Elena Di Lavore

Born in Milano, Italy, 13/08/1995

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December 17, 2024

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

Awards

European (EuroProofNet) grant for a Short Term Scientific Mission 2024

Kleene Award to the best student paper [12], ACM/IEEE LiCS 2022

Exemptions for High Academic Performance (Politecnico di Milano) 2015–2017

Best Freshers Award (Politecnico di Milano) 2015

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, MFPS, ...) and journals (LMCS, MSCS, TAC, RAIRO, ...).

Teaching experience

- (Spring 2024) Co-supervision of the BSc thesis of Anna Ricci at the University of Pisa, with Filippo Bonchi, published in CSL2025 [1].

- (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.

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

Publications

[1] 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.

[2] 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.

[3] 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`.

[4] Elena Di Lavore. "Monoidal Width". PhD thesis. Tallinn, Estonia: Tallinna Tehnikaülikool, Nov. 2023. DOI: `10.23658/taltech.55/2023`.

[5] 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]`.

[6] 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`.

[9] 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`.

[10] 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`.

[12] 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]`.

[16] 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`.

[18] 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]`.

[19] 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

[7]   Elena Di Lavore and Mario Román. "Partial Markov Categories - Extended Abstract". In: *Applied Category Theory 2023*. 2023.

[8]   Elena Di Lavore and Mario Román. "Symmetric Monoidal Automata - Extended Abstract". In: *Nordic Workshop in Programming Theory 2023*. 2023.

[11] 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.

[13] Elena Di Lavore, Giovanni de Felice, and Mario Román. "Monoidal Streams for Dataflow Programming - Extended Abstract". In: *Applied Category Theory 2022*. 2022.

[14] Elena Di Lavore and Mario Román. "Evidential Decision Theory via Partial Markov Categories - Extended Abstract". In: *Nordic Workshop in Programming Theory 2022*. 2022.

[15] Elena Di Lavore and Paweł Sobociński. "Monoidal Width - Extended Abstract". In: *Women in Logic 2022*. 2022.

[17] 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.

[20] Elena Di Lavore, Wilmer Leal, and Valeria de Paiva. "Dialectica Petri Nets - Extended Abstract". In: *Symposium on Compositional Structures 8*. 2021.

[21] Elena Di Lavore and Paweł Sobociński. "Monoidal Width - Extended Abstract". In: *Symposium on Compositional Structures 8*. 2021.

Doctoral schools

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

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.

Other skills

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

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