

Elies Harington

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Research Topics

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

Research Experience

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| 2022 – present | PhD , Ecole Polytechnique – Palaiseau
Polynomial models of linear logic in higher categories. <ul style="list-style-type: none">• Supervised by Samuel Mimram and Thomas Seiller. |
| March-July 2022 | Research internship , Birmingham University (remotely) – Birmingham, UK
Opetopic ∞ -categories in homotopy type theory. <ul style="list-style-type: none">• 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. <ul style="list-style-type: none">• 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. <ul style="list-style-type: none">• Supervised by Thierry Coquand. |
| June-July 2019 | Research internship , LORIA – Nancy
Periodic Delaunay triangulations in 2 and 3 dimensions. <ul style="list-style-type: none">• Supervised by Monique Teillaud and Vincent Despres. |

Education

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| 2022 – present | Ecole Polytechnique , PhD in Computer Science – Palaiseau <ul style="list-style-type: none">• 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 <ul style="list-style-type: none">• 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 <ul style="list-style-type: none">• 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 <ul style="list-style-type: none">• With highest honors. |
| 2016 – 2018 | Lycée Joffre , in Classes préparatoires MPSI-MP* – Montpellier |

Publications

- 2024 **Polynomials in homotopy type theory as a Kleisli category**
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)

Preprints

- 2025 **∞ -categorical models of linear logic** ([pdf](#))
Elies Harington, Samuel Mimram

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

- 2025 **∞ -categorical models of linear logic**
- 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

- 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)