

# Joshua Wrigley

[jwrigley@uninsubria.it](mailto:jwrigley@uninsubria.it) • [josh.l.wrigley@gmail.com](mailto: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     **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

- Apr. 21, 2023 **The Geometric and Sub-Geometric Completions of Doctrines**,  
[11<sup>th</sup> 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).
- 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](#)),  
*2<sup>nd</sup> 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**  
*9<sup>th</sup> Symposium on Compositional Structures*, Como, Italy.

## Technical skills

### Software and Programming Languages

Λ<sub>T</sub>EX, 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](mailto:olivia.caramello@uninsubria.it).