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Curriculum vitæ

1 Presentation

1.1 Research

Keywords : *dynamical systems, entropy, subshifts of finite type, computability, Turing machines, exactly solvable models, information integration, causality, causal structure.*

I am doctor in mathematics ; during my thesis, I proved several mathematical results in the field of symbolic dynamics, in between mathematics and theoretical computer science, in particular of characterisation of the values of entropy of multidimensional SFT under dynamical constraints, and extended this question to other types of dynamical systems, such as interval maps. After my PhD, I worked on other aspects of these systems, mainly theoretical but at the contact with other disciplines, such as quantum and statistical physics (proof of exactness of some entropy computations for exactly solvable models), and computational neuroscience (causal analysis of discrete dynamical systems).

1.2 Teaching

During my PhD thesis, I had the opportunity to teach mathematics, mainly tutorials, in algorithmic graph theory, algebra, analysis, programming (python), and Turing machines in a computer science department. I enjoy teaching and I am actually ready to teach any mathematics class.

2 University positions

2.1 Current position

2019-2020 Post-doctoral researcher at the Center for sleep and consciousness, department of psychiatry of the university of Wisconsin-Madison, under supervision of Giulio Tononi, working on the notion of causal structure in the causal analysis of finite dynamical systems.

2.2 Past positions

2018-2019 Post-doctoral researcher at LIP, ENS de Lyon, under supervision of Nathalie Aubrun and Michael Rao in the ANR project CoCoGro CoCoGro, on exact computation of entropy for multidimensional subshifts of finite type.

2015-2018 PhD thesis at the university Aix-Marseille, under supervision of Mathieu Sablik and Gullaume Theyssier.
Topic : Algorithmic complexity of growth-type invariants of multidimensional subshifts of finite type under dynamical constraints.
Defense : at the university Paul Sabatier, june, 28th of 2018.
Jury : Mathieu Sablik, Guillaume Theyssier, Samuel Petite, Andrei Romashchenko, Valérie Berthé, Jérôme Buzzi, Emmanuel Jeandel, Michael Hochman.

2015-2018 Teacher (mathematics) at the university Aix-Marseille and University Paul Sabatier.

2.3 Pre-doctoral studies

2015 Agrégation de mathématiques (french competitive exam for high school teaching)

2015 Master in pure mathematics, University Pierre et Marie Curie.

2011-2015 Student at ENS Paris.

3 Teaching

3.1 University

1. 96 hours of tutorials at the universitary institute of technology, computer science of Aix-Marseille : algorithmic theory of graphs and algebra for computer science.
2. 96 hours of tutorials at the universitary institute of technology, mechanics at the university Paul Sabatier : algebra and analysis.
3. 96 hours of tutorials at the department of mathematics, university Paul Sabatier : algebra and analysis. **writting of integral corrections of tutorials available online for the students.**
4. 16 hours of tutorials on Turing machines, at the department of computer science of Claude Bernard, Lyon.

3.2 Miscellaneous

1. Oral interrogations for prep-school students at Lycée Louis-le-Grand (Paris) then Lycée Bellevue (Toulouse).
2. Writting of corrections of exams of École polytechnique in 2013 and 2014 for H&K editions.
3. Sensibilisation to mathematics : I participated in 2015 at the university Paul Sabatier and in 2019 at ENS Lyon (project of Nathalie Aubrun) to sensibilisation to mathématics activities for high school and middle school students.

4 Research activities

4.1 Scientific meetings

In March 2018, I co-organised with M.Sablik, C.Rojas and A.Chéritat an international conference at the University of Toulouse, Paul Sabatier, gathering researchers in mathematics and computer science around algorithmic questions on dynamical systems (website of the conference : ici).

Along the year 2018-2019, during my post-doctoral year at ENS Lyon, I was the main organizer of a work group around exact computations of entropy in statistical physics and symbolic dynamics. This work group gathered once a month approximately some researchers in mathematics, computer science and physics.

4.2 Selection of talks in workshops

1. Computability, Randomness and applications, CIRM, Marseille, Juin 2016.
2. Combinatorics, Automata and Number Theory, CIRM, Marseille, Décembre 2016.
3. Seminaire de l'équipe MC2, LIP, ENS Lyon, Février 2017.
4. Seminar Systemas dynamicos, Décembre 2018, Santiago Chile.
5. Colloquium University of Denver, Février 2019.
6. Séminaire Ernest, Marseille, Mars 2019
7. Journées SDA2, Juin 2019
8. Séminaire de l'équipe SymPA, LAMFA, Septembre 2019.