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Né le 20 novembre 1986

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 and automata theory.

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

Articles published or accepted to publication :

1. *Separability of Reachability Sets of Vector Addition Systems,*
   L. Clemente, W. Czerwiński, S. Lasota and C. Paperman, STACS, 2017.
2. *Schema validation via streaming circuits*,
   F. Murlak, C. Paperman, M. Pilipczuk, PODS, pages 237-249, 2016.
3. *Finite-Degree Predicates and Two-variable First Order Logic*,
   C. Paperman, CSL, pages 616-630, 2015.
4. *A Circuit Complexity Approach to Transductions*,
   M. Cadilhac, A. Krebs, M. Ludwig and C. Paperman, MFCS, Part 1, pages 141-153, 2015.
5. *Classes of Languages Generated by the Kleene Star of a Word*,
   L. Daviaud and C. Paperman, MFCS, Part 1, pages 167-178, 2015.
6. *Alternation Hierarchies of First Order Logic with Regular Predicates*,
   L. Dartois and C. Paperman, FCT, pages 160-172, 2015.
7. *Monadic Second Order Logic with Arbitrary Monadic Predicates*,
   N. Fijalkow and C. Paperman, MFCS, Part 1, pages 279-290, 2014.

8. *Two-variable first order logic with modular predicates over words*,
   L. Dartois and C. Paperman, STACS, pages 329-340, 2013.

Applied project :

— Sage math library for algebraic theory of automaton and its online interface :
`http://www.liafa.univ-paris-diderot.fr/~paperman/index.php?page=sage`
`http://paperman.cadilhac.name/pairs/`

Presentations :

— *Algebraic approach to gate-level description for automata*
Talk at LIF (Marseille, March 2015), LSL (Saclay, January 2015), PARKAS (Paris, October 2014).

— *Adding modular predicates*
Highlights (Paris, September 2014).

— *Two Variable logic and linear circuit complexity*
Talk *Circuits, Logic and Games* (Dagstuhl, September 2015), Highlights (Prague, September 2015), Talk at university of Warsaw (March & April 2015), LIAFA (Paris, February. 2014), LITIS (Rouen, January 2014).

— *Separation method in wreath product of varieties*
FREC, workshop on *séparation* (Bordeaux, 2014).

— *On properties of logical sentences with arbitrary monadic predicates*
Highlights (Paris, September 2013).

— *Two variable first order logic with modular predicates*
Talk at Warsaw university (Warsaw, February 2013).

Other activities :

— 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).

Teaching

— Teacher assistant at university Paris Diderot-Paris 7 :
  — Introduction to algorithm (Java first semester) 26 h en 2011 (TD), 20h en 2012 (TP), 20h en 2013 (TP).
  — Programming with object (Java second semester) 26 h en 2011 (TD).
  — Tool for internet (HTML, CSS, PHP et mySQL, second semester) 52 h in 2012 (TD-TP).
  — Introduction to systems, 39 h en 2014 (TD-TP).

— Other teaching experiment :
  — Oral examination in mathematics in classes Préparatoires aux grandes Écoles à Saint-Louis et Condorcet, (Paris, 2008-2010).
  — Teacher assistant in *numerical analysis* at ESIEE, 40 h in 2009.

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.