**Elena Di Lavore**
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**January 5, 2026**
personal webpage: https://elenadilavore.github.io/

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

## Academic positions and education

**University of Oxford** — United Kingdom
*Postdoctoral researcher working with Sam Staton* — *from Jan 2025*

**Università di Pisa** — Italy
*Postdoctoral researcher working with Filippo Bonchi* — *Jan 2024 - Dec 2024*

**Tallinn University of Technology** — Estonia
*PhD in Theoretical Computer Science* — *2019 - 2023*

- Thesis: Monoidal Width
  Supervisor: Professor Paweł Sobociński

**University of Oxford** — United Kingdom
*MSc in Mathematics and Foundations of Computer Science* — *2018 - 2019*

- Thesis: Subgame Perfection in Compositional Game Theory
  Supervisors: Dr Jules Hedges, Dr Jamie Vicary
- Mark: merit

**Università di Pisa** — Italy
*BSc in Mathematics* — *2017 - 2018*

- Thesis: Data-driven Estimation for Nash Equilibria
  Supervisor: Professor Giancarlo Bigi
- Mark: 110 cum laude / 110

**Politecnico di Milano** — Italy
*BSc in Mathematical Engineering* — *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

## Awards and distinctions

- (July 2025) Distinguished paper [BDR25b], ACM/IEEE LiCS conference.
- (June 2024) Distinguished presentation [BDR24], 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).

## 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 $9^{th}$ 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, ...).

## Teaching experience

- (Autumn 2025) Teaching assistant for the Categories, Proofs and Processes course, University of Oxford.
- (Spring 2024) Co-supervision of the BSc thesis of Anna Ricci at the University of Pisa, with Filippo Bonchi, work published in CSL2025 [BDR25a].
- (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 2021) Teaching assistant in the Introduction to Category Theory course, TalTech.

## 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.

## Publications


[Bon+25] Filippo Bonchi, Cipriano Junior Cioffo, Alessandro Di Giorgio, and Elena Di Lavore. "Tape Diagrams for Monoidal Monads". In: *11th Conference on Algebra and Coalgebra in Computer Science (CALCO 2025)*. Ed. by Corina Cîrstea and Alexander Knapp. Vol. 342. Leibniz International Proceedings in Informatics (LIPIcs). Dagstuhl, Germany: Schloss Dagstuhl – Leibniz-Zentrum für Informatik, 2025, 11:1–11:24. ISBN: 978-3-95977-383-6. DOI: 10.4230/LIPIcs.CALCO.2025.11. URL: https://drops.dagstuhl.de/entities/document/10.4230/LIPIcs.CALCO.2025.11.

[BDD25] Filippo Bonchi, Alessandro Di Giorgio, and Elena Di Lavore. "A Diagrammatic Algebra for Program Logics". In: *Foundations of Software Science and Computation Structures*. Ed. by Parosh Aziz Abdulla and Delia Kesner. Springer Nature Switzerland, 2025, pp. 308–330. ISBN: 978-3-031-90897-2. DOI: 10.1007/978-3-031-90897-2_15.

[BDR25a] Filippo Bonchi, Elena Di Lavore, and Anna Ricci. "Strong Induction Is an Up-To Technique". In: *33rd EACSL Annual Conference on Computer Science Logic (CSL 2025)*. Ed. by Jörg Endrullis and Sylvain Schmitz. Vol. 326. Leibniz International Proceedings in Informatics (LIPIcs). Dagstuhl, Germany: Schloss Dagstuhl – Leibniz-Zentrum für Informatik, 2025, 28:1–28:21. ISBN: 978-3-95977-362-1. DOI: 10.4230/LIPIcs.CSL.2025.28. URL: https://drops.dagstuhl.de/entities/document/10.4230/LIPIcs.CSL.2025.28.

[BDR25b] Filippo Bonchi, Elena Di Lavore, and Mario Román. "Effectful Mealy Machines: Bisimulation and Trace". In: *2025 40th Annual ACM/IEEE Symposium on Logic in Computer Science (LICS)*. 2025, pp. 541–554. DOI: 10.1109/LICS65433.2025.00047. arXiv: 2410.10627v2 [cs.LO].

[Cer+25] Lorenzo Ceragioli, Elena Di Lavore, Giuseppe Lomurno, and Gabriele Tedeschi. "A Coalgebraic Model of Quantum Bisimulation". In: Proceedings Seventh International Conference on *Applied Category Theory 2024*, Oxford, United Kingdom, 17 - 21 June 2024. Ed. by Michael Johnson and David Jaz Myers. Vol. 429. Electronic Proceedings in Theoretical Computer Science. Open Publishing Association, 2025, pp. 249–269. DOI: 10.4204/EPTCS.429.14.

[DdR25] Elena Di Lavore, Giovanni de Felice, and Mario Román. "Coinductive Streams in Monoidal Categories". In: *Logical Methods in Computer Science* Volume 21, Issue 3, 18 (Aug. 2025). ISSN: 1860-5974. DOI: 10.46298/lmcs-21(3:18)2025. URL: https://lmcs.episciences.org/10759.

[DLd25] Elena Di Lavore, Wilmer Leal, and Valeria de Paiva. "Dialectica Petri Nets". In: *Fundamenta Informaticae* Volume 194, Issue 3, 4 (Dec. 2025). ISSN: 1875-8681. DOI: 10.46298/fi.13125. URL: https://fi.episciences.org/13125.

[Di +25] Elena Di Lavore, Mario Román, Paweł Sobociński, and Márk Széles. "Order in Partial Markov Categories". In: *Electronic Notes in Theoretical Informatics and Computer Science* Volume 5 - Proceedings of MFPS XLI, 14 (Dec. 2025). ISSN: 2969-2431. DOI: 10.46298/entics.16686. URL: https://entics.episciences.org/16686.

[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.

[Di 23] Elena Di Lavore. "Monoidal Width". PhD thesis. Tallinn, Estonia: Tallinna Tehnikaülikool, Nov. 2023. DOI: 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. arXiv: 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. arXiv: 2301.12989 [cs.LO].

[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.

[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.

[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. arXiv: 2202.02061 [cs.LO].

[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.

[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. arXiv: 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].

## Invited talks

- (17 Jun 2025) Conference on Algebra and Coalgebra in Computer Science.
- (4 Jun 2025) Logic, Homotopy, Categories days, École Polytechnique.
- (24 Apr 2025) Thirteenth Symposium on Compositional Structures, University College London.
- (13 Mar 2025) Chocola seminar, Université Paris Cité.

## Extended abstracts in peer-reviewed workshops


[DR25] Elena Di Lavore and Mario Román. "Graded Coalgebras of Monads for Continuous Dynamics (Early Ideas)". In: *Conference on Algebra and Coalgebra 2025*. 2025.

[BDR24] 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

- (23 Dec 2025) ItaCa Workshop, Università degli Studi di Milano.
- (23 Jun 2025) Logic Mentoring Workshop, colocated with LiCS 2025.
- (17 Jun 2025) Conference on Algebra and Coalgebra in Computer Science.
- (12 Mar 2025) group seminar at IRIF, Paris.
- (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 $\lambda$-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