

# Corentin Lunel

Postdoctoral Researcher

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France

Born on December 24th, 1996  
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## 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

- 2024-2025** *INRIA UCA*: Post-doc in collaboration with Clément Maria within the Datashape team.
- 2021-2024** *LIGM, Université Gustave Eiffel*: PhD thesis: "Trees, Decompositions, and Knot Theory" under the supervision of Arnaud de Mesmay and Pierre Dehornoy. PHD defended the 23rd of September 2024.
- Reviewers:
    - David Eppstein, University of California
    - Stephan Tillmann, University of Sydney
  - Examiners:
    - Dominique Attali, Gipsa-lab
    - Livio Liechti, Université de Fribourg
    - Delphine Moussard, Aix-Marseille Université
    - Lionel Pournin, Université Sorbonne Paris Nord
- 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

- Geometry & Computing (poster), Marseille, France, 2024.
- 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

- 2022-2024** Algorithms course, exercise and practical sessions, 48 hours, ESIPE, first year.  
**2021-2023** Algorithms and tree data structures, exercise sessions, 22 hours, L2 course at Université Gustave Eiffel.  
**2021-2022** 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