

# DAMIEN SIMON

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## EDUCATION

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### University Paris-Sud/Paris-Saclay, Orsay

2018 - present

– PhD student, Laboratoire de Mathématiques d'Orsay

Thesis: *Vertex algebras of chiral differential operators on a reductive group and representation theory.*

Advisor: Anne Moreau.

– M2 Arithmétique, Analyse, Géométrie (Supported by a Sophie Germain scholarship)

Master's thesis: *The geometric Satake equivalence.*

Advisors: Gérard Laumon and Anne Moreau.

– Préparation à l'agrégation de Mathématiques

French recruiting competitive examination for high school and undergrad teachers, ranked: 15/327.

Thesis : *How to use finite fields for problems concerning infinite fields.*

Advisor: Gérard Laumon.

– M1 Program Jacques Hadamard (Supported by a Sophie Germain scholarship)

Thesis: *La représentation de Weil.*

Advisor: Gérard Laumon.

– L3 Mathématiques fondamentales et appliquées

Thesis: *Le théorème de Hasse-Minkowsky.*

Advisor: Pierre Lorenzon.

### Lycée du Parc, Lyon

2016-2018

– MP\*

– MPSI

## MATHEMATICAL WRITING

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### Preprints

– *Representation theory of the principal equivariant  $\mathcal{W}$ -algebra and Langlands duality*, [arXiv:2510.06990](#).

### Books

– (with Yves Laszlo, Laurent Moonens and Thomas Mordant) *A path to advanced algebra*, volume I, in preparation, draft available [here](#).

## TALKS

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### 2026

– University of Dijon – Séminaire Mathématiques-Physique: *Representation theory of the principal equivariant  $\mathcal{W}$ -algebra and Langlands duality.*

### 2025

– University of Angers – Séminaire de topologie et géométrie algébriques: *Representation theory of the principal equivariant  $\mathcal{W}$ -algebra and Langlands duality.*

– University of Erlangen: *Representation theory of the vertex algebra of chiral differential operators on a reductive group.*

– University of Lille – Algebraic geometry, integrable systems and automorphic forms: *Chiral differential operators on a reductive group and representation theory.*

– Inter-University center, Dubrovnik, Croatia – Representation theory XIX: *Representation theory of the vertex algebra of chiral differential operators on a reductive group.*

– University of Roma Tor Vergata – ARTS seminar: *Chiral differential operators on a reductive group and representation theory.*

– Institut des Hautes Etudes Scientifiques (IHES) – Rencontres MathTech: *When is a problem solved ?*.

## 2024

- Laboratoire de Mathématiques d’Orsay – D-modules learning seminar: *D-modules, integrable connections and coherence*.
- Laboratoire de Mathématiques d’Orsay – D-modules learning seminar: *The sheaf of differential operators*.
- Laboratoire de Mathématiques d’Orsay – PhD students day: *Quantum geometric Langlands program in the language of vertex algebras*.
- Laboratoire de Mathématiques d’Orsay – Good moduli spaces and GIT learning seminar: *Stable vector bundles over projective curves*.

## 2023

- Institut Henry Poincaré (IHP) – RéGA: *Classifying reductive algebraic groups*.
- Laboratoire de Mathématiques d’Orsay – P=W conjecture learning seminar: *Springer theory*.

## EVENT ORGANIZATION

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- Co-organizer of the D-modules learning seminar in Orsay, in charge with Thomas Mordant of the [webpage](#), 2024-2025.
- Co-organizer with Romain Cretier and Yugang Zhang of the popularization seminar ”Explique-Moi” aimed at undergraduate student, Orsay, 2022-2024.

## INVITATIONS

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- Research stay at the University of Erlangen, invited by Thomas Creutzig, 05 July 2025 – 17 July 2025.
- Research stay at the Sapienza University of Rome, invited by Alberto De Sole, 17 February 2025 – 28 February 2025.

## TEACHING

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### University Paris-Sud/Paris-Saclay, Orsay

- Representation theory of Lie algebras, M2 Analyse, Arithmétique, Géométrie, 2025-2026.  
*Exercice sessions on the representation theory of semisimple Lie algebras.*
- Oral examinations, L2 et L3, 2025-2026.  
*Oral examinations of undergraduate students on various topics.*
- Intégration, L3 double diplôme, 2025-2026  
*Exercice sessions on the theory of Lebesgue integration and measure theory.*
- Fonctions holomorphes, L3 Mathématiques fondamentales et appliquées, 2025-2026  
*Exercice sessions on the theory of holomorphic functions in one variable.*
- Algèbre 2, L3 Mathématiques fondamentales et appliquées, 2023-2026.  
*Exercise sessions on the theory of modules over a commutative ring and its application to linear algebra.*
- Calcul formel, L3 Mathématiques fondamentales et appliquées, 2023-2024.  
*An introductory class to the use of SageMath with applications to cryptography.*
- Analyse et topologie, L2 Mathématiques et Physique, 2023.  
*Exercise sessions for a course of basic functional analysis.*

## LANGUAGES

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French (native), English (fluent), Spanish (beginner).