Curriculum Vitae

Luca Reggio

Contact

Professional address:	Department of Computer Science University College London 66–72 Gower Street London WC1E 6EA, United Kingdom
Personal address:	6 Rawlinson Road Oxford OX2 6UE, United Kingdom
Telephone:	+44 73 08 14 72 83
E-mail (professional):	`l.reggio@ucl.ac.uk`
E-mail (personal):	`reggio.luca@gmail.com`
Web page:	`https://lucareggio.github.io/`

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. S. Abramsky, **L. Reggio** (2023). Arboreal categories: an axiomatic theory of resources. Extended version of the ICALP'21 paper, *Logical Methods in Computer Science* **19**, issue 3, 14:1–14:36. DOI: 10.46298/lmcs-19(3:14)2023.

2. M. Abbadini, **L. Reggio** (2023). Barr-exact categories and soft sheaf representations. *Journal of Pure and Applied Algebra* **227**, issue 12, 107413. DOI: 10.1016/j.jpaa.2023.107413.

3. G. Metcalfe, **L. Reggio** (2023). Model completions for universal classes of algebras: necessary and sufficient conditions, *Journal of Symbolic Logic* **88**, issue 1, 381–417. DOI: 10.1017/jsl.2022.1.

4. M. Gehrke, T. Jakl, **L. Reggio** (2023). A Cook's tour of duality in logic: From quantifiers, through Vietoris, to measures, *In: Samson Abramsky on Logic and Structure in Computer Science and Beyond*, Outstanding Contributions to Logic **25**, Springer. DOI: 10.1007/978-3-031-24117-8_4.

5. **L. Reggio** (2022). Polyadic sets and homomorphism counting, *Advances in Mathematics* **410**, Part A, 108712. DOI: 10.1016/j.aim.2022.108712.

6. M. Gehrke, T. Jakl, **L. Reggio** (2022). A duality theoretic view on limits of finite structures: Extended version, *Logical Methods in Computer Science* **18**, issue 1, 16:1–16:38. DOI: 10.46298/lmcs-18(1:16)2022.

7. S. Abramsky, **L. Reggio** (2021). Arboreal categories and resources, *International Colloquium on Automata, Languages, and Programming (ICALP), LIPIcs* **198**, 115:1–115:20.
DOI: 10.4230/LIPIcs.ICALP.2021.115.

8. A. Dawar, T. Jakl, **L. Reggio** (2021). Lovász-type theorems and game comonads, *Proceedings of the 36th Annual ACM/IEEE Symposium on Logic in Computer Science (LiCS)*, 1–13. DOI: 10.1109/LICS52264.2021.9470609.

9. **L. Reggio** (2021). Beth definability and the Stone-Weierstrass Theorem, *Annals of Pure and Applied Logic* **172**, 102990. DOI: 10.1016/j.apal.2021.102990.

10. M. Gehrke, D. Petrişan, **L. Reggio** (2020). Quantifiers on languages and codensity monads, *Mathematical Structures in Computer Science* **30**(10), issue 10, 1054–1088. Extended version of the LiCS'17 paper. DOI: 10.1017/s0960129521000074.

11. V. Marra, **L. Reggio** (2020). A characterisation of the category of compact Hausdorff spaces, *Theory and Applications of Categories* **35**, 1871–1906. URL: http://www.tac.mta.ca/tac/volumes/35/51/35-51abs.html

12. M. Abbadini, **L. Reggio** (2020). On the axiomatisability of the dual of compact ordered spaces, *Applied Categorical Structures* **28**, 921–934. DOI: 10.1007/s10485-020-09604-y.

13. M. Gehrke, T. Jakl, **L. Reggio** (2020). A duality theoretic view on limits of finite structures, *International conference on Foundations of Software Science and Computation Structures (FoSSaCS)*, 299–318. DOI: 10.1007/978-3-030-45231-5_16.

14. **L. Reggio** (2020). Codensity, profiniteness and algebras of semiring-valued measures, *Journal of Pure and Applied Algebra* **224**, 181–205. DOI: 10.1016/j.jpaa.2019.05.002.

15. S. J. van Gool, **L. Reggio** (2018). An open mapping theorem for finitely copresented Esakia spaces, *Topology and its Applications* **240**, 69–77. DOI: 10.1016/j.topol.2018.03.006.

16. M. Gehrke, D. Petrişan, **L. Reggio** (2017). Quantifiers on languages and codensity monads, *Proceedings of the 32nd Annual ACM/IEEE Symposium on Logic in Computer Science (LiCS)*, 1–12. DOI: 10.1109/LICS.2017.8005140.

17. V. Marra, **L. Reggio** (2017). Stone duality above dimension zero: the algebraic theory of $\mathrm{C}(X)$, *Advances in Mathematics* **307**, 253–287. DOI: 10.1016/j.aim.2016.11.012.

18. M. Gehrke, D. Petrişan, **L. Reggio** (2016). The Schützenberger product for syntactic spaces, *International Colloquium on Automata, Languages, and Programming (ICALP), LIPIcs* **55**: 112:1–112:14. DOI: 10.4230/LIPIcs.ICALP.2016.112.

Preprints

19. S. Abramsky, **L. Reggio** (2023). Arboreal categories and homomorphism preservation theorems. DOI: 10.48550/arXiv.2211.15808.

20. **L. Reggio**, C. Riba (2023). Finitely accessible arboreal adjunctions and Hintikka formulae. DOI: 10.48550/arXiv.2304.12709.

21. C. Borlido, P. Karazeris, **L. Reggio**, K. Tsamis (2023). Filtral pretoposes and compact Hausdorff locales. DOI: 10.48550/arXiv.2306.11169.

Invited presentations at international conferences (selection)

1. *Resource-sensitive model theory: a categorical view*, at *Category Theory 2023*, Louvain-la-Neuve, July 2023.
2. *The algebraic theory of* $\mathrm{C}(X)$ *and its logic*, at *XXVII Incontro di Logica*, Caserta, September 2022. Triennial conference of the Italian Association for Logic and its Applications (AILA).
3. *Lovász-type theorems and polyadic spaces*, at *BLAST 2021 (Special session on Stone and Priestley dualites)*, New Mexico University and online, June 2021.
4. *Dualities in logic: old and new results*, at *XXI Congresso dell'Unione Matematica Italiana, sezione Logica Matematica*, Pavia, September 2019.
5. *Dualities in logic*, tutorial in two parts at *PhDs in Logic XI*, Bern, April 2019.
6. *Pretoposes and topological representations*, at *ToLo VI: Topological Methods in Logic*, Tbilisi State University, July 2018.
7. *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:

- *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	**Marie Skłodowska-Curie Individual Fellowship**, Horizon 2020. Project *Duality for finite models* (D-FINED), hosted by the Department of Computer Science of Oxford University and supervised by Samson Abramsky.
01/2019 – 12/2020	**CAS-ICS postdoctoral position**, 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	**Fellowship for Junior Researchers** 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	**Sorbonne Paris Cité Volant International PhD scholarship**, three years of full funding for the applicant's PhD research project, awarded by Sorbonne Paris Cité.

Participation in research projects

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

Teaching and supervision

Spring 2023	Teaching assistant. Undergraduate course **Discrete Mathematics**, UCL.
Summer 2022	Lecturer, with Tomáš Jakl, for the advanced course **An Invitation to Game Comonads** at the *33rd ESSLLI Summer School*, Galway.
Spring 2022	Co-supervisor for a research internship (*stage de M1*) at UCL (Thomas Laure, ENS Paris).
Fall 2021	Lecturer. Master course **Categories, Proofs and Processes**, University of Oxford.
Spring 2021	Class tutor. Undergraduate course **Logic and Proof**, University of Oxford.
Fall 2020	Guest lecturer and class tutor. Master course **Categories, Proofs and Processes**, University of Oxford.
Spring 2020	Assessor for two Part C and Oxford Masters in Mathematical Sciences dissertations.

Spring 2020	Co-supervisor for a *mémoire de M2* in Mathematics (Jérémie Marquès, Univ. de Nice).
Fall 2019	Teaching assistant. Master course **Model theory**, University of Bern.
Fall 2019	Co-organiser of the seminar **Duality Theory** 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

09/2023	**Workshop on Springer Volume "Samson Abramsky on Logic and Structure in Computer Science and Beyond"**, international workshop at University College London. Member of the organising and scientific committees.
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 Jérémie Marquès (Nice).

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* · *Publicacions Matemàtiques* · *Filomat*

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).