TAL GOTTESMAN

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(+33) 7 61 92 11 37 ⋄ tal.gottesman@rub.de ⋄ Year or birth : 1998

EDUCATION

Université Paris cité *Septembre 2021 - December 2024*
PhD in pure mathematics
Under the supervision of Baptiste Rognerud.
Subject : Fractionally Calabi–Yau Lattices
IMJ-PRG
Full funding from École doctorale Sciences Mathématiques Paris centre.

Université Paris cité *September 2019 - June 2021*
Masters of pure and applied Mathematics with highest honnors
UFR de Mathématiques

University of Cambridge *October 2018 - June 2019*
Master of advanced study in Pure Mathematics Pass
Departement of Pure Mathematics and Mathematical Statistics

Sorbonne Université (former UPMC) *September 2015 - July 2018*
Double major Bachelor Mathematics and Physics with highest honnors
Faculté des Sciences

WORK EXPERIENCE

Ruhr Universität Bochum October 2024 - present
Post-doc

· In Prof. Dr. Karin Baur's team
· Four hours weekly teaching duties

Université Paris Cité September 2021 - August 2024
Complementary teaching duty as a phd student

· Four hours weekly teaching duties

Sorbonne Université January 2018 - May 2018
Tutoring

· Tutored 15 first year undergraduate student in mathematics in weekly meetings.

Private Lessons 2016 and 2019/2021

· High School level mathematics. Weekly

PAPERS

T. Gottesman, *Antichains in the representation theory of finite lattices*, Séminaire Lotharingien de Combinatoire (2024).

PREPRINTS

T. Gottesman, *Fractionally Calabi-Yau lattices that tilt to higher Auslander algebras of type A*. Submitted to *Advances in mathematics*. `https://arxiv.org/abs/2406.09148`

T. Gottesman, Viktória Klász, Markus Kleinau, Rene Marczinzik, *Pure minimal injective resolutions and perfect modules for lattices*. `https://arxiv.org/abs/2511.03385`.

J. Garber, L. Goltermann, D. Horiatakis, D. König, T. Gottesman, *Counting Boolean antichains in Tamari Lattices*. Submitted to FPSAC as an extended abstract.

SUPERVISING

Summer projects:

- Lucas Pouillart, *Root systems and the word problem in finite coxeter groups*, summer 2023.
- J. Garber, L. Goltermann, D. Horiatakis and D. König, *Counting Boolean antichains*, summer 2025, Dive into Research funded by Combinatorial synergies.

Masters students:

- Julie Garber, *Bounded derived category of a poset*, Winter semester 2025-2026. University of Bochum.

ORGANISING AND OTHER RESPONSABILITIES

Diversity Officer of the Faculty of mathematics 2025-ongoing
university of Bochum

- I followed a faculty organised training afternoon on how to welcome students and faculty workers that face discriminations.

Learning Seminar on Cohen-Macaulay posets Winter semester 2025-2026
University of Bochum

- I organised this seminar which was a joint seminar between the team of Prof.Dr. Karin Baur and the team of Prof. Dr. Markus Reineke.

Collaborations in Algebra, Representation theory and Ethics October 2025
ENS Lyon

- Conference with 70 participants, 18 math research talks and two minicourses, 4 talks on ethical topics followed by dicussions.
- Together with my coorganisers Alice Bouillet, Luca Casarin, Luca Francone, and Matilde Macan, I among other things, contacted funding bodies, designed the poster of the event (with Luca Casarin), maintained the website, invited speakers.

Phd student representative September 2022 - September 2024
Université Paris Cité

- At the pedagocial commission of the department of mathematics which is in charge of taking decisions regarding everything that is being taught at the university.

Masters-Phd students meeting 2022 and 2023

· Organising an afternoon of short talks followed by an informal discussions between phd students and masters students

Student representative September 2017 - May 2018
Sorbonne Université

· Teaching Board of the Department of physics of Sorbonne Université
· Keeping track of inovative teaching technics and methods. Measuring their efficiency.

TALKS AND POSTERS

In Conferences

· *Fractionally Calabi-Yau Posets: coroborating a conjecture by Chapoton* CHARMS summer school and conference in May 2024, Bonn in October 2024, Colloque tournant du RT algèbre in March 2025.
· *A small dictionary for the representation theory of lattices*, Artig 5, Bonn, February 2025
· *Antichains in the representation theorie of Lattices*, Poster, FPSAC 2024.

Invitations to seminars

· *Counting Boolean antichains*, Bonn, October 2025.
· *Combinatorial perspectives on Fractionally Calabi-Yau lattices*, Versailles, Seminaire et groupe de travail d'Algèbre-Géometrie, Septembre 2025.
· *Fractionally Calabi-Yau Lattices: techniques and perspectives* in Strasbourg, Algebra seminar,May 2025. Also in the online seminar ACPMS in June 2025.
· *Fractionally Calabi-Yau Posets: coroborating a conjecture by Chapoton*, GATo seminar, LAMFA, Amien, January 2024.
· *Some homology with antichains in a lattice*, DGeCo seminar, LAMFA, January 2023.
· *Representations of ordered sets and derived equivalences*, LAMFA's PhD student seminar, Amien, November 2022.

Learning seminars

· Lexicographically shellable posets, Learning seminar on Cohen-Macaulay Posets, Winter semester 2025-2026, Bochum.
· Proof of the finitistic conjecture for special algebras, Learning seminar on the finitistic dimension conjecture, Summer semester 2025, Bochum.
· 6-functor formalism, Learning seminar on Perverse sheaves, 2021, Université Paris Cité.

CONFERENCES AND SUMMER SCHOOL

· Artig 7: Algebras and Representation Theory in Germany December 2025
Munich
· Collaborations in Algebra, Rep. Theory and Ethics (CARE) October 2025
Lyon
· Artig 6: Algebras and Representation Theory in Germany July 2025
Bochum
· Frieze patterns in algebra, combinatorics and geometry May 2025
CIRM - Luminy

· Spring school on Dynkin Classification — April 2025
Bochum

· Colloque tournant du RT algèbre — Mars 2025
Clermont-Ferrand

· Artig 5: Algebras and Representation Theory in Germany — February 2025
Bonn

· ABCD meeting — October 2024
University of Cologne

· FPSAC — July 2024
Bochum

· Rencontre de l'ANR CHARMS: Catégories amassés et symétrie miroir — May 2024
Strasbourg

· CHARMS Summer School — May 2024
Versailles

· Current trends in Rep. theory, Cluster algebras and Geometry — November 2023
CIRM - Luminy

· LMS-Bath Summer school on Geometric and Categorical Rep. theory — August 2023
Bath

· Homology of groups and functors — June 2023
Université de Lille

· **Algebra days in Paris in honnor of Bernhard Keller** — Septembre 2022
Institue Henri Poincaré - Paris

· Summer school Representation theory and flag or quiver varieties — June 2022
Université Paris Cité

· Summer school in Symplectic singularities in Geometry and Rep. theory — April 2022
CIRM - Luminy

· Summer School in Algebraic Combinatorics — July 2021
online

RESEARCH VISITS

· Visiting Viktória Klász, Markus Kleinau, Rene Marczinzik in Bonn in October 2025

· Junior Research Retreat in Bad Boll: Representation Theory and Combinatorics in september 2025, working with Julia Hörmayer, Maximilian Kaipel and Viktória Klász.

· Visiting Viktória Klász, Markus Kleinau, Rene Marczinzik in Bonn in October 2024

TEACHING

Ruhr-Universität-Bochum — October 2024 - Present

· Category theory. Winter semester 2025-2026. I am teaching the second half of the course which consists in two session of one and half hours of lecture combined with exercises. The first half of the course introduces the langage of category theory and follows the book *Categories in Context* by Emily Riehl. The second half of the class will explore more advanced topics such as categorification of sl_2 representation or 2-dimensional TQFTS depending on the student's interests. **Course coordinators**: Dr. Azzurra Ciliberti and Dr. Tal Gottesman.

- Elementary number theory. Summer semester 2025. I conducted weekly one and half hours long exercise classes for a group of ten second year undergraduate students from the bachelor of arts of the University of Bochum. **Course coordinators**: Prof. Dr. Markus Reineke and Dr. Nico Lorenz.
- Representation theory of quivers. Winter semester 2024-2025. I conducted weekly one and a half hours long exercise classes for a group of four masters student at the university of Bochum. I prepared the exercise sheets. **Course coordinator**: Prof. Dr. Karin Baur.

Université Paris Cité September 2021 - August 2024
Complementary teaching duty as a phd student

- Integration and Fourrier series. I conducted examples classes for a group of 35 third year undergraduate students in mathematics for three hours every week. **Course coordinator**: Cyril Lucas.
- Algorithms and Complexity for first year graduate students in mathematics. I conducted practice sessions for 20 students for four hours everyweek for a month then two hours every two weeks for a month. The end of a the course consisted in supervising the student's end of term programming project. **Course coordinators**: Bertrand Gentou, François Le Maitre.
- Oral exams ("colles") in algebra and analysis for first year undergraduate students in mathematics. Every week I would prepare a series of exercises related to the classes the student were taking. I would then use those exercises to simultaneously evaluate three students each solving a different exercise on a black board for an hour. **Course coordinator**: Marie-Claude Arnaud, Patrick Le Meur.

AWARDS AND STUDENTSHIPS

Programme PGSM 2019/2021
Fondation Science Mathématique de Paris

- Full studentship

Knox Studentship 2018/2019
Trinity College - Cambridge

- Full studentship

Award for excellency June 2016
Sorbonne Université

- 600 € for finishing 3rd out of 800 students during the first year of undergraduate studies

WORKING PAPERS

About des representations of preordered sets June 2020
Introduction to research

- Under the supervision of Sebastian Posur (University of Siegen), Baptiste Rognerud (University of Paris) and Daniel Juteau (University of Paris).
- I reproduce a proof of the existence of an equivalence between a finite poset category of representations and the Freyd Category of the additive closure of the linear closure of its associated category. Using this equivalence I was able to implement the derived category of a finite poset set in the Gap Package CAP. The intention was to identify interesting derived equivalences conjectured by Chapoton in Lie theory

Congruent Subgroup Problems Juin 2019
Part III Essay

- Under the supervision of Emamnuel Breuillard.
- Restitution of the article "Solution to the congruence subgroup problem" de Bass, Milnor et Serre.

TECHNICAL STRENGTHS

Computer Languages	Python, MATLAB, GAP, SageMath
Software & Tools	LaTeX, Excel, Mathematica, GAP
Languages	French, Hebrew (mother tong), English (TOEFL) German (A2)