Corentin Lunel

PhD Student

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Born on December 24th, 1996
French citizen
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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 complexity theory. I am studying graphs and knots from a computational point of view.

Employment and Education

2021-Present *LIGM, Université Gustave Eiffel*: PhD thesis: "Décompositions arborescentes et théorie des noeuds : structure et algorithmes." under the supervision of Arnaud De Mesmay and Pierre Dehornoy. I expect to defend before october 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, to appear).

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).

Articles in journal

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.

Presentation

- 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 Gutave Eiffel.
2021-2022	Lab math-info, exercise and practical sessions, 40 hours, L2 course at Université Gutave 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