Charles Grellois

French citizen
Born on February 5, 1988 in Bordeaux, France
I currently live in Bordeaux, France
Two sons (2019 and 2020)
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Contents

1 Research activities

1.1 Research interests

My main interest so far has been the connection of **semantics** and **verification**. It encompasses (tree) automata theory, notions of languages and recognition, logic over words and trees, linear logic and its models, domain theory, game semantics, type theory, some game theory, but also coinduction and infinitary rewriting.

I have also worked on **probabilistic** aspects of computation, and especially on type systems for probabilistic termination verification, with Prof. Dal Lago in Bologna, and Prof. Kobayashi (Tokyo).

I was in the LIRICA team of the LIS (CNRS & Université Aix-Marseille) from 2017 to 2022 and I have started to work on **modal logics** there with Prof. Olivetti and Dr. Tiziano Dalmonte. I am particularly aware of the importance of local collaborations.

In Aix-Marseilles I have also started to work on mathematics and computer science applied to precision oncology, in collaboration with the INRIA team COMPO (Marseilles). So far this is more of a side project I work on on my free time, but I would like to develop this research axis as it serves the public good.

I have joined the LaBRI (CNRS & Université de Bordeaux, France) in September 2022 and I am starting a local collaboration there on higher-order model-checking with Dr. Igor Walukiewicz.

I have a personal taste for synthesis and tentative **unification** of domains.

1.2 Status

Since September 2022: Assistant/Associate Professor (*Maître de Conférences*, tenured), Bordeaux INP. Teaching at the *ENSEIRB-MATMECA* engineering school, and research in the MTV team of the LaBRI.

September 2017-August 2022: Assistant/Associate Professor (*Maître de Conférences*, tenured), Université Aix-Marseille. Teaching at the *Faculté d'Economie et de Gestion* (Economics and Management Faculty) and research in the LIRICA team of the LIS.

1.3 Research experiences

Jan 2016 - Aug 2017 **Postdoctoral Research Assistant** in the joint team FOCUS of INRIA and University of Bologna.

Fall 2015 **Research Assistant** at the University of Dundee, working with Marco Gaboardi on linear dependent types for higher-order model-checking.

2012-2016 **PhD thesis**, entitled *Semantics of linear logic and higher-order model checking*, advised by **Paul-André Melliès** (PPS, Université Paris Diderot) and **Olivier Serre** (LIAFA, Université Paris Diderot). Defense: April 8, 2016. Reviewers: **Kazushige Terui** and **Igor Walukiewicz**.
Manuscript: `http://research.grellois.fr/doc/these.pdf`

1.4 Fundings

I am a member of the ANR projects TICAMORE, PPS, THEME, RECIPROG and LAMBDACOMB. The ANR (Agence Nationale de la Recherche) is France's principal funding agency. Being committed to many projects, I am not able to apply for funding a project I would lead, or this would mean that I would have to leave most of these projects.

I was invited on a special funding for young researchers to the whole program on Automata, Logic and Games of the *Institute for Mathematical Science* of Singapore in August-September 2016.

My PhD and my studies at ENS Cachan (2008-2012) were fully funded by the French state, after a competitive selection.

1.5 Students

PhD students. *Cédric de Lacroix de Lavalette*, since 2021, cosupervised with Luigi Santocanale.
Subject: *From algebra to logic through categories : Frobenius algebras and Girard semigroups in autonomous categories.*

Interns. I have supervised the following Bachelor students:

- Spring 2022: *Hadil Bechar* and *Romain Prokopp* (coding a game together with a graphical interface in Java)
- Fall 2021: *Théo Esposito* (introduction to machine learning with applications to oncology)
- Fall 2021: *Aimé Jean* (tree automata and modal mu-calculus)
- Summer 2021: *Pauline Bonnet* (modal logics, cosupervised with Prof. Olivetti)
- Summer 2021: *Louis Jalouzot* (machine learning theory, cosupervised with Dr. Nathanaël Fijalkow)
- Summer 2021: *Rémy Citérin* (machine learning theory, cosupervised with Dr. Nathanaël Fijalkow)
- Summer 2021: *Emilie Genty* (data analysis with applications to oncology)

- Summer 2020: *Emilie Genty* (introduction to machine learning)

And the following Master students:

- Summer 2022: *Thomas Blanchard* (operational research, optimization, machine learning)
- Summer 2022: *Yannis Coutouly* (higher-order model-checking and intersection types)

1.6 Visits

2019 (planned but cancelled a few hours before the flight due to my first son's very early birth):
One week in Tokyo visiting **Naoki Kobayashi**.

2018 One week in Bologna visiting **Ugo Dal Lago**.
January: two weeks in Turku visiting **Juhani Karhumäki**.
February: one week in Oxford visiting **Luke Ong** and **Takeshi Tsukada**.

2015 September: one week in Salerno, visiting **Antonio di Nola**'s group.
I gave a 8-hours **research course** there.
October: two weeks in Aarhus, visiting **Lars Birkedal** and his group.

2013 Visits to **Luke Ong** and **Takeshi Tsukada** in Oxford: one month in August, one week in October.

Since 2019, being a father (in addition to the pandemic), I have had much less traveling opportunities, would it be for visits or conferences, in spite of funding avalaible thanks to our ANR projects.

1.7 Events

I notably attended the **NII Shonan** meeting on higher-order verification in March 2016, the EPIT **Coq school** organized by Yann Régis-Gianas in Fréjus in May 2015, the **winter school** of the ESF GAMES network in 2013, the **school** on Geometry of Interaction of the LOGOI project in Carry-Le-Rouet during Spring 2011, and **Dagstuhl seminar** 10252 "Game semantics and verification" in July 2010.

I was invited on a special funding for young researchers to the whole program on Automata, Logic and Games of the *Institute for Mathematical Science* of Singapore in August-September 2016.

1.8 Research-oriented administrative duties

I was in the organizing committee of the STACS 2022 conference.

From Spring 2020 to Fall 2021, I have organized with Nathanaël Fijalkow, Koko Muroya and Krishna S the online seminar (twice a month) **YR-OWLS**.

From March 2018 to August 2022, I have been an **elected member of the *Conseil Scientifique*** of my laboratory, the LIS.

I used to organize the *Semantics and Verification* **working group** at PPS and LIAFA, and its predecessor, the *Recursion Schemes, Automata, Semantics* working group.

I was a representative of the PhD candidates of our *Ecole doctorale* (2014-2016).

I used to be an organizing member of the seminar of Parisian students in Logic ("GDT Logique", founded by Marc Bagnol), which ran weekly at ENS Ulm (2010-2012). I gave seven talks there.

Reviews and PC duties. I was a PC member of DICE-FOPARA 2017 and of ITRS 2018.
I was reviewer for 34 papers, for:

- the conferences TCS (2014), ICFP (2015, 2022), MFPS (2015, 2022), CSL (2015, 2016), FoSSaCS (2016, 2017, 2018), FSTTCS (2017), LICS (2016, 2017, 2020, 2021), POPL (2018), FSCD (2016, 2017, 2018), MFCS (2017, 2018), KR (2018), CONCUR (2021), ICFP (2022)
- the workshops LCC (2016), DICE-FOPARA (2017), ITRS (2018, 2019)
- the journals LMCS (2017), ACM TOPLAS (2019), Bulletin of Symbolic Logic (2020), MSCS (2020),

2 Communications

The complete list of my talks is avalaible at http://research.grellois.fr/talks_date.htm — with the associated slides.

I gave 65 talks since 2009 (plus 7 at the working group of Parisian students in logic).

In addition, I participate since 2021 to yearly dissemination events in Corsica. We explain our research on maths and computer science applied to oncology to a general audience, but also to high school teachers and students.

3 Publications

3.1 International conferences with proceedings and program committee

1. Tiziano Dalmonte, Charles Grellois, Nicola Olivetti *Towards an Intuitionistic Deontic Logic Tolerating Conflicting Obligations* WoLLIC 2022: 280-294 https://link.springer.com/chapter/10.1007/978-3-031-15298-6_18

2. Tiziano Dalmonte, Charles Grellois, Nicola Olivetti *Terminating Calculi and Countermodels for Constructive Modal Logics* TABLEAUX 2021: 391-408 https://link.springer.com/chapter/10.1007%2F978-3-030-86059-2_23

3. Tiziano Dalmonte, Charles Grellois, Nicola Olivetti *Proof Systems for the Logics of Bringing-It-About* DEON 2020/2021 http://collegepublications.co.uk/contents/DEON00003.pdf

4. Naoki Kobayashi, Ugo Dal Lago, Charles Grellois *On the Termination Problem for Probabilistic Higher-Order Recursive Programs* LICS 2019 https://ieeexplore.ieee.org/document/8785679

5. Pierre Clairambault, Charles Grellois, Andrzej S. Murawski *Linearity in higher-order recursion schemes*, Principles of Programming Languages (POPL) 2018. https://dl.acm.org/citation.cfm?doid=3158127

6. Charles Grellois et Ugo Dal Lago. *Probabilistic Termination by Monadic Affine Sized Typing*, European Symposium on Programming (ESOP) 2017. https://link.springer.com/chapter/10.1007%2F978-3-662-54434-1_15

7. Charles Grellois et Paul-André Melliès. *Relational semantics of linear logic and higher-order model-checking.* 24th EACSL Annual Conference on Computer Science Logic (CSL) 2015 http://drops.dagstuhl.de/opus/volltexte/2015/5419/, 2015.

8. Charles Grellois et Paul-André Melliès. *Finitary semantics of linear logic and higher-order model-checking.* Mathematical Foundations of Computer Science (MFCS) 2015 http://link.springer.com/chapter/10.1007%2F978-3-662-48057-1_20, 2015.

9. Charles Grellois et Paul-André Melliès. *An infinitary model of linear logic.* Foundations of Software Science and Computation Structures (FoSSaCS) 2015 http://link.springer.com/chapter/10.1007%2F978-3-662-46678-0_3, 2015

3.2 International journals

1. Tiziano Dalmonte, Charles Grellois, Nicola Olivetti *Intuitionistic Non-normal Modal Logics: A General Framework.* J. Philos. Log. 49(5): 833-882 (2020) https://link.springer.com/article/10.1007%2Fs10992-019-09539-3

2. Naoki Kobayashi, Ugo Dal Lago, Charles Grellois *On the Termination Problem for Probabilistic Higher-Order Recursive Programs* Log. Methods Comput. Sci. 16(4) (2020) https://lmcs.episciences.org/6817

3. Ugo Dal Lago, Charles Grellois *Probabilistic Termination by Monadic Affine Sized Typing* ACM TOPLAS (2019) https://dl.acm.org/citation.cfm?doid=3320016.3293605

3.3 International workshops with proceedings and program committee

1. Charles Grellois et Paul-André Melliès. *Indexed linear logic and higher-order model checking.* Proceedings Seventh Workshop on Intersection Types and Related Systems, ITRS 2014, `https://arxiv.org/html/1503.04377v1`, 2014.

3.4 Thesis (selected)

1. Charles Grellois. *Semantics of linear logic and higher-order model checking.* Thèse de doctorat, Université Paris 7, `http://research.grellois.fr/doc/these.pdf`, 2016.
2. Charles Grellois. *Algebraic theories, monads, and arities.* Mémoire de Master, Université Paris 6, `http://arxiv.org/abs/1110.3294`, 2011.

4 Teaching

4.1 Teaching-oriented administrative duties

I was in charge (2018-2022) of the **DESU Outils Numériques du Manager** at the Faculté d'Economie et Gestion of Aix-en-Provence.

- Creation of the diploma
- Students' selection
- Finding professors, hiring professionals
- Preparing the schedules, finding the rooms
- Organizing the exams
- Dealing with the pandemics and online courses
- Partnership with Région Sud, which funded unemployed people to follow the courses (**new at the University**)
- Possibility to follow only some modules of the cursus (**new at the faculty**)
- ...

4.2 Teaching activities

I have taught about 2000h at University level. The usual teaching load for a Maître de Conférences is 192h a year. Although, when I was at the Faculté d'Economie et de Gestion in Aix-Marseilles (2017-2022), we realized that we were 10 permanents to assume the teaching load of 26 people. This has led me to teach a bit less than 400h a year during that time, which was complex since my two sons were born in 2019 and in 2020. I must confess that this has impacted my research activity.

The following lists most of the topics I have covered:

- Oriented Object Programming
- Introduction to Algorithms with Python
- Systems and Networks in C and in Python
- Introduction to Machine Learning
- Introduction to Computer Science
- Excel, from basics to advanced concepts
- Operational Research
- Modal logics; temporal logics
- Mathematics oral examinations

5 Education

Former student of the *Ecole Normale Supérieure de Cachan* (2008-2012).

2011 - 2012	**Master 2 of Computer Science** at the *Master Parisien de Recherche en Informatique* (MPRI), with honours. *Semantics, automata theory, game theory, linear logic, type theory.*
2010 - 2011	**Master 2 of Pure Mathematics** at University Paris 6, with honours. *Algebraic geometry, homology, differential geometry, mathematical physics.*
2009 - 2010	**Master 1 of Computer Science** at MPRI, with honours.
2008 - 2009	**Bachelor of Computer Science** at ENS Cachan, with honours.
2007 - 2008	**Bachelor of Mathematics** at University Bordeaux 1.
2005 - 2008	A three-year preparation course for admission to the French *grandes écoles*, Lycée Montaigne, Bordeaux. I was notably accepted to ENS Lyon and ENS Cachan.

6 Languages

Fluent French and English. Italian skills.