

Charles Grellois

French citizen

Born on February 5, 1988 in Bordeaux, France

I currently live in Aix-en-Provence, France

Two sons (2019 and 2020)

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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 been working on **probabilistic** aspects of computation, and especially on type systems for probabilistic notions of termination, with Prof. Dal Lago in Bologna, and Prof. Kobayashi (Tokyo).

I have joined in 2017 the LIRICA team of the LIS (CNRS & Université Aix-Marseille) and have started to work on **modal logics**, in addition to these previous items, with Prof. Olivetti and Tiziano Dalmonte.

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.

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

1.2 Status

Since September 2017: **Associate Professor** (*Maître de Conférences*), Université Aix-Marseille. Teaching at the *Faculté d'Economie et de Gestion* 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 ANRs TICAMORE, PPS, THEME, RECIPROG and LAMBACOMB.

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.

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:

- 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 Jalouzet* (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)

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, I have had much less traveling opportunities, would it be for visits or conferences.

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

Since Spring 2020, I organize with Nathanaël Fijalkow, Koko Muroya and Krishna S the online seminar (twice a month) **YR-OWLS**.

Since March 2018, I am 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 29 papers, for:

- the conferences TCS (2014), ICFP (2015), MFPS (2015), 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)
- 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 available 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). I have talked in:

- 4 international conferences with proceedings and program committee,
- 2 international conferences without proceedings and with program committee,
- 1 national conference with proceedings and program committee,
- 1 national conference without proceedings and with program committee,
- 1 international workshop with proceedings and program committee,
- 5 international workshops without proceedings and with program committee,
- 4 international workshops without proceedings and on invitation,
- 2 international workshops without proceedings nor program committee,
- 5 national workshops without proceedings nor program committee,

- 35 seminars,
- 3 talks during “journées de rentrées” of labs or teams,
- 2 extra talks of different nature.

In addition, I participate since 2021 to vulgarisation events in Corsica. We explain our research on maths and computer science applied to oncology to people, and mainly to high school teachers and students.

3 Publications

3.1 International conferences with proceedings and program committee

1. Tiziano Dalmonde, 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
2. Tiziano Dalmonde, Charles Grellois, Nicola Olivetti *Proof Systems for the Logics of Bringing-It-About* DEON 2020/2021 <http://collegepublications.co.uk/contents/DEON00003.pdf>
3. 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>
4. 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>
5. 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
6. 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.
7. 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.
8. 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 Dalmonde, 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

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. *Interprétation catégorique des arbres rationnels*. Mémoire de Master, Université Paris 7, <http://research.grellois.fr/doc/grellois-interpretation-categorique-des-arbres-rationnels.pdf>, 2012.
3. Charles Grellois. *Algebraic theories, monads, and arities*. Mémoire de Master, Université Paris 6, <http://arxiv.org/abs/1110.3294>, 2011.
4. Charles Grellois. *Game semantics of higher-order recursion schemes establishes the decidability of MSO model-checking*. Mémoire de Master, Université Paris 7, <http://research.grellois.fr/doc/grellois-game-semantics-and-ho-model-checking.pdf>, 2010.

4 Teaching

4.1 Teaching-oriented administrative duties

I am in charge 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 funds unemployed people to follow the courses (**new at the University**)
- Possibility to follow only some modules of the cursus (**new at the faculty**)
- Work in progress: accreditate the cursus for professionals so that they can use a special funding (CPF) to follow the courses (**new at the University**)
- ...

Teaching activities follow (please proceed to the next page).

4.2 Teaching activities

- 2021-2022 Système et réseau (L3I and L3G MIAGE). Programmation objet avancée (M1 MIAGE). Introduction à l'informatique et à la programmation (L1 MIASHS). Introduction aux tableurs (L1 MIASHS). Programmation (L1 MIASHS). Informatique appliquée (M1 Commerce International). Recherche Opérationnelle (L3 MIASHS). Suivi d'alternants.
- 2020-2021 Formation des professeurs de lycée pour la spécialité NSI (1 journée). Introduction au Machine Learning (L2, en option). Système et réseau (L3I and L3G MIAGE). Programmation objet avancée (M1 MIAGE). Introduction à l'informatique et à la programmation (L1 MIASHS). Introduction aux tableurs (L1 MIASHS). Programmation (L1 MIASHS). Logiques modales (1 séance en M2 recherche). Informatique appliquée (M1 Commerce International). Excel avancé (DESU Outils Numériques du Manager). Suivi d'alternants.
- 2019-2020 Formation des professeurs de lycée pour la spécialité NSI (7 journées). Système et réseau (L3I and L3G MIAGE). Programmation objet avancée (M1 MIAGE). Introduction à l'informatique et à la programmation (L1 MIASHS). Introduction aux tableurs (L1 MIASHS). Programmation (L1 MIASHS). Logiques modales (1 séance en M2 recherche). Informatique appliquée (M1 Commerce International). Suivi d'alternants.
- 2018-2019 Système et réseau (L3I and L3G MIAGE). Programmation objet avancée (M1 MIAGE). Introduction à l'informatique et à la programmation (L1 MIASHS). Introduction aux tableurs (L1 MIASHS). Programmation (L1 MIASHS). Informatique appliquée (M1 Commerce International). Suivi de 4 alternants. Colles de mathématiques en maths sup (PTSI, lycée Vauvenargue) et maths spé (PC, lycée militaire d'Aix).
- 2017-2018 Systèmes d'exploitation et architecture des ordinateurs (L3 MIAGE and M2 CCI). Informatique générale (L1 Economie-Gestion). Logiques temporelles (M2 Informatique)
- 2014-2015 **Teaching Assistant** at University Paris 7 : in charge of the Java **programming sessions** (first year). The course was totally reorganized, which is why I took it for one more year. We implemented a Web interface for discovering Java, named **Hackojo**. I mainly contributed to expanding the set of exercices. I also gave **exercise sessions** of the **Elements of algorithmics and combinatorics** course.
- 2013-2015 **Teaching Assistant** of the *Duality Theory in Logic and Computer Science* course taught by **Mai Gehrke** at the LMFI Master.
- 2013 Member of the **jury** evaluating BSc's and MSc's internships at University Paris 7.
- 2012-2014 **Teaching Assistant** at University Paris 7 : in charge of the Java **programming sessions** (first year), and **exercise sessions** of the Mathematics for Computer Science course at the EIDD engineering school (third year).
- 2010-2012 **Mathematics examinations** ("colles") at Lycée Buffon, Paris (first year).
- 2010-2012 **Maple teacher** (as a "colleur") and preparation to oral examinations at Lycée Carnot, Paris (second year).
- 2001-2006 Volunteer teacher of the basics of computer use at the Grand-Parc social center, Bordeaux.

5 Education

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.