

PAUL BASTIDE

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EDUCATION

PhD student at Labri, Bordeaux & Utrecht University Supervised by Marthe Bonamy & Carla Groenland	<i>2022- now</i>
Master Parisien de recherche en Informatique (MPRI) Mater 2 in theoretical Computer Science	<i>2021- 2022</i>
Ecole normale supérieure de Rennes <i>2020 - 2021</i> <i>prélab</i> year – 2 research internships <i>2019 - 2020</i> Master 1 in theoretical Computer Science <i>2018 - 2020</i> Double diploma Computer Science License, Mathematics License	<i>2018 - 2021</i>
Blaise Pascal High School, Clermont-ferrand Preparatory class MPSI/MP*	<i>2016 - 2018</i>

DIPLOMA

Master in Theoretical Computer Science	MPRI/ENS Rennes
Magister in Computer Science	ENS Rennes
Computer Science License	Rennes University in Computer Science
Mathematic License	Rennes University in Mathematics

PROJECTS

Antichain induced saturation in poset *Summer 2022*

As part of my M2 internship with Carla Groenland, associate professor at Utrecht University, I worked on partially ordered set. We were interested in the minimum size of a maximal subfamily of the inclusion poset on $\{1, 2, \dots, n\}$ that does not contain a fix induced subposet P . We settle the exact value when $P = \bar{C}^k$ where \bar{C}^k is the antichain of size k for all k and large enough n . Results were only known for $k \leq 6$. This work has been submitted to Journal of Combinatorial Theory and is available online [BGJJ22].

Propagation in graphs and burning number *Summer 2021*

During the second part of my *prelab* year at the ENS, I did an 5 months internship with Marthe Bonamy, researcher for the CNRS, in the combinatorics team, Labri, Bordeaux. During this internship I studied propagation in graph and more specifically a new graph parameter called *burning number* which measure the speed of virus/idea propagation in network. This work has been submitted to The Electronic Journal of Combinatorics and is available online [BBC⁺21].

Topological aspect of distributed system *Fall 2020*

During the first part of my *prelab* year at the ENS, I did a 3 months internship with Pierre Fraigniaud, researcher CNRS, IRIF, Paris. During this internship I studied a reductions technics named *round elimination* originally defined in the LOCAL-model with the goal of generalizing this technics to more generals settings using topological approach. This work has been presented at the conference DISC [BF21].

Self-stabilization protocol for clock synchronization *September 2019 - August 2020*

I worked the analysis of a distributed protocol with George Giakkoupis. The theoretical goal was to design and analyze a protocol for clock synchronization using only one bit of information per round. In practice, this project could be used to improve more advanced population protocols by reducing the size of the message without affecting the time complexity of such protocols. Work publish at SODA

conference [BGS21].

Density estimation with random walkers

Summer 2019

During my L3 internship with Emanuele Natale, I worked on density estimation with ant algorithm. We showed that with some assumption, random walkers can estimate density with great information constraint on the grid.

PUBLICATIONS

References

- [BBC⁺21] P. Bastide, M. Bonamy, P. Charbit, T. Pierron, and M. Rabie, “Improved pyrotechnics : Closer to the burning graph conjecture,” 2021. [Online]. Available: <https://arxiv.org/pdf/2110.10530>
- [BF21] P. Bastide and P. Fraigniaud, “Brief announcement: On extending brandt’s speedup theorem from LOCAL to round-based full-information models,” in *35th International Symposium on Distributed Computing, DISC 2021, October 4-8, 2021, Freiburg, Germany (Virtual Conference)*, ser. LIPIcs, S. Gilbert, Ed., vol. 209. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2021, pp. 47:1–47:4. [Online]. Available: <https://doi.org/10.4230/LIPIcs.DISC.2021.47>
- [BGJJ22] P. Bastide, C. Groenland, H. Jacob, and T. Johnston, “Exact antichain saturation numbers via a generalisation of a result of lehman-ron,” *arXiv preprint arXiv:2207.07391*, 2022.
- [BGS21] P. Bastide, G. Giakkoupis, and H. Saribekyan, “Self-Stabilizing Clock Synchronization with 1-bit Messages,” in *SODA 2021 - ACM-SIAM Symposium on Discrete Algorithms*. Alexandria, VA, United States: ACM, Jan. 2021, pp. 1–27, full version. [Online]. Available: <https://hal.inria.fr/hal-02987598>

RESEARCH VISITS

- Pierre Fraigniaud
- George Giakkoupis
- Emanuelle Natale