

# Curriculum Vitae

Luca Reggio

## Contact

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## Personal information

*Name and surname:* Luca Reggio

*Nationality:* Italian

*Date of birth:* July 31, 1989

*Place of birth:* Monza, Italy

## Current position

**02/2022 – ongoing**      **Senior Research Fellow**  
Department of Computer Science, University College London (UCL)

## Previous positions

**02/2020 – 01/2022**      **Marie Skłodowska-Curie Research Fellow**  
Department of Computer Science, University of Oxford  
Project: “Duality for finite models: relating structure to power”  
Supervisor: Samson Abramsky

**08/2019 – 01/2020**      **Postdoctoral researcher**  
Mathematical Institute, University of Bern  
Supervisor: George Metcalfe

**10/2018 – 07/2019**      **Postdoctoral researcher**  
Institute of Computer Science of the Czech Academy of Sciences, Prague  
Supervisor: Petr Cintula

## Education

- 09/2015 – 09/2018**      **Doctorat de Mathématiques**, *mention très honorable*  
 Institut de Recherche en Informatique Fondamentale (IRIF), Paris-Diderot,  
 Université de Paris  
*Title*: “Quantifiers and duality”  
*Defence*: September 10, 2018 in Paris  
*PhD supervisor*: Mai Gehrke
- 09/2012 – 04/2015**      **Masters of Mathematics**, *cum laude*  
 Department of Mathematics, Università degli Studi di Milano Statale  
*MSc thesis*: “Stone duality above dimension zero”  
*MSc thesis supervisor*: Vincenzo Marra
- 09/2008 – 02/2012**      **Bachelor of Mathematics**, *with full marks*  
 Department of Mathematics, Università di Trento

## List of publications

Copies of all articles and manuscripts listed below are available at the following address:

<https://lucareggio.github.io/publications/>

1. M. Abbadini, **L. Reggio**. Barr-exact categories and soft sheaf representations. *Journal of Pure and Applied Algebra* **227**, issue 12, 107413 (2023).
2. G. Metcalfe, **L. Reggio**. Model completions for universal classes of algebras: necessary and sufficient conditions, *Journal of Symbolic Logic* **88**, issue 1, 381–417 (2023).
3. **L. Reggio**. Polyadic sets and homomorphism counting, *Advances in Mathematics* **410**, Part A, 108712 (2022).
4. M. Gehrke, T. Jakl, **L. Reggio**. A Cook’s tour of duality in logic: From quantifiers, through Vietoris, to measures, *to appear in a volume, dedicated to Samson Abramsky, of the Springer series Outstanding Contributions in Logic*.
5. M. Gehrke, T. Jakl, **L. Reggio**. A duality theoretic view on limits of finite structures: Extended version, *Logical Methods in Computer Science* **18**, issue 1, 16:1–16:38 (2022).
6. S. Abramsky, **L. Reggio**. Arboreal categories and resources, *International Colloquium on Automata, Languages, and Programming (ICALP), LIPIcs* **198**, 115:1–115:20 (2021).
7. A. Dawar, T. Jakl, **L. Reggio**. Lovász-type theorems and game comonads, *Proceedings of the 36th Annual ACM/IEEE Symposium on Logic in Computer Science (LiCS)*, 1–13 (2021).
8. **L. Reggio**. Beth definability and the Stone-Weierstrass Theorem, *Annals of Pure and Applied Logic* **172**, 102990 (2021).

9. M. Gehrke, D. Petrişan, **L. Reggio**. Quantifiers on languages and codensity monads, *Mathematical Structures in Computer Science* **30**(10), issue 10, 1054–1088 (2020). (Extended version of the LiCS’17 paper.)
10. V. Marra, **L. Reggio**. A characterisation of the category of compact Hausdorff spaces, *Theory and Applications of Categories* **35**, 1871–1906 (2020).
11. M. Abbadini, **L. Reggio**. On the axiomatisability of the dual of compact ordered spaces, *Applied Categorical Structures* **28**, 921–934 (2020).
12. M. Gehrke, T. Jakl, **L. Reggio**. A duality theoretic view on limits of finite structures, *International conference on Foundations of Software Science and Computation Structures (FoSSaCS)*, 299–318 (2020).
13. **L. Reggio**. Codensity, profiniteness and algebras of semiring-valued measures, *Journal of Pure and Applied Algebra* **224**, 181–205 (2020).
14. S. J. van Gool, **L. Reggio**. An open mapping theorem for finitely cogenerated Esakia spaces, *Topology and its Applications* **240**, 69–77 (2018).
15. M. Gehrke, D. Petrişan, **L. Reggio**. Quantifiers on languages and codensity monads, *Proceedings of the 32nd Annual ACM/IEEE Symposium on Logic in Computer Science (LiCS)*, 1–12 (2017).
16. V. Marra, **L. Reggio**. Stone duality above dimension zero: the algebraic theory of  $C(X)$ , *Advances in Mathematics* **307**, 253–287 (2017).
17. M. Gehrke, D. Petrişan, **L. Reggio**. The Schützenberger product for syntactic spaces, *International Colloquium on Automata, Languages, and Programming (ICALP), LIPIcs* **55**: 112:1–112:14 (2016).

### Preprints

18. S. Abramsky, **L. Reggio**. Arboreal categories: an axiomatic theory of resources. Extended version of the ICALP’21 paper.
19. S. Abramsky, **L. Reggio**. Arboreal categories and homomorphism preservation theorems.
20. **L. Reggio**, C. Riba. Finitely accessible arboreal adjunctions and Hintikka formulae.

### Articles in preparation

21. C. Borlido, P. Karazeris, **L. Reggio**, K. Tsamis. Filtral pretoposes and compact Hausdorff locales.

### Invited presentations at international conferences (selection)

1. *The algebraic theory of  $C(X)$  and its logic*, at XXVII Incontro di Logica, Caserta, September 2022. Triennial conference of the Italian Association for Logic and its Applications (AILA).
2. *Lovász-type theorems and polyadic spaces*, at BLAST 2021 (Special session on Stone and Priestley dualities), New Mexico University and online, June 2021.

3. *Dualities in logic: old and new results*, at *XXI Congresso dell'Unione Matematica Italiana, sezione Logica Matematica*, Pavia, September 2019.
4. *Dualities in logic*, tutorial in two parts at *PhDs in Logic XI*, Bern, April 2019.
5. *Pretoposes and topological representations*, at *ToLo VI: Topological Methods in Logic*, Tbilisi State University, July 2018.
6. *Towards a general Stone-Gelfand duality*, at *ToLo V: Topological Methods in Logic*, Tbilisi State University, June 2016.

I was recently invited to give talks at:

- *Category Theory 2023*, which will take place in Louvain-la-Neuve in July 2023.  
<https://sites.uclouvain.be/ct2023>
- *XXII Congresso dell'Unione Matematica Italiana, sezione Logica Matematica*, taking place in Pisa in September 2023. Quadrennial conference of the Italian Mathematical Union (UMI).  
<https://umi.dm.unibo.it/congresso2023>
- *Seventeenth International Tbilisi Summer School in Logic and Language*, taking place in Tbilisi in September 2023. Invited tutorial.  
<https://www.logic.at/tbilisi23/>

### Contributed presentations at international conferences (selection)

1. *Regular categories and soft sheaf representations*, at *Topology, Algebra, Categories in Logic (TACL)*, Coimbra, June 2022.
2. *Game comonads and homomorphism counting in finite model theory*, at *Logic Colloquium*, Poznań and online, July 2021.
3. *Arboreal categories and resources*, at the *48th International Colloquium on Automata, Languages, and Programming (ICALP)*, Glasgow and online, July 2021.
4. *Lovász-type theorems and game comonads*, at the *36th Annual Symposium on Logic in Computer Science (LiCS)*, Rome and online, June 2021.
5. *A pretopos theoretic characterisation of compact Hausdorff spaces*, at *Journées niçoises: Logique catégorique, topos et dualités*, Nice, January 2018.
6. *Axiomatising the dual of compact Hausdorff spaces*, at *Topology, Algebra, Categories in Logic (TACL)*, Ischia, June 2015.

Between 2015 and 2023, I gave ~50 presentations at local seminars and international workshops. For a complete list, see: <https://lucareggio.github.io/talks>

## Funding

02/2020 – 01/2022	<b>Marie Skłodowska-Curie Individual Fellowship</b> , Horizon 2020. Project <i>Duality for finite models</i> (D-FINED), hosted by the Department of Computer Science of Oxford University and supervised by Samson Abramsky.
01/2019 – 12/2020	<b>CAS-ICS postdoctoral position</b> , jointly funded by the Czech Academy of Sciences and the Institute of Computer Science, two years of full funding for the applicant's postdoctoral research.
10/2018 – 09/2020	<b>Fellowship for Junior Researchers</b> of the Institute of Computer Science of the Czech Academy of Sciences. In January 2019 I renounced to this fellowship to take up the previous one.
10/2015 – 09/2018	<b>Sorbonne Paris Cité Volant International PhD scholarship</b> , three years of full funding for the applicant's PhD research project, awarded by Sorbonne Paris Cité.

## Participation in research projects

02/2022 – ongoing	<b>Resources in computation</b> , funded by the Engineering and Physical Sciences Research Council (EPSRC). P.I.: Samson Abramsky.
02/2020 – 06/2023	<b>Resources and co-resources: a junction between semantics and descriptive complexity</b> , funded by the Engineering and Physical Sciences Research Council (EPSRC). P.I.: Samson Abramsky and Anuj Dawar.
08/2019 – 01/2020	<b>Hidden quantifiers</b> , funded by the Swiss National Science Foundation (SNSF). P.I.: George Metcalfe.
01/2019 – 07/2019	<b>Predicate graded logics and their applications to computer science</b> , funded by the Czech Science Foundation (GACR). P.I.: Carles Noguera.
09/2015 – 09/2018	<b>DuaLL: Duality in formal languages and logic</b> , funded by the European Research Council (ERC), Advanced Grant. P.I.: Mai Gehrke.

## Teaching and supervision

Fall 2022	Teaching assistant. Undergraduate course <b>Discrete Mathematics</b> , UCL.
Summer 2022	Lecturer, with Tomáš Jakl, for the advanced course <b>An Invitation to Game Comonads</b> at the <i>33rd ESSLLI Summer School</i> , Galway.
Spring 2022	Co-supervisor for a research internship ( <i>stage de M1</i> ) at UCL (Thomas Laure, ENS Paris).
Fall 2021	Lecturer. Master course <b>Categories, Proofs and Processes</b> , University of Oxford.
Spring 2021	Class tutor. Undergraduate course <b>Logic and Proof</b> , University of Oxford.
Fall 2020	Guest lecturer and class tutor. Master course <b>Categories, Proofs and Processes</b> , University of Oxford.
Spring 2020	Assessor for two Part C and Oxford Masters in Mathematical Sciences dissertations.
Spring 2020	Co-supervisor for a <i>mémoire de M2</i> in Mathematics (Jérémy Marquès, Univ. de Nice).
Fall 2019	Teaching assistant. Master course <b>Model theory</b> , University of Bern.
Fall 2019	Co-organiser of the seminar <b>Duality Theory</b> for Master's students, University of Bern.

## Qualifications

- 05/2022** *Abilitazione scientifica nazionale, settore concorsuale 01/A1: Logica matematica e matematiche complementari.*  
Ministero dell'Università e della Ricerca.
- 02/2021** *Qualification aux fonctions de maître de conférences en Mathématiques.*  
Ministère de l'Enseignement Supérieur français, n° de qualification 21225342956.

## Prizes and awards

- 08/2022** **EACSL sponsorship** for the course *An Invitation to Game Comonads* at the 33rd ESSLLI Summer School. Awarded by the European Association for Computer Science Logic.
- 06/2020** **Premio Speciale Paolo Gentilini** for PhD theses in mathematical logic and its applications to theoretical computer science. Awarded by the Italian Association for Logic and its Applications (AILA).
- 11/2019** **Premio Ada Lettieri** for the paper *Stone duality above dimension zero* (Adv. Math. **307**, 2017), written jointly with Vincenzo Marra. Awarded by AILA.
- 05/2015** **AILA Prize 2015** for the best Master's theses in Logic.

## Organisation of scientific meetings

- 09/2022** **Resources in Computation**, international workshop at University College London. Member of the organising and scientific committees.
- 06/2019** **Topology, Algebra, and Categories in Logic (TACL)**, international conference at Université Côte d'Azur. Member of the organising committee.
- 09/2018** **Quantifiers and Duality**, international workshop at Université Paris-Diderot. Member of the organising and programme committees.
- 09/2017 – 07/2018** **Dualité de Stone, langages formels et logique**, weekly seminar at Université Côte d'Azur. Organiser.

## Committees

- 09/2023** Member of the **PhD defence committee** for the PhD thesis of Aliaume Lopez (Paris).
- 06/2022** Member of the **programme committee** of the conference *TACL 2022* (Coimbra).
- 02/2021** Member of the **admissions committee** for the Oxford MSc in Advanced Computer Science (Oxford).
- 04/2020** Member of the **scientific committee** of the conference *PhDs in Logic XII* (Berlin).

## Reviewing activities

Anonymous peer reviewer for several international journals, including:

*Journal of Symbolic Logic · Annals of Pure and Applied Logic (2) · Journal of Logic and Analysis · Journal of Logic and Computation · Archive for Mathematical Logic · Logic Journal of the IGPL · Journal of Pure and Applied Algebra (3) · Journal of Algebra · Algebra Universalis · Topology and its Applications (2) · Applied Categorical Structures · Cahiers de Topologie et Géométrie Différentielle Catégoriques · Houston Journal of Mathematics · Mathematical Structures in Computer Science*

and for several international conferences, including:

*LiCS 2017, 2019 · CSL 2021, 2023 · CALCO 2017 · RAMICS 2020, 2021 · ICALP 2021, 2023*

### Language skills

**Italian** (native speaker), **French** (fluent), **English** (fluent).