

Sacha AMIEL

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Presentation

I am a PhD student in mathematical physics at Institut Camille Jordan working on a *Groupoidal Formulation of (Quantum) Field Theory* under the supervision of A. Frabetti and J. Kellendonk.

I also loosely follow from afar other topics in mathematical physics such as Algebraic Quantum Field Theory, Functorial Field Theory, Non-commutative Geometry and Quantum Algebra, Pseudo-differential and Micro-local Analysis as well as many subfields of theoretical physics as my general interest is in the axiomatization of physics, especially quantum field theory.

Academics

Master (2) in Fundamental Mathematics [↗](#)

- GPA: 14.4/20
- Assessed Courses: Mathematical Physics; Operads; Algebraic Topology; C^* -Algebras; Pseudodifferential Calculus & Microlocal Analysis
- Unassessed Courses: Homology, Cohomology & Sheaves; Geometric Analysis; Schemes; Quantum Groups & Multi-zetas.

Sept 2024 – Aug 2025
Ecole Normale Supérieure
of Paris;
Sorbonne University;
Paris-City University;
Paris-North University

Master (MSc) in Theoretical Physics [↗](#)

- GPA: 77/100
- Assessed Courses: Algebraic Geometry; Geometric Topology; Mathematical Physics; Quantum Field Theory; Supersymmetry & Conformal Field Theory; Strings, Branes & Quantum Gravity; Gauge Theory & Renormalization; AdS/CFT & Related Topics.
- Unassessed Courses: Manifolds; Standard Model Physics & Beyond; Lie Groups & Lie Algebras; Operators on Infinite Dimensional Vector Spaces; Advanced Algebra.

Sept 2023 – Sept 2024
King's College London

Magistère (L3+M1) in Fundamental Physics [↗](#)

- GPA: 14.4/20
- Courses: Quantum Mechanics; Analytical Mechanics; Special Relativity; General Relativity; Statistical Physics; Path Integral (Quantum); Epistemology; Astrophysics; Lie Theory; Experimental Physics; Electromagnetism; (Non-Linear) Optics; Laser; Non-Linear Dynamics; Plasma Physics; Spectral Theory of Atoms & Molecules; Particles & Nuclei; Condensed Matter Physics; Coding (Python; C; C++); Classical Covariant Field Theory; Cosmology; Fluid Mechanics.

Sept 2021 – Sept 2023
Ecole Normale Supérieure
of Paris-Saclay;
Magistère of Fundamental
Physics of Orsay;
University of Paris-Saclay

CPGE [↗](#) - MPSI & MP* (french undergrad)

- Courses: Mathematics; Physics; Coding; Algorithmics; Engineering; French Literature & Philosophy.

Sept 2018 – June 2021
Lycée Chaptal

Conferences Workshops and Summer Schools

Deformed Algebraic structures and Applications [↗](#), ICJ

Oct 2025

Who is afraid of infinite dimensions? [↗](#), ICJ

Oct 2025

Groupe de travail : Observables et Quantifications, Dijon

Oct 2025

OAK1 : Observables, Actions and Quantization [↗](#), Institut Élie Cartan de Lorraine

July 2025

Mathematical Physics of Gravity and Symmetry [↗](#), ENS Lyon

June 2025

11th AQFT-UK meeting [↗](#), Cardiff University

June 2025

Teaching

Tutorials at Université Claude Bernard Lyon 1

2026

- Math “Kholes” for 2nd year students. (24h)
- Numerical Analysis. (6h)

Teaching Advanced Math to Higschoolers

Dec 7th, 2025
[parimath.fr](#) [↗](#)

- Part of the *Paris-Math* initiative at ENS Paris.
- The topic was a short introduction to K.A.M. theory, at the intersection between Newtonian Physics and Number theory, motivated (to highscoolers) by elementary astrophysics (namely orbital resonance).

Organizing Research Seminars for Master Students at King’s College

Feb 2024 - April 2024
[msc-talks.uk](#) [↗](#)

- I organized seminars where PhD students, Post-docs, Professors and Master students would present their work to the students of the Theoretical Physics MSc at King’s College London.

Organizing Peer-to-peer tutoring at Paris-Saclay

2021 - 2023

- During the first year of my Magistère, I took part in the peer-to-peer tutoring organized by the physics student association *Photon*. During the second year, I co-ran the organization of this tutoring structure.
- In this framework I taught some introductory courses on Analytical Mechanics, Distribution Theory, Quantum Mecanics, Lebesgue Measure Theory and Lie Theory.
- I also co-wrote the student-maintained summary of the first-year quantum mechanics course, meant for newcomers to catch back (see [P2MQ](#) [↗](#)).

I also independently taught python, arithmetics and french...

Math animation for ([Fête de la Science](#) [↗](#)) at UCBL, as part of the ICJ team

Autumn 2025

Summer of Math exposition ([SOME-2](#) [↗](#)) a popular talk contest on [youtube.com](#) [↗](#)

Summer 2023

Alcor Christmas Conference

Dec 2023

- Alcor is the astrophysics association of Paris-Saclay. They organize monthly conferences. I am member of that association.
- For Christmas, the conference is presented by members of the association. I did one of those (see [alcor.asso.fr](#) [↗](#)).

Coding

Programming: Python, C++, C, Java-Script, OCamel; currently learning Rust.

Markup: \LaTeX , HTML, Jupyter.

Others: Geogebra, Desmos, Maple, SQL, Linux.

Languages

English: bi-lingual

French: native

German: Learner (hight-school level)

Spanish: Learner (hight-school level)