Nicolás Bitar

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Education

2021–2024 **PhD in Discrete Mathematics and Computer Science**, *Université Paris Saclay*, Expected June 2024, 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 Aggreagation**, *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

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.

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 Bausmlag-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, LaTeX, Sage, C++.

Interests Running, Trail Running, History, Literature, Philosophy, Music, Guitar, and Bass Guitar.