

# AHMANE Amar

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in amar-ahmane

*"The mathematician's patterns, like the painter's or the poet's must be beautiful; the ideas like the colours or the words, must fit together in a harmonious way. Beauty is the first test: there is no permanent place in the world for ugly mathematics." — G. H. Hardy*

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## Education

- 2024 – Today **M1 Hadamard**, *École Normale Supérieure Paris-Saclay*, Gif-sur-Yvette, France  
Master of Science 1 in Mathematics. Courses are taught at **ENS Paris-Saclay**, **Orsay's Mathematical Institute** and **l'École Polytechnique (X)**.  
○ Courses followed : Real and Functional Analysis (ENS); Algebra and Galois Theory (Orsay); Advanced Probability Theory (Orsay); Algebraic Topology (X); Geometry (Orsay); Compact & Lie Groups (X); Mathematics for Image Processing (ENS).
- 2023 – 2024 **Magistère of Mathematics**, *École Normale Supérieure de Rennes*, Rennes, France  
Result : Success at the entrance exam of the ENS Paris-Saclay (Rank 9).  
○ Courses followed : General Topology; Linear Algebra; Complex Analysis; Differential Calculus; General Group Theory; Measure Theory; Probability Theory; ODEs, Rings & Arithmetics; Formal languages and computability.
- Secondary and post-secondary
- 2021 – 2023 **MP2I/MPI\***, *Lycée Paul Valéry*, Paris 12e  
Two years in a special higher education class that prepares for competitive entrance exams to french Grandes Écoles. "MPI" stands for "Mathematics, Physics and Computer Science". As a result of these two years, I was accepted into a highly selective Grande École : l'École Normale Supérieure de Rennes.
- 2019 – 2020 **Terminale S, spécialité Mathématiques**, *CNED*, 17,77/20  
CNED is a French public institution that provides distance learning material. I completed my last year of high school working from home, succeeded at the French baccalauréat exam, and applied to continue my studies in France.

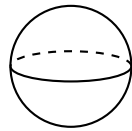
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## Work experience and internships

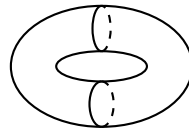
### Research experience

May 2024 — **Research internship**, *Laboratoire de Mathématiques d'Orsay*, Orsay, France  
 July 2024 Magistère de mathématiques de Rennes students must spend at least six weeks in a research internship at the end of the first year. Anne Vaugon supervised mine at the Laboratoire de Mathématiques d'Orsay. You can access my report [here](#) (there's only a french version for now).  
 During this internship, I worked on :

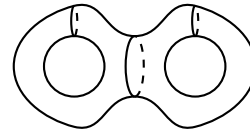
- Basics of Morse Theory;
- A proof of the classification of compact, connected, orientable and boundless surfaces.



$T_0 = \mathbb{S}^2$



$T_1 = \mathbb{S}^2$



$T_2 = \mathbb{T}^2 \# \mathbb{T}^2$

### Work experience

2024 – Today **Mathematics examiner (Khôlleur MPI/MPI\*)**, *Lycée Paul Valéry*, Paris 12e  
 I select exercises and grade CPGE students in weekly mathematics oral exams of 1 hour duration.

Since 2022 **Private lessons in Mathematics**, *Independant*

### Computer Skills

Programming Java, OCaml, C, Python, Javascript.  
 Tools  $\LaTeX$ , git, UNIX systems.

### Languages

French Fluent  
 English C1  
 Arabic Fluent

### Interests

Academic Probability Theory, Functional Analysis, Optimization, Formal Languages, Mathematics for Data Science

Other Video games (Minecraft, Strategy games, construction and management simulation), Tarot, 3D art...