

Charles Paperman

P.h.D in computer science at university Paris Diderot-Paris 7.
Agrégé in mathematics.

Research topics : logic on finite structures, semigroups, circuits complexity

- 2022** – ∞ **Responsible permanent** at CRIStAL-INRIA Links team
- 2017** – ∞ **Associate Professor** at Université de Lille, CRIStAL – INRIA Links team.
- 2017** – **2017** **Postdoctorat** at IMJ-PRG at Paris 7 university under the supervision of Arnaud Durand
- 2016** – **2017** **Postdoctorat** at Tübingen university under the supervision of Klaus-Jörn Lange
- 2015** – **2016** **Postdoctorat** at Warsaw university under the supervision of Mikołaj Bojańczyk
- 2011** – **2014** **Doctorat** with honor at university Paris Diderot-Paris 7 under the direction of both Olivier Carton and Jean-Éric Pin.
Title (french) : Circuits booléens, prédicats modulaires et langages réguliers
This thesis is funded by *fondation CFM pour la recherche*.
- 2010** – **2011** **MPRI** (Master parisien de recherche en informatique) with honors at university Paris Diderot-Paris 7.
- 2009** – **2010** Preparation and admission at **Agrégation de mathématiques**.
- 2007** – **2009** **Master degree in mathematics MFA** (Mathématiques Fondamentales et Appliquées) with honors from university Paris-Sud.

Research

Publication order is by alphabetical order for all venue, as it is the tradition in theoretical computer sciences.

1. *On Polynomial Recursive Sequences*.
M. Cadilhac, F. Mazowiecki, C. Paperman, M. Pilipczuk and G. Sénizergues, Theory Comput. Syst. 68(4) 2024.
2. *Locality and Centrality : The Variety ZG*.
A. Amarilli and C. Paperman, Log. Methods Comput. Sci. 2023.
3. *Supporting Descendants in SIMD-Accelerated JSONPath*.
M. Gienieccko, F. Murlak and C. Paperman. ASPLOS 2023.
4. *An algebraic approach to vectorial programs*.
C. Paperman, S. Salvati, C. Soyez-Martin, STACS 2023.
5. *The regular languages of wire linear AC0*.
M. Cadilhac, C. Paperman, Acta Informatica 2022.

6. *The Regular Languages of First-Order Logic with One Alternation*
C. Barloy, M. Cadilhac, C. Paperman, T. Zeume, LICS 2022.
7. *Dynamic Membership for Regular Languages.*
A. Amarilli, L. Jachiet, C. Paperman, ICALP 2021. **Best Paper Award**
8. *Stackless Processing of Streamed Trees.*
C. Barloy, F. Murlak, C. Paperman, PODS 2021.
9. *On Polynomial Recursive Sequences.*
M. Cadilhac, F. Mazowiecki, C. Paperman, M. Pilipczuk, G. Sénizergues ICALP 2020. (Selected for the Special Issue)
10. *Continuity of Functional Transducers : A Profinite Study of Rational Functions.* M. Cadilhac, O. Carton, C. Paperman. Log. Methods Comput. Sci. 2020
11. *Classes of Languages Generated by the Kleene Star of a Word.*
L. Daviaud and C. Paperman, Computation & Computation, 2018.
12. *Topological Sorting under Regular Constraints.*
A. Amarilli and C. Paperman, ICALP, 2018.
13. *Monadic Second Order Logic with Arbitrary Monadic Predicates.*
N. Fijalkow and C. Paperman, ACM Trans. Comput. Log. 18(3), page 20 :1-20 :17, 2017.
14. *Continuity and Rational Functions.,*
M. Cadilhac, O. Carton and C. Paperman, ICALP, 2017.
15. *Regular Separability of Parikh Automata.*
L. Clemente, W. Czerwiński, S. Lasota and C. Paperman, ICALP, 2017.
16. *A crevice on the Crane Beach : Finite-degree predicates.,*
M. Cadilhac and C. Paperman, LICS, 2017.
17. *Separability of Reachability Sets of Vector Addition Systems.*
L. Clemente, W. Czerwiński, S. Lasota and C. Paperman, STACS, 2017.
18. *Schema validation via streaming circuits.*
F. Murlak, C. Paperman, M. Pilipczuk, PODS, 2016.
19. *Finite-Degree Predicates and Two-variable First Order Logic.*
C. Paperman, CSL, 2015.
20. *A Circuit Complexity Approach to Transductions.*
M. Cadilhac, A. Krebs, M. Ludwig and C. Paperman, MFCS, 2015.
21. *Classes of Languages Generated by the Kleene Star of a Word.*
L. Daviaud and C. Paperman, MFCS, 2015.
22. *Alternation Hierarchies of First Order Logic with Regular Predicates.*
L. Dartois and C. Paperman, FCT, 2015.
23. *Monadic Second Order Logic with Arbitrary Monadic Predicates.*
N. Fijalkow and C. Paperman, MFCS, 2014.
24. *Two-variable first order logic with modular predicates over words.*
L. Dartois and C. Paperman, STACS, 2013.

PhD supervision

- Co-supervision of the PhD of Claire Soyeze-Martin
- Co-supervision of the PhD of Corentin Barloy

Other supervision

- Bruno Guillon : post-doctorate (2018-2019)
- Nicolas Crosetti : engineer on NetworkDisk (2022-)

Applied project :

- NetworkDisk : On-disk graph manipulation Python Module.
- CompAut : A python experimental framework to manipulate and statically compiled automata-ish models.
- pysemigroup : A python module to compute and visualize stuffs about semigroups and automata.
- semigroup online : An online JS interface for pysemigroups.

Administrative duties

- Examiner for 'oraux d'informatique de l'ENS Ulm'
- Organizer of CNRS yearly GT-DAAL meeting in 2022
- Co-organizer of TUDASTIC (interdisciplinary workshop between database and biocomputing communities) 2022
- In charge of *CU/DU* at computer science department (2021-)
- Head of studies of *WebAnalyst* graduate program (2018-2021)
- In charge of *Alternance* in the MIME department (2018-2021)
- Reviewer for conferences (ICALP, LICS, STACS, MFCS)

Other activities :

- (small) participation to the Dissem.in project.
- Participation at the organisation of the conference *Highlights in Logic, Games and Automata* September 2013 and September 2014 (Paris).
- Organisation of a reading group on circuits complexity at Warsaw university (in 2015).

Animation in mathematics

The Animath association is a major nonprofit organization dedicated to the promotion and animation of mathematics in France. It received a significant national grant from the Commissariat général à l'investissement in order to develop international collaboration in mathematics.

- 2011 : In charge of the relations with two clubs of mathematics for high-school students in Douala (Cameroun) and in Lomé (Togo)
- 2012 : Co-organization of the first Animath winter school of mathematics (Douala, 2012)
- 2013 : Co-organization of the second Animath winter school of mathematics (Lomé, 2013) The success of these winter schools lead Animath to organize around a dozen of similar events in 2014 and 2015.