

# Corentin Lunel

PhD Student

Laboratoire d'Informatique Gaspard Monge  
5 Boulevard Descartes, Champs-sur-Marne  
77454 Marne-la-Vallée Cedex 2  
France

Born on December 24th, 1996  
French citizen  
<https://corentinlunel.github.io/>  
corentin.lunel2@univ-eiffel.fr

## Research Interests

I am motivated by topics at the interface of mathematics and theoretical computer science. My main interest is computational topology which is a field in between low dimensional topology and algorithms. I aim at exploring the interactions between graphs and knots from a computational point of view.

## Employment and Education

- 2021-Present**     *LIGM, Université Gustave Eiffel*: PhD thesis: "Tree-like decompositions and knot theory: structure and algorithms" under the supervision of Arnaud De Mesmay and Pierre Dehornoy. I expect to defend at the end of september 2024.
- 2017-2021**     *École Normale Supérieure de Lyon*, scholarship at ENSL:
- 2020-2021     ENSL M2 of theoretical computer science.  
Internship with Arnaud de Mesmay at *LIGM*: "From decomposing graphs to sweeping knots".
- 2019-2020     ENSL M1 of Mathematics.  
Internship with Olga Kravchenko at *Université Lyon 1*: "Le polynôme d'Alexander vu par les graphes bipartis".
- 2018-2019     ENSL M1 of theoretical computer science.  
Internship with Uli Wagner at *Institute of Science and Technology Austria*: "Expander graphs and high dimensional Expanders".
- 2017-2018     ENSL M2 of theoretical computer science.  
Internship with Arnaud de Mesmay at *Gipsa-lab*: "Réduction monotone de noeuds".
- 2014-2017**     *Toulouse*, Higher school preparatory classes at Lycée Pierre de Fermat

## Awards

- 2022**     Best PhD student talk at ED MSTIC day.
- 2017**     Junior Fermat prize for mathematical research.

## Publication

### Articles in conferences

1. *Hopf Arborescent Links, Minor Theory, and Decidability of the Genus Defect*, with Pierre Dehornoy and Arnaud de Mesmay, Proceedings of the 40th Symposium on Computational

Geometry (SoCG 2024, invited to a DCG special issue on SoCG 2024).

<https://arxiv.org/abs/2312.09094>.

2. *A Structural Approach to Tree Decompositions of Knots and Spatial Graphs*, with Arnaud de Mesmay, Proceedings of the 39th Symposium on Computational Geometry (SoCG 2023).

<https://arxiv.org/abs/2303.07982>.

## Articles in journals

3. *Etude d'un invariant des noeuds alternés et mise en oeuvre informatique*, in french, with Hugo Fages and Quentin Rembert, Quadrature 112 (2019) p23-31.

## Presentations

- International symposium of Computational Geometry, Athens, Greece, 2024.
- Journées du GdR IFM (poster), Grenoble, France, 2024.
- Journées Graphes et Algorithmes, Lyon, France, 2023.
- International symposium of Computational Geometry, Dallas, Texas, USA, 2023.
- SOS Workshop, Dagstuhl, Germany, 2023.
- ED MSTIC PhD Student day, best presentation, Paris, 2022.
- Journée de Géométrie Algorithmique, online, 2022.
- AMS-EMS-SMF Joint Congress of Mathematics, Grenoble, France, 2022.

## Teaching

<b>2022-2024</b>	Algorithms course, exercise and practical sessions, 48 hours, ESIPE, first year.
<b>2021-2023</b>	Algorithms and tree data structures, exercise sessions, 22 hours, L2 course at Université Gustave Eiffel.
<b>2021-2022</b>	Lab math-info, exercise and practical sessions, 40 hours, L2 course at Université Gustave Eiffel.

## Reviews

- I reviewed a paper for SoCG 2023.

## Skills

### Spoken languages

- French, native speaker.
- English, fluent (Certificate in Advanced English, C1).
- German, school level (B1).

### Programming languages

- C
- Python
- OCaml
- LaTeX