

Joshua Wrigley

jwrigley@uninsubria.it • josh.l.wrigley@gmail.com • +44 7532 069 073

Via Valleggio 11, Como 22100 (CO), Italy

Research interests

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

Education

- 2020 – Present **Università degli Studi dell’Insubria** – Como, Italy
Dottorato di ricerca in informatica e matematica del calcolo,
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.

Preprints

- 2023 **On Topological Groupoids that Represent Theories**, [arXiv:2306.16331](#).
- 2023 **The Representing Localic Groupoid for a Geometric Theory**, with Graham Manuell, [arXiv:2305.15209](#).
- 2023 **The Geometric Completion of a Doctrine**, [arXiv:2304.07539](#).
- 2023 **Some Properties of Internal Locale Morphisms Externalised**, [arXiv:2301.00961](#).

Teaching experience

- 2022 – Present **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](#).

Research experience

- 2019 **Summer Research Project**, Mathematical Institute, University of Oxford,
Algebraic and relational models for certain non-classical propositional logics,
Supervisor: [Prof. Hilary Priestley](#),
Awarded an Undergraduate Research Bursary by the Mathematical Institute.
- 2018 **Summer Research Project**, Mathematical Institute, University of Oxford,
Integration in finite terms,
Supervisor: [Prof. Kevin McGerty](#),
Awarded an Undergraduate Research Bursary by the [London Mathematical Society](#).

Presentations

- 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: Categorical 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.UNIVCO, 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.

Technical skills

Software and Programming Languages

LaTeX, MATLAB, Agda.

Languages

English (fluent), Italian (advanced), Chinese Mandarin (conversational).

References

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