

Postdoctoral researcher in theoretical computer science at the University of Oxford.

Awards and distinctions

- (June 2024) Distinguished presentation [BDR24b], ACT conference.
- (August 2023) Distinguished presentation [DR23b], ACT conference.
- (July 2022) Distinguished presentation [DdR22b], ACT conference.
- (July 2022) Distinguished paper [DdR22a], ACM/IEEE LiCS conference.
- (July 2022) **Kleene Award** to the best student paper [DdR22a], ACM/IEEE LiCS.
- (2015–2017) Exemptions for High Academic Performance (Politecnico di Milano).
- (2015) Best Freshers Award (Politecnico di Milano).

Grant writing

- (July 2024) **Grant** from the Advanced Research + Innovation Agency, UK, *Monoidal Coalgebraic Metrics*, PI: Filippo Bonchi.
- (July 2024) **Grant** from the Advanced Research + Innovation Agency, UK, *String Diagrams for Probabilistic Logic: Specification and Modelling Languages*, PI: Paweł Sobociński.
- (July 2024) **Grant** from the Advanced Research + Innovation Agency, UK, *Categorical Probability Towards Safe AI*, PI: Sam Staton.
- (June 2024) European (EuroProofNet) **travel grant** for a Short Term Scientific Mission (host): *A type theory for exact and continuous Bayesian observations* with Mario Román.
- (March 2024) European (EuroProofNet) **travel grant** for a Short Term Scientific Mission (visitor): *Bidimensional Markov categories* with Mario Román.

Academic commitments

- (April 2025) **Program committee** member of the 41st conference on Mathematical Foundations of Programming Semantics.
- (March 2025) **Program committee** member of the Applied Category Theory conference.
- (since Dec 2023) Member of the **steering committee** of the Adjoint School.
- (since May 2023) Member of the **executive board** of the journal Compositionality.
- (Sep 2022) Local co-organiser of the 9th Symposium on Compositional Structures.
- (May 2022) **Program committee** member of the Applied Category Theory conference.
- (2021–2023) Organiser of the Adjoint School.
- Reviewer for conferences (LiCS, POPL, MFPS, ...) and journals (LMCS, MSCS, TAC, RAIRO, ...).

Academic positions and education

University of Oxford

Postdoctoral researcher working with Sam Staton

United Kingdom

from Jan 2025

Università di Pisa

Postdoctoral researcher working with Filippo Bonchi

Italy

Jan 2024 - Dec 2024

Tallinn University of Technology

PhD in Theoretical Computer Science

Estonia

2019 - 2023

– Thesis: Monoidal Width

Supervisor: Professor Paweł Sobociński

University of Oxford

MSc in Mathematics and Foundations of Computer Science

United Kingdom

2018 - 2019

– Thesis: Subgame Perfection in Compositional Game Theory

Supervisors: Dr Jules Hedges, Dr Jamie Vicary

– Mark: merit

Università di Pisa

BSc in Mathematics

Italy

2017 - 2018

– Thesis: Data-driven Estimation for Nash Equilibria

Supervisor: Professor Giancarlo Bigi

– Mark: 110 cum laude / 110

Politecnico di Milano

BSc in Mathematical Engineering

Italy

2014 - 2017

– Thesis: Floquet Theory Applied to a Perturbed Wave Equation

Supervisor: Professor Gianni Arioli

– Mark: 110 cum laude / 110

– Studies abroad: Erasmus program at Linnaeus University, Växjö, Sweden

Teaching experience

- (Spring 2024) Co-supervision of the BSc thesis of Anna Ricci at the University of Pisa, with Filippo Bonchi, to appear in CSL2025 [BDR24a].
- (Spring 2024) Co-supervision of the BSc thesis of Francesco Stefani at the University of Pisa, with Filippo Bonchi.
- (Spring 2024) Teaching assistant in the Introduction to Category Theory course, University of Pisa.
- (Spring 2023) Teaching assistant in the Introduction to Category Theory course, TalTech.
- (Spring 2022) Teaching assistant in the Introduction to Category Theory course, TalTech.
- (Spring 2021) Teaching assistant in the Introduction to Category Theory course, TalTech.

Publications

- [BDD24] Filippo Bonchi, Alessandro Di Giorgio, and Elena Di Lavore. “A diagrammatic algebra for program logics”. In: *to appear in: Proceedings of the International Conference on Foundations of Software Science and Computation Structures 2025*. 2024.
- [BDR24a] Filippo Bonchi, Elena Di Lavore, and Anna Ricci. “Strong Induction is an up-to Technique”. In: *to appear in: Proceedings of Computer Science Logic 2025*. 2024.
- [Cer+24] Lorenzo Ceragioli, Elena Di Lavore, Giuseppe Lomurno, and Gabriele Tedeschi. “A Coalgebraic Model of Quantum Bisimulation”. In: *to appear in: Proceedings of Applied Category Theory 2024*. 2024.
- [Gia+24] Francesco Giannini, Stefano Fioravanti, Pietro Barbiero, Alberto Tonda, Pietro Liò, and Elena Di Lavore. “Categorical Foundation of Explainable AI: A Unifying Theory”. In: *Explainable Artificial Intelligence*. Ed. by Luca Longo, Sebastian Lapuschkin, and Christin Seifert. Springer Nature Switzerland, 2024, pp. 185–206. DOI: [10.1007/978-3-031-63800-8_10](https://doi.org/10.1007/978-3-031-63800-8_10).
- [Di 23] Elena Di Lavore. “Monoidal Width”. PhD thesis. Tallinn, Estonia: Tallinna Tehnikaülikool, Nov. 2023. DOI: [10.23658/taltech.55/2023](https://doi.org/10.23658/taltech.55/2023).
- [Di +23] Elena Di Lavore, Alessandro Gianola, Mario Román, Nicoletta Sabadini, and Paweł Sobociński. “Span(Graph): a Canonical Feedback Algebra of Open Transition Systems”. In: *Software and Systems Modeling 22* (2023), pp. 495–520. DOI: [10.1007/s10270-023-01092-7](https://doi.org/10.1007/s10270-023-01092-7). arXiv: [2010.10069](https://arxiv.org/abs/2010.10069) [math.CT].
- [DR23a] Elena Di Lavore and Mario Román. “Evidential Decision Theory via Partial Markov Categories”. In: *2023 38th Annual ACM/IEEE Symposium on Logic in Computer Science (LICS)*. 2023, pp. 1–14. DOI: [10.1109/LICS56636.2023.10175776](https://doi.org/10.1109/LICS56636.2023.10175776).
- [DS23a] Elena Di Lavore and Paweł Sobociński. “Monoidal Width”. In: *Logical Methods in Computer Science* 19 (3 Sept. 2023). DOI: [10.46298/lmcs-19\(3:15\)2023](https://doi.org/10.46298/lmcs-19(3:15)2023).
- [DS23b] Elena Di Lavore and Paweł Sobociński. “Monoidal Width: Capturing Rank Width”. In: *Proceedings Fifth International Conference on Applied Category Theory*, Glasgow, United Kingdom, 18–22 July 2022. Ed. by Jade Master and Martha Lewis. Vol. 380. Electronic Proceedings in Theoretical Computer Science. Open Publishing Association, 2023, pp. 268–283. DOI: [10.4204/EPTCS.380.16](https://doi.org/10.4204/EPTCS.380.16).
- [DdR22a] Elena Di Lavore, Giovanni de Felice, and Mario Román. “Monoidal Streams for Dataflow Programming”. In: *Proceedings of the 37th Annual ACM/IEEE Symposium on Logic in Computer Science*. 2022, pp. 1–14. DOI: [10.1145/3531130.3533365](https://doi.org/10.1145/3531130.3533365). arXiv: [2202.02061](https://arxiv.org/abs/2202.02061) [cs.LG].
- [de +21] Giovanni de Felice, Elena Di Lavore, Mario Román, and Alexis Toumi. “Functorial Language Games for Question Answering”. In: *Electronic Proceedings in Theoretical Computer Science*. Vol. 333. Open Publishing Association, Feb. 2021, pp. 311–321. DOI: [10.4204/eptcs.333.21](https://doi.org/10.4204/eptcs.333.21).
- [Di +21] Elena Di Lavore, Alessandro Gianola, Mario Román, Nicoletta Sabadini, and Paweł Sobociński. “A Canonical Algebra of Open Transition Systems”. In: *Formal Aspects of Component Software*. Ed. by Gwen Salaün and Anton Wijs. Vol. 13077. Cham: Springer International Publishing, 2021, pp. 63–81. ISBN: 978-3-030-90636-8. DOI: [10.1007/978-3-030-90636-8_4](https://doi.org/10.1007/978-3-030-90636-8_4). arXiv: [2010.10069v1](https://arxiv.org/abs/2010.10069v1) [math.CT].

- [DHS21] Elena Di Lavore, Jules Hedges, and Paweł Sobociński. “Compositional Modelling of Network Games”. In: *29th EACSL Annual Conference on Computer Science Logic (CSL 2021)*. Ed. by Christel Baier and Jean Goubault-Larrecq. Vol. 183. Leibniz International Proceedings in Informatics (LIPIcs). Dagstuhl, Germany: Schloss Dagstuhl–Leibniz-Zentrum für Informatik, 2021, 30:1–30:24. ISBN: 978-3-95977-175-7. DOI: 10.4230/LIPIcs.CSL.2021.30. arXiv: 2006.03493 [cs.GT].

Extended abstracts in peer-reviewed workshops

- [BDR24b] Filippo Bonchi, Elena Di Lavore, and Mario Román. “Effectful streams - Extended Abstract”. In: *Applied Category Theory 2024*. 2024.
- [DR23b] Elena Di Lavore and Mario Román. “Partial Markov Categories - Extended Abstract”. In: *Applied Category Theory 2023*. 2023.
- [DR23c] Elena Di Lavore and Mario Román. “Symmetric Monoidal Automata - Extended Abstract”. In: *Nordic Workshop in Programming Theory 2023*. 2023.
- [Bha+22] Siddharth Bhat, Elena Di Lavore, Pim de Haan, Miguel Lopez, Mario Román, Nicoletta Sabadini, and Ruben van Belle. “Cyclic Causal Networks via Partial Markov Categories - Extended Abstract”. In: *Symposium on Compositional Structures 9*. 2022.
- [DdR22b] Elena Di Lavore, Giovanni de Felice, and Mario Román. “Monoidal Streams for Dataflow Programming - Extended Abstract”. In: *Applied Category Theory 2022*. 2022.
- [DR22] Elena Di Lavore and Mario Román. “Evidential Decision Theory via Partial Markov Categories - Extended Abstract”. In: *Nordic Workshop in Programming Theory 2022*. 2022.
- [DS22] Elena Di Lavore and Paweł Sobociński. “Monoidal Width - Extended Abstract”. In: *Women in Logic 2022*. 2022.
- [DdR21] Elena Di Lavore, Giovanni de Felice, and Mario Román. “Stream-based Computations in Monoidal Categories - Extended Abstract”. In: *Nordic Workshop in Programming Theory 2021*. 2021.
- [DLd21] Elena Di Lavore, Wilmer Leal, and Valeria de Paiva. “Dialectica Petri Nets - Extended Abstract”. In: *Symposium on Compositional Structures 8*. 2021.
- [DS21] Elena Di Lavore and Paweł Sobociński. “Monoidal Width - Extended Abstract”. In: *Symposium on Compositional Structures 8*. 2021.

Academic talks

- (19 Jun 2024) Applied Category Theory conference.
- (16 May 2024) Topos Institute Colloquium.
- (09 Apr 2024) Workshop, University of Padova.
- (19 Mar 2024) Process Theory for Security Protocols, Tallinn University of Technology.
- (08 Mar 2024) Oxford Advanced Seminar on Informatic Structures, University of Oxford.
- (08 Jan 2024) Directions and Perspectives in the λ -calculus, University of Bologna.
- (22 Nov 2023) 34th Nordic Workshop on Programming Theory.
- (01 Aug 2023) Applied Category Theory conference.
- (18 Jul 2023) Coresources workshop, University of Cambridge.
- (27 Jun 2023) Logic in Computer Science conference.
- (25 Jun 2023) International Workshop on Quantitative Logical methods.
- (14 Jun 2023) Categories Networking Project opening workshop, University of Edinburgh.
- (26 Apr 2023) Italian Category Theory Fest 2023.
- (01 Aug 2022) Women in Logic workshop.
- (22 Jul 2022) Applied Category Theory conference.
- (26 Jun 2022) 29th Foundational Methods in Computer Science workshop.
- (25 May 2022) Comonads Meetup, University of Cambridge.
- (24 May 2022) Mathematical Foundations Seminar, University of Bath.
- (13 Dec 2021) Symposium on Compositional Structures 8.
- (26 Jan 2021) Computer Science Logic 2021 conference.

Doctoral schools

- (2019-2020) Student in the Adjoint School mentored by Valeria de Paiva.
- (Mar 2020) Estonian Winter School in Computer Science

Other skills

Language skills: Italian (native), English (C1).

Programming languages: basic knowledge of Idris, Matlab, C, R.