

## Education

- 2021–2024 **PhD in Discrete Mathematics and Computer Science**, *Université Paris-Saclay*, Supervisor: Nathalie Aubrun.
- 2020–2021 **Masters in Fundamental Mathematics**, *Université d'Aix-Marseille*.
- 2019–2020 **Masters in Engineering Science, Applied Mathematics**, *Universidad de Chile*.
- 2014–2019 **Mathematical Engineering**, *Universidad de Chile*.
- 2017–2018 **Minor in Quantum Physics**, *Universidad de Chile*.
- 2014–2018 **Bachelor's degree in Engineering Sciences, mention in Mathematics**, *Universidad de Chile*.

## Publications

### Journals

- 2024 **Strongly Aperiodic SFTs on Generalized Baumslag-Solitar groups**, *Ergodic Theory and Dynamical Systems* 44(5):1209-1238, Nathalie Aubrun, N.B., Sacha Huriot-Tattergrain.
- 2022 **Computational Complexity of Biased Diffusion-Limited Aggregation**, *SIAM Journal on Discrete Mathematics* 36(1):823-866, N.B., Eric Goles, Pedro Montealegre.

### Pre-prints

- 2024 **Realizability of Subgroups by Subshifts of Finite Type**, *arXiv Preprint*, N.B.  
**Self-Avoiding Walks on Cayley Graphs Through the Lens of Symbolic Dynamics**, *arXiv Preprint - submitted*, Nathalie Aubrun, N.B.
- 2023 **Computability of Domino Snake Problems on Finitely Generated Groups**, *submitted to a special issue of the Journal of Computer and System Sciences*, Nathalie Aubrun, N.B.

### Conference Proceedings

- 2024 **Contributions to the Domino Problem: Seeding, Recurrence and Satisfiability**, *41st International Symposium on Theoretical Aspects of Computer Science 2024*, N.B.
- 2023 **Domino Snake Problems on Groups**, *International Symposium on Fundamentals of Computation Theory 2023*, Nathalie Aubrun, N.B.

### Book Chapters

- 2022 **Distortion in Automorphisms of Expansive Systems**, *Automata and Complexity: Essays Presented to Eric Goles on the Occasion of His 70th Birthday*, N.B., Sebastián Donoso, Alejandro Maass.

### Memoires and Thesis

- 2024 **Subshifts of Finite Type on Groups: Emptiness and Aperiodicity**, *PhD Thesis*, Université Paris-Saclay.

- 2021 **Domino Problem on Groups**, *Mémoire Master 2*, Aix-Marseille Université.
- 2020 **Contributions to the study of distortion in automorphism groups**, *Memoria Magíster en Ciencias de la Ingeniería, Mención Matemáticas Aplicadas*, Universidad de Chile.

## Selected Talks & Presentations

### International Conferences

- 03/2024 **Contributions to the Domino Problem: Seeding, Recurrence and Satisfiability**, *Clermont-Ferrand*, STACS 2024.
- 09/2023 **Domino Snake Problems on Groups**, *Universität Trier*, 24th International Symposium on Fundamentals of Computation Theory 2023.

### Invited Talks

- 03/2024 **Self-Avoiding Walks and Symbolic Dynamics**, *Aveiro, Portugal*, Theoretical and Computational Algebra 2024.

### Seminars, Work Groups and National Meetings

- 05/2024 **Are Cayley graphs diabolical?**, *Orléans*, Journées sda2 2024.
- 02/2024 **Snakes, SAWs and Symbolic Dynamics**, *CIRM, Marseille*, Complexity of Simple Dynamical Systems in honor of Jarkko Kari's 60th birthday.
- 02/2024 **Substitutions and Hierarchical Structures on Countable Groups**, *CIRM, Marseille*, Research School in Discrete Mathematics and Computer Science.
- 12/2023 **Caminos Autoevitantes desde la Dinámica Simbólica**, *Universidad de Chile*, XCI Encuentro Anual de la SOMACHI.
- 08/2023 **SFTs Aperiódicos para Grupos de Baumslag-Solitar Generalizados**, *Universidad Católica de Chile*, Seminario de Sistemas Dinámicos.
- 03/2023 **Realizability of Subgroups by SFTs**, *Institut de Mathématiques de Toulouse*, Journées sda2 2023.
- 01/2023 **Symbolic dynamics on groups: Emptiness and Aperiodicity**, *IMJ-PRG, Paris*, Séminaire DGeCo.
- 06/2022 **Strongly Aperiodic SFTs on Generalized Baumslag-Solitar groups**, *Université de Liège*, Journées sda2 2022.

## Reviews

- 2023 **Mathematical Foundations of Computer Science (MFCS)**.
- 2019-2021 **International Journal of Modern Physics C**.

## Teaching

### Lecturer

- Fall 2023 **Linear algebra, normal forms and applications**, *Préparation à l'agrégation externe de Mathématiques d'Orsay et ENS Paris-Saclay, Option C: algèbre et calcul formel*, 6h.

### Teaching Assistant

- Spring 2023 **Introduction to Operating Systems**, *IUT d'Orsay, TP*, 1st year, 16h.

- Introduction to Computer Architecture**, *IUT d'Orsay*, TP, 1st year, 16h.
- Algorithms and Complexity**, *Polytech Paris-Saclay*, TD et TP, 2nd year, 28h.
- Spring 2022 **Sorting and Complexity**, *Préparation à l'agrégation externe de Mathématiques d'Orsay et ENS Paris-Saclay, Option C: algèbre et calcul formel*, TP, 6h.
- Mathematics 1**, *Polytech Paris-Saclay*, TD, 1st year, 32h.
- Introduction to Imperative Programming**, *Université Paris-Saclay*, TP, 1st year, 24h.
- Fall 2022 **Safety and Security**, *Université Paris-Saclay*, TD, 3rd year, 24h.
- Spring 2021 **Introduction to Imperative Programming**, *Université Paris-Saclay*, TD/P, 1st year, 42h.
- Fall 2020 **Functional Analysis**, *Universidad de Chile*, Master 1, 32h.
- Fall 2019 **Complex Analysis and Special Functions**, *Universidad de Chile*, 3rd year, 32h.
- Computability and Computational Complexity**, *Universidad de Chile*, Master 1, 32h.
- Spring 2017 **Abstract Algebra**, *Universidad de Chile*, 3rd year, 32h.
- Fall 2017 **Multivariable Calculus**, *Universidad de Chile*, 2nd year, 32h.
- Spring 2015 **Linear Algebra**, *Universidad de Chile*, 1st year, 32h.
- Grader
- Fall 2016 **Introduction to Algebra**, *Universidad de Chile*, 1st year, 32h.

## Supervision

- 2024 **Raphaël Evrard**, *L3 internship*, co-supervised with Nathalie Aubrun.

## Awards and Scholarships

- 2021 **PhD grant**, *Ecole Doctorale STIC*, Université Paris-Saclay.
- 2020 **Master 2 grant**, *Institut Archimède*, Aix-Marseille Université.
- 2019 **Romberg Grant for selected participants of the 7th Heidelberg Laureate Forum**, *Heidelberg University*.
- 2019 **CONYCIT Master Grant**, *Comisión Nacional de Investigación Científica y Tecnológica, Chile*.
- 2015–2018 **Outstanding student**, *Escuela de Ingeniería y Ciencias*, Universidad de Chile, Awarded to students who have achieved remarkable performances on all their courses.
- 2014 **Andrés Bello Scholarship**, *Universidad de Chile*, Awarded for outstanding admission score in the national selection test for engineering.
- 2012 **Bronze Medal**, *Olimpiada Iberoamericana de Física*.

## Miscellaneous

- Languages Spanish (maternal), English (fluent), French (fluent).
- Programming Unix, Python,  $\text{\LaTeX}$ , Sage, C++.
- Interests Running, Trail Running, History, Literature, Philosophy, Music, Guitar, and Bass Guitar.