link).

Preprints

2024   **Topoi with enough points and topological groupoids,** arXiv:2408.15848.

2024   **Existentially closed models and locally zero-dimensional toposes,** with Mark Kamsma, arXiv:2406.02788.

2023   **On Topological Groupoids that Represent Theories,** arXiv:2306.16331.

2023   **The Geometric Completion of a Doctrine,** arXiv:2304.07539.

2023   **Some Properties of Internal Locale Morphisms Externalised,** arXiv:2301.00961.

Teaching experience

2023 – 2024   **Graduate tutor** (Università degli Studi dell'Insubria)
Topics in category theory – 36 hrs (course lecturer: Prof. Olivia Caramello).

2022 – 2023   **Graduate tutor** (Università degli Studi dell'Insubria)
Topos theory – 36 hrs (course lecturer: Prof. Olivia Caramello).

2021 – 2022   **Undergraduate tutor** (Università degli Studi dell'Insubria)
- *Algebra 1* – 12 hrs (course lecturer: Prof. Valerio Monti),
- *Algebra 2* – 12 hrs (course lecturer: Prof. Valerio Monti),
- *Geometria 1* – 12 hrs (course lecturer: Prof. Olivia Caramello).

Honours and scholarships

2020   Insubria-Huawei scholarship,
A studentship for research into Grothendieck toposes for Information and Computation, with the aim to further the development of the theory of topos-theoretic 'bridges' in connection with relevant topics in classical model theory, duality and non-classical logics;

2020   L.H. Martin Prize;

2019   Lord Crewe Scholarship;

2018   Lincoln College Scholarship;

2017   Stewart Exhibition.

Presentations

1 July, 2024   **A bi-equivalence between topoi with enough points and a localisation of topological groupoids.** (Abstract),
Topology, Algebra and Categories in Logic 2024, Universitat de Barcelona, Spain.

Apr. 15, 2024   **A topos-theoretic framework for reconstruction theorems in model theory.** (Abstract),
12th Symposium on Compositional Structures, University of Birmingham, UK.
Recording available here.

Dec. 18, 2023   **A cylindrical Diaconescu's equivalence.** (Abstract),
4th ItaCa Workshop, Università degli Studi di Torino, Turin, Italy.

Sept. 28, 2023   **Topological groupoids for classifying toposes.** (Abstract),
ItaCa Fest 2023, (online),
Recording available here.

July 4, 2023   **When are there enough model isomorphisms? Representing groupoids for classifying toposes.** (Abstract),
Category Theory 2023, Université catholique de Louvain, Louvain-la-Neuve, Belgium,
Recording available here.

May 30, 2023   **Eliminating imaginaries and adding structure: how does the geometric completion fit in?** (Abstract),
Workshop on Doctrines and Fibrations, Università degli Studi di Padova, Padua, Italy,
Recording available here.

Apr. 21, 2023   **The Geometric and Sub-Geometric Completions of Doctrines**,
11th Symposium on Compositional Structures, École Polytechnique, Palaiseau, France,
Recording available here.

Nov. 24, 2022   **Dynamical Objects: Categoric and Topos-Theoretic Techniques for Deep Neural Networks** (Abstract),
Matematica per l'Intelligenza Artificiale e il Machine Learning - Giovani ricercatori,
Politecnico di Torino, Turin, Italy.

Sept. 23, 2022   **The Geometric Completion of a Doctrine** (Abstract),
Categories and Companions Symposium, (online),
Recording available here.

July 18, 2022   **Notions of 'Point' in Point-Free Topology**,
Domoschool - International Alpine School of Mathematics and Physics, Association ARS.UNI.VCO, Domodossola, Italy.

Dec. 20, 2021	**A Topos-Theoretic Perspective on Properly Discontinuous Actions** (Abstract), *2ⁿᵈ ItaCa Workshop*, Università degli Studi di Genova, Genoa, Italy, Recording available here.
June 29, 2021	**The Logic and Geometry of Localic Morphisms**, *Toposes Online*, Università degli Studi dell'Insubria and l'IHES, (online), Recording available here.
June 9, 2021	**From Lindenbaum-Tarski Algebras to Classifying Toposes** (Abstract), *Categories and Companions Symposium*, (online), Recording available here.

Service

Sept. 8-9, 2022	**Local Organiser** *9ᵗʰ Symposium on Compositional Structures*, Como, Italy.

Languages

English (fluent), Italian (advanced, B2/C1).

References

Prof. Olivia Caramello,
Università degli Studi dell'Insubria,
E-mail: olivia.caramello@uninsubria.it.

Prof. Maria Emilia Maietti,
Università degli Studi di Padova,
Tel: +39 334 856 6814,
E-mail: maietti@math.unipd.it.