

Zacharie MOUGHANIM

Education

- 2024- *Ecole Normale Supérieure de Rennes - Université de Rennes, M1 SIF, dual curriculum Computer Science/Mathematics*, Rennes, France.
- 2023-2024 *Ecole Normale Supérieure de Rennes - Université de Rennes, L3 SIF, dual curriculum Computer Science/Mathematics*, Rennes, France, highest honour.
- 2021-2023 *Lycée Louis-le-Grand, CPGE MP2I/MPI**, Paris, France.
- 2021 *Baccalauréat général - Mathematics and Computer science*, highest honour, *Lycée Jean Lurçat*, Martigues, France.

Experience

- 2024-2025 **Research Project**, on "Type system for automated proof of cryptographic protocols" supervised by Joseph Lallemand, Stéphanie Delaune and Clément Herouard.
- 2024 **Research Internship**, on "Operational Properties of the algebraic λ -calculus" supervised by Lionel Vaux Auclair, leading to the publication of The weak algebraic λ -calculus for the *Journées Françaises des Langages Applicatifs 2025*.
- 2024 **Popularization for primary school students**, Unplugged computer science activities, within the *Pédagogie* course.
- 2019-2020 **Mathematics popularization**, *Forum des mathématiques de Marseille*.
- 2018-2021 **Former member of the Club de Maths de Marseille as a student**, I still attend to a few meetings, and once gave a talk about the close proximity between discrete sums/differences and integrals/differentiation for a session.
- 2018-2019 **Private lessons**, given to a middle school student, 50h.

Projects

- 2024- **λ MLC2**, A project of verified transpiler (in Coq/Rocq) from a subset of OCaml to the untyped λ -calculus.
- 2023- **λ MLC**, A transpiler from a subset of OCaml towards the untyped λ -calculus.
- 2021-2023 **TIPE**, personal projects as part of the CPGE curriculum, studies of open problems from "Almost Stable Matchings in the Roommates Problem", and publication of a new sequence to the OEIS, distinguished in the jury's report of the examination.
- Scientific competitions during high school
- 2021 **Mathematics olympics for french high-school students**, Laureate of regionals - ranked 4th, selected for nationals.
- 2020 *Correspondances des jeunes mathématicien-ne-s*, la plus belle preuve award.
- 2020-2021 **Participation to other various mathematics and computer science competitions**, Concours général de Mathématiques, TFJM², Algoréa, Animath cups, FFJM.

Languages

French Native
English Fluent

Hobbies

- Cinema I follow courses of film analysis and film theory at the *Université de Rennes 2*. I also like to practice: I enjoy video editing and 3D animation on Blender.
- Badminton Regular practice.