Antoine COMMARET

Post-doctorate - 2025

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📖 Education

2025 –   **Post-doctorate**, *INRIA Sophia-Antipolis, équipe ABS*, Valbonne, France.
Convergence of geometric Markov chains.
Optimization of non-smooth functions.

2021 – 2024   **PhD Candidate**, *DataShape Team, INRIA Sophia-Antipolis & J. A. Dieudonné Lab*, France.
"Persistent Geometry", under the supervision of David Cohen-Steiner & Indira Chatterji.

2019 – 2020   **Master 2 "Mathématiques, Vision, Apprentissage" with highest honors**, *ENS Paris-Saclay*.
Courses over the mathematics of Vision and Learning.

2017 – 2019   **Master 1 & Last Year of Bachelor**, *École Normale Supérieure de Paris*, France.
General advanced maths in the highly selective mathematics path of the ENS.

2015 – 2017   **Classes préparatoires aux Grandes Ecoles**, *Lycée Hoche*, Versailles, France.
Admitted to both École Polytechnique and ENS Paris after 2 years of intense preparation.

2012 – 2015   **Baccalauréat scientifique with highest honors**, *Lycée Jean-Pierre Vernant*, Sèvres, France.

💼 Research residency and internships

Juil 2025   **Research guest**.
Institute of Geometry, directed by Michael Kehrber. *Graz, Austria* ;
Charles University. Visiting Jan Rataj. *Prague, Czechia* ;
Algebraic Systems Biology team directed by Heather Harrington. *Dresden, Germany*.

Feb 2023   **Startup Week 3IA**, *Sophia-Antipolis*.
One week project on the segmentation femoral arteries on ultrasound scans for Caranx Medical.

June 2022   **Summer School EUTOPIA**, *Paris*.
Topology in the context of soft matter and proteins.

2020 – 2021   **Research Internship**, *INRIA Saclay*, under the supervision of Frédéric Chazal & Bertrand Michel.
TDA and study of the dimension reduction algorithm UMAP.

2019   **Research Internship**, *Göttingen University, Germany*, under the supervision of Harald Helfgott.
Analytic Number Theory. Reviewing the proof of the weak Goldbach conjecture.

🏛 Teaching

2021 – 2026   **Lecturer**, *Université Côte d'Azur*.
Introduction to Topological Data Analysis (M2), Graph Theory, Analysis I, Algebra II (Bachelor)

2017 – 2021   **Colleur in Preparatory Classes**, *Lycée Hoche, Versailles*.
Weekly oral exams.

👥 Talks & Conferences

July 2025   **Max-Planck Institute**, *Dresden, Germany*.
Talk about links between topology and geometry and tools from persistent homology.

March 2025   **Jean Kutzmann lab seminar**, *Grenoble, France*.
Talk about PhD results.

Oct 2023   **Young Researcher in Geometry Day**, *Paris, France*.
Organization and talk about Geometric measure theory.

July 2023   **Young Topologist Meeting**, *Lausanne, Switzerland*.
Talks for *Generalized Morse theory for tubular neighborhoods*.

Feb 2023   **World AI Festival**, *Cannes, France*.
Presenting the work done during the startup week 3IA.

June 2022 & 2023	**Math PhD Students' Colloquium**, *Nice, France*. Talks about persistent homology & Organization.

❯ Languages

Native	French
Fluent	English, German
Beginner	Esperanto, Italian

</> Programming

Advanced	LaTeX
Advanced	Python : Machine Learning with Numpy, Scipy, Pytorch and Topological data analysis with GUDHI.