Francesca Paganelli

Ph.D. student in Mathematics

Personal information

- Date of birth: 09/09/1999.
- Nationality: Italian.
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Education

- 2023- : Ph.D. course Mathematical Models for Engineering, Electromagnetism, and Nanosciences of **Sapienza University of Rome**, Department of basic and applied sciences for engineering (SBAI). Dual Ph.D programme with **University Paris Cité**, faculty of Mathematics.
  Supervised by **Giovanni Cerulli Irelli** (Sapienza university of Rome) and **David Hernandez** (university Paris Cité).

- 2021-2023: Master degree in Mathematics at University of Bologna, Italy.
  Grade Achieved: 110/110 cum laude.
  Title of thesis: "Symmetries of q-characters of representations of quantum affine algebras," supervised by Nicoletta Cantarini and David Hernandez.

- 2018-2021: Bachelor degree in Mathematics at the University of Bologna, Italy.
  Grade Achieved: 105/110.
  Title of thesis: "Ado's Theorem," supervised by Nicoletta Cantarini.

- 2018: Scientific high school diploma, Liceo Albert Einstein, Rimini, Italy.

Talks/Posters

- ***Quantum cluster Algebras and representations of shifted quantum affine algebras.*** I have given this talk at the following seminar: Algebra and representation Theory Seminar (ARTS) at University of Tor Vergata, **Rome** on September 26th 2025; Algebra seminar at University of **Edinburgh** on November 12th 2025.
- ***Representations of shifted quantum affine algebras and quantum cluster algebras,*** contributed talk at SQUARE (Symposium on Quivers, Algebras and Representation Theory), Trento, June 24th 2025.
- ***Representations of shifted quantum affine algebras and quantum cluster algebras,*** talk for Journée d'équipe (IMJ-PRG), Paris, June 6th, 2025.
- ***Representations of shifted quantum affine algebras and quantum cluster algebras***, poster session at Graduate student Meeting in Applied Algebra and Combinatorics, Bologna, April 28-30, 2025.

- ***An introduction to Nakajima quiver varieties****,* March 20th, 2025, Séminaire des thèsards (PhD seminar) de l'IMJ-PRG, Sorbonne University.
- ***The interplay between cluster algebras and quantum groups****,* March 3rd 2025, Rencontre des jeunes chercheuses de l'IMJ-PRG, Sorbonne University.
- ***An introduction to monoidal categorification of cluster algebras***, November 14th, 2024, Séminaire Pampers (Algebra and geometry PhD students seminar), Institut de recherche mathématique de Rennes
- ***Monoidal categorification of cluster algebras: how to enjoy quantum groups with the help of combinatorics****,* November 6th, 2024*,* Réncontre master-doctorat, Université Paris Cité.

Attended conferences and workshops

- *New Perspectives on Quantum representation theory,* Edinburgh, ICMS, November 17-21 2025.
- *Collaborations in algebra and representation theory (CARE)*, Lyon, October 27-31 2025.
- *Symposium on Quivers, Algebras and Representation Theory,* Trento, June 23-27 2025.
- *Graduate Student Meeting on Applied Algebra and Combinatorics*, University of Bologna, April 28-30, 2025.
- *Algebra days in Caen 2025: categorification and quantization in cluster algebras and beyond*, Université de Caen-Normandie, March 18-19, 2025.
- *International Conference of Representations of Algebras (ICRA),* Shanghai Jiao Tong University, July 31- August 9, 2024
- *Higher homological algebras and related topics,* University of Nanjing, July 26-29, 2024.
- *Algèbres Vertex, théorie géométrique des représentations et groupes quantiques*, CIRM (Luminy), 10-14 juin, 2024*.*
- *Quiver Representations, Quiver Varieties and Combinatorics*, University of Bologna, May 22-26, 2023.
- *Théorie des représentations à Lyon,* Lyon, June 26-30, 2023.

Publications and preprints

- *Representations of shifted quantum affine algebras and quantum cluster algebras,* preprint arXiv:2507.05008.

Teaching

- Academic year 2025-2026: teaching assistant for the course *Geometria* for Sapienza University, faculty of Engineering.
- Academic year 2024-2025: Tutor for exercise session (Travaux Dirigés) for the course *Mathématiques élémentaires* (UPCité, CUPGE1); oral exams (colles) for the course *Algèbre et analyse fondamentales II* (UPCité, L2 Mathématiques).
- September 16-20, 2024 : Tutor for crash course in Mathematics (Precorsi di matematica) for Sapienza University, faculty of Engineering.
- Autumn 2022: Online tutoring for *Algebra 1* course of the University of Bologna. Weekly correction of homework.

Fundings

- 2025: funding for double Ph.D. programs by Università italo-francese (progetto Vinci).
- 2024: funding for young researchers *Avvio alla ricerca* by Sapienza University.
- 2023: Internship funding by Institut de Mathématiques de Jussieu-Paris Rive Gauche.

Languages

- Italian: native language.
- English: fluent.
- French: fluent.

Rome, November 18, 2025.