Elies Harington

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Research Topics

Logic in computer science, (higher) category theory, homotopy type theory, algebraic topology, algebraic geometry.

Research Experience

2025 – present **ATER**, Université Sorbonne Paris Nord – Villetaneuse

2022 – 2025 **PhD**, Ecole Polytechnique – Palaiseau
Polynomial models of linear logic in higher categories.
- Supervised by Samuel Mimram and Thomas Seiller.

March-July 2022 **Research internship**, Birmingham University (remotely) – Birmingham, UK
Opetopic ∞-categories in homotopy type theory.
- Supervised by Eric Finster.

April-July 2021 **Research internship**, Carnegie Mellon University (remotely) – Pittsburgh, USA
Research memoir around Jacob Lurie's theory of structured spaces.
- Supervised by Mathieu Anel.

February-July 2020 **Research internship**, Chalmers university of technology (remotely due to Covid19) – Gothenburg, Sweden
Cohomology groups in univalent type theory.
- Supervised by Thierry Coquand.

June-July 2019 **Research internship**, LORIA – Nancy
Periodic Delaunay triangulations in 2 and 3 dimensions.
- Supervised by Monique Teillaud and Vincent Despres.

Education

2022 – 2025 **Ecole Polytechnique**, PhD in Computer Science – Palaiseau
- Supervised by Samuel Mimram and Thomas Seiller.
- Title : Polynomial models of linear logic in higher categories.

2021 – 2022 **Université Paris Cité**, Master 2 (MPRI) in Computer Science – Paris
- Linear logic, functional programming, concurrency, foundations of proof systems, proof assistants, well quasi-orders and algorithms, finite automata modeling, category theory and game semantics, 5 months research internship.
- With highest honors.

2020 – 2021 **Sorbonne Université**, Master 2 (IMJ-PRG) in Mathematics – Paris
- Riemann surfaces, algebraic geometry, algebraic topology and categorical algebra, higher category theory, 5 months research internship.
- With highest honors.

2018 – 2022 **Ecole Normale Supérieure Paris-Saclay**, in Computer Science – Cachan
- With highest honors.

2016 – 2018 **Lycée Joffre**, in Classes préparatoires MPSI-MP*– Montpellier

Publications

2025 **∞-categorical models of linear logic (pdf)**
Elies Harington, Samuel Mimram
https://doi.org/10.4230/LIPIcs.FSCD.2025.23 (Leibniz International Proceedings in Informatics, Volume 337)

2024 **Polynomials in homotopy type theory as a Kleisli category (pdf)**
Elies Harington, Samuel Mimram
http://dx.doi.org/10.46298/entics.14786 (Electronic Notes in Theoretical Informatics and Computer Science, Volume 4 - Proceedings of MFPS XL)

Internship Reports

2022 **Opetopic types and higher algebra in Homotopy Type Theory (pdf)**
Elies Harington
Internship report

2021 **A construction of Spectra in Algebraic Geometry (pdf)**
Elies Harington
Master's thesis

2020 **Cohomology groups in univalent type theory (pdf)**
Elies Harington
Internship report (in french)

2019 **Delaunay triangulations on the flat torus in dimensions 2 and 3 (pdf)**
Elies Harington
Internship report (in french)

Talks

July 19th, 2025 **An extensional perspective on higher categorical models of linear logic – TLLA workshop in Birmingham**

2025 **∞-categorical models of linear logic**
- FSCD 2025 conference, Birmingham, July 18th
- I2M LDP seminar, invited talk, Marseille, June 19th
- IRIF semantics seminar, invited talk, Paris, June 17th
- LHC days, Palaiseau, June 3rd
- CHoCoLa meeting, invited talk, Lyon, May 15th

November 29th, 2024 **Cohomologie en HoTT : une traduction mot à mot du langage faisceautique en théorie des types – Catégories supérieures, polygraphes et homotopie Seminar at IRIF, Paris**

June 21st, 2024 **A model of linear logic using polynomials in Homotopy Type Theory – MFPS Conference in Oxford**

June 4th, 2024 **Polynomials in Homotopy Type Theory – LHC days in Nantes**

May 28th, 2024 **Introduction to Category Theory – Grace team student seminar, LIX, Palaiseau**

2023-2024 **Introduction to Homotopy Type Theory**
- Category theory working group, LIPN, Villetaneuse, February 7th 2024
- Cosynus team seminar, LIX, Palaiseau, November 23rd 2023

Teaching

2025 – present **L2 - Computer Architecture – Universite Sorbonne Paris Nord**

2025 – present **L1 - C programming – Universite Sorbonne Paris Nord**

2025 – present **L0 - Python programming – Universite Sorbonne Paris Nord**

2023 – 2025 **M1 Java courses – Ecole Polytechnique**

2022 – 2025 **L3 Compilation courses – Ecole Polytechnique**

Skills

Programming: Worked on projects in C++, OCaml, JavaScript, Agda, HTML, CSS. Experience with C, Java, Python

Languages: French (native), English (fluent)