

# MONICA GARCIA

PhD student, Laboratoire de Mathématiques de Versailles (LMV)

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## EDUCATION

Pursuing a PhD in Mathematics

Université de Versailles-Saint-Quentin-en-Yvelines |  
Université Paris-Saclay

2020 – Present Versailles, France

Under the supervision of Pierre-Guy Plamondon

MSc in Mathematics

• M2 Arithmetic, Analysis and Geometry

Université Paris-Saclay

2019 – 2020 Orsay, France

Average: 16,95/20 Très bien

Mémoire: "Motivic Hall algebras and scattering diagrams"

• M1 Voie Jacques Hadamard

Université Paris-Saclay

2018 – 2019 Orsay, France

Average: 17,5/20 Très bien

Mémoire: "Introduction to derived categories"

BSc in Applied Mathematics

Universidad Autónoma de Aguascalientes

2013 – 2018 Aguascalientes, Mexico

Average: 9.97/10

Thesis : "Toric Varieties"

## PUBLICATIONS AND PREPRINTS

- Garcia, Monica (2023). "On thick subcategories of the category of projective presentations". URL: <https://arxiv.org/abs/2303.05226>.
- Garcia, Monica and Alexander Garver (2020). "Semistable subcategories for tiling algebras". In: *Beiträge zur Algebra und Geometrie | Contributions to Algebra and Geometry* 61.

## TALKS AND CONFERENCES

Invited talks :

- (Online) Towards stability for projective presentations

Algebra and Geometry seminar

December 12th 2022

Queen's University, Kingston, Canada

- Introduction to cluster algebras

Séminaire doctorant de géométrie combinatoire (DGeCo)

May 12th 2022

IMJ-PRG, Paris, France

## HONORS & AWARDS

2018-2020  
FMJH's Sophie Germain Scholarship

2017  
BANAMEX's Excellence Youth award

2017  
MITACS Globalink Research Intern award

## EXTRACURRICULAR

- (2021-2022) Co-organizer of welcome activities for international students at the Paris-Saclay's Graduate School of Mathematics.
- (2020 - 2022) Elected representative for PhD students in the Paris-Saclay's Graduate School of Mathematics, the Doctoral School of Mathematics Hadamard and the LMV's councils.
- (2015-2017) President of the student body of the BSc in Applied Mathematics at the Universidad Autónoma de Aguascalientes.

## SKILLS

Spanish	●●●●●●
English	●●●●●●
French	●●●●●●
LaTeX	●●●●●●
Sage	●●●●●●
Python	●●●●●●

- (in French) Méthodes géométriques pour la théorie de représentations des algèbres  
**Séminaire des doctorants du Laboratoire amiénois de Mathématique Fondamentale et Appliquée**  
📅 April 6th 2022 📍 LAMFA, Amiens, France
- (in Spanish) Representaciones de Carcaj: Combinatoria y Álgebra Lineal  
**Seminario de Matemáticas Aplicadas**  
📅 April 13th 2021 📍 Universidad Autónoma de Aguascalientes, Mexico

### Contributed talks :

- Talk in mini-course : Stability conditions in representation theory  
**ISM Discovery School on Mutations: From Cluster Algebras to Representation Theory**  
📅 July 4-8th 2022 📍 UQAM, Montréal, Canada
- Poster : Semistable subcategories for tiling algebras  
**International conference on formal power series and algebraic combinatorics (FPSAC)**  
📅 July 2018 📍 Dartmouth College, Hanover, USA
- Poster : Semistable subcategories for tiling algebras  
**US-Mexico conference on representation theory, categorification and non-commutative algebra**  
📅 November 2017 📍 Instituto de Matemáticas de la UNAM, Mexico city, Mexico
- A combinatorial model for the module category of a certain class of gentle algebras  
**Congress of the Mexican Mathematical Society**  
📅 October 2017 📍 UNAM, Mexico city, Mexico
- Poster : Stability Conditions and Noncrossing Tree Partitions  
**Mathematical Congress of the Americas**  
📅 July 2017 📍 McGill University, Montreal, Canada

### Selected attended conferences and workshops:

- **Workshop and 20th International Conference on Representations of Algebras (ICRA 2022)**. August 3-12th, Montevideo, Uruguay and Buenos Aires, Argentina.
- **VII Encuentro Colombiano de Combinatoria (ECCO) | CIMPA Research School: Geometric methods in combinatorics**. June 14-25th 2022, Bogotá, Colombia.
- (Online) **Winter School "Connections between representation theory and geometry"**. October 2020.
- (Participation cancelled due to Covid-19) **Junior Trimester Program "New trends in representation theory"**. Autumn 2020 at the Hausdorff Research Institute for Mathematics in Bonn, Germany.
- **Mathematics Summer School of Latin America and the Caribbean (EMALCA)**:
  - June 2016 at BIRS-affiliated mathematics research centre Casa Matemática Oaxaca.
  - June 2015 at the Benemérita Universidad Autónoma de Puebla.

### As an organiser:

- Member of the local organizing committee of the **Summer School "Géométrie algébrique en liberté" (GAeL XXIX)**. May 23-27th 2022. Orsay, France.
- Student volunteer for the **50th Congress of the Mexican Mathematical Society**. October 2017, Universidad Nacional Autónoma de México, Mexico.
- Student Volunteer for the **Mathematical Congress of the Americas 2017**. July 2017, McGill University, Montréal, Canada.
- Member of the local organizing committee of the **49th Congress of the Mexican Mathematical Society**. October 2016, Universidad Autónoma de Aguascalientes, Mexico.

## RESEARCH INTERNSHIPS

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Undergraduate Research Intern

**Instituto de Matemáticas de la UNAM**

📅 Autumn 2017

📍 Mexico City, Mexico

Under the supervision of Daniel Labardini-Fragoso. Studied stability conditions as described in the article "*Moduli of representations of finite dimensional algebras*" by Alistair King.

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Cluster algebras and partial triangulations

## Laboratoire d'algèbre, de combinatoire et d'informatique mathématique

📅 Summer 2017

📍 Montreal, Canada

Under the supervision of Alexander Garver and Hugh Thomas as a MITACS fellow. Classified the semistable subcategories of tiling algebras. Used a combinatorial model for the torsion pairs in the module category of these algebras, called the noncrossing complex.

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Undergraduate Research Intern

### Unidad Cuernavaca del Instituto de Matemáticas de la UNAM

📅 Summer 2016

📍 Cuernavaca, Mexico

Under the supervision of Gregor Weingart. Studied the basics on Representation Theory of Groups. Focused on the character table of the symmetric group and the algorithms available to compute it.

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Undergraduate Research Intern

### University of New Mexico

📅 Summer 2015

📍 Albuquerque, USA

Under the supervision of Salvador Portillo. Worked on understanding the mathematical background of the Random Coupling Model in order to study the application of short electromagnetic wavelengths into cavities with various sized apertures.

## TEACHING

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### 2020 -2021 and 2021-2022

- Linear Algebra and geometry (L1 Mathematics - Physics)

#### Université Paris-Saclay, Campus Orsay

📅 Sept - Dec 2020 and 2021

📍 Orsay, France

24 hrs | Supervisor : Joël Merker.

- Elements of algebra and geometry (L1 MPSI)

#### Université Paris-Saclay, Campus Orsay

📅 Sept - Dec 2020 and 2021

📍 Orsay, France

36 hrs | Supervisor : Franck Benoist