

Hugo Mathevet

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Education

- 2023– **Ph.D. student**, *Laboratoire Mathématique de Reims - Université de Reims Champagne-Ardenne - Reims, France*
3 year grant from the Université of Reims Champagne-Ardenne.
Themes: Lie algebras, algebraic group, invariant theory, algebraic geometry.
Title: Problems related to adjoint and coadjoint orbits in Lie algebras.
Supervisor: Rupert W. T. Yu.
Expected end: August 2026.
- 2022–2023 **M. Sc.: M2 Analysis, Arithmetic, Geometry**, *Université Paris-Saclay - Orsay, France*
Courses: Algebraic geometry, algebraic number theory, Lie algebras and vertex algebras.
- 2019–2023 **Elève Polytechnicien, Master and Bachelor degrees**, *Ecole Polytechnique - Palaiseau, France*
Admitted through national entrance exam.
4 year tuition and pension granting contract.
Specialisation: Mathematics.
- 2017–2019 **Preparatory Classes**, *Lycée Pierre de Fermat - Toulouse, France*
Specialisation: Mathematics, physics and computer science.

Research internships

- 2023 **Master Thesis**, *Laboratoire Mathématiques d'Orsay - Orsay, France*
Themes: Lie algebras, algebraic groups, positive characteristics.
Title: Kostant slices in positive characteristics.
Supervisor: Anne Moreau.
- 2022 **First year of master internship**, *Institut de mathématiques de Jussieu – Paris Rive Gauche, France*
Theme: Analytic number theory.
Title: From the resonance method to G₂ sums.
Supervisor: Régis de la Bretèche.
- 2020–2021 **Group science project**, *Centre mathématiques Laurent Schwartz - Ecole Polytechnique - Palaiseau, France*
Together with M. André, L. Detzen, S. Guerini and Z. Niu and C-Y. Wu.
Themes: Dynamical systems, geometry, spectral theory.
Awarded among the X2019 class.
Title: Spectral Rigidity.
Supervisor: Carlos Matheus Silva Santos.

Research

My research lies at the interface of complex Lie theory and algebraic geometry, with a focus on the geometry of adjoint and coadjoint orbits. A guiding theme of my work is the study of nilpotent orbits and their closures of reductive Lie algebras, through the study of their generalized Takiff Lie algebras.

Papers

- Hugo Mathevet**, *Slices and invariants of orbit varieties in generalized Takiff Lie algebras*, Work in progress, Expected preprint in 2026
- 2026 **Hugo Mathevet**, *Relative modality of elements in generalized Takiff Lie algebras.*, *Journal of Algebra*, 685:755–774, 2026.

Research Talks

- Dec. 2025 **Journées SL2R**, *Institut de Recherche en Mathématique et en Physique - Louvain-La-Neuve*, Belgium
Relative modality in generalized Takiff Lie algebras.
- Nov. 2025 **Algebra seminar**, *Institut Camille Jordan - Lyon*, France
Relative modality in generalized Takiff Lie algebras.

Lab activities

- 2024– **Working and reading group**, *Laboratoire Mathématiques de Reims*, Reims
Together with Y. Demesmay, V. Massicot and P. Jouteur.
Themes: Enveloping algebras, representation theory, combinatorics.
- Oct. 2025 **Talk at the PhD student seminar**, *Laboratoire mathématiques de Reims - Reims*
Title: Vous n'avez pas les bases (canoniques).
- Jul. 2025 **Talk at the teambuilding seminar**, *Laboratoire mathématiques de Reims - Reims*
Title: Takiff Lie algebras: on truncated Taylor series and matrices.

Attended conferences

- Nov. 2025 **Journées SL2R**, *Institut de Recherche en Mathématique et en Physique - Louvain-La-Neuve*, Belgium
- Jul. 2025 **Representations with Interconnections: Lie Theory and Nonassociative Algebras**, *Institut Camille Jordan - Lyon*, France
- Jun. 2025 **Spring school: Group Actions and Symplectic Singularities**, *Lille*, France
- Mar. 2025 **Colloque Tournant du RT algèbre**, *Clermont-Ferrand*, France
- Oct. 2024 **New Trends in Geometry, Combinatorics and Mathematical Physics**, *Oléron*, France
- Jun. 2024 **Groups and their actions: algebraic, geometric and combinatorial aspects**, *Levico terme*, Italy
- Nov. 2023 **Journées SL2R**, *Institut Élie Cartan de Lorraine - Metz*, France

Teaching experience

- 2025 **Lectures in calculus for undergraduate students**, *Université de Reims Champagne-Ardenne - Reims*, France, (30h)

- 2024 **Lectures in calculus for undergraduate students**, *Université de Reims Champagne-Ardenne - Reims, France*, (54h)
- 2024 **Remedial courses for undergraduate students**, *Université de Reims Champagne-Ardenne - Reims, France*, (8h)
- 2024 **Teaching assistant in linear algebra for undergraduate student**, *Université de Reims Champagne-Ardenne - Reims, France*, (8h)
- 2022-2023 **Teaching assistant in analysis**, *Ecole Polytechnique - Palaiseau, France*, (40h)
- 2019-2020 **Tutoring for rank up exams**, *Paris firefighter brigade - Clichy-sous-Bois, France*

Miscellaneous

Maths popularization

- 2025 **Tournois français des jeunes mathématiciennes et mathématiciens**

Problem conceper for a nation-wide mathematical Olympiad.

- 2024 **MathC2+**

Popularization talk during a maths internship for highschool students.

- 2023– **Student internships**

Referent for the LMR PhD students team during the welcoming of high school and middle school interns.

Other professional experiences

- 2021 **R&D internship**, *EDF Lab Paris Saclay - Palaiseau, France*

Software development for data analysis of nuclear plant transformer.

- 2019-2020 **Ambulance team leader**, *Paris firefighter brigade - Clichy-sous-Bois, France*

National defence medal: Bronze level.

Congratulatory letter: service during COVID19 pandemic.

Coauthored a report on integration of women and newcomers in the brigade.

Other

- 2017 **National chemistry olympiad**, *Ranked 2nd*.

- 2012 **National judo championship (FSGT)**, *Ranked 3rd*, male, ≤ 14 y.o., ≤ 34 kg.

Soft skills

Computer skills

Programming languages

Python, GAP, \LaTeX , Ocaml.

Other

Office suite, Geogebra.

Language skills

French: Native speaker.

English: Fluent.

Spanish: Intermediate.

Japanese: Notions.

Hobbies

Sports

Bouldering, dance (neo-trad), hiking.

Arts

Watercolor (still life), charcoal (figure drawing)