

JOËL OUAKNINE

— Short CV —

September 26, 2023

Year of birth: 1972
Citizenships: Canada and France

RESEARCH INTERESTS

Foundations of Algorithmic Verification and Theoretical Computer Science; in particular:

- Decision, control, and synthesis problems for discrete and continuous linear dynamical systems (using tools from number theory, Diophantine geometry, algebraic geometry)
- Automated verification of real-time, probabilistic, and infinite-state systems (e.g. model-checking algorithms, synthesis problems, complexity)
- Logic and applications to verification
- Automated software analysis
- Concurrency

EDUCATION

Oxford University Oxford, UK	PhD, Computer Science	2001
McGill University Montréal, Canada	MSc, Mathematics BSc, Honours in Mathematics	1995 1993

EMPLOYMENT

Max Planck Institute for Software Systems Saarbrücken, Germany	Scientific Member & Director - Managing Director 2018 – 2020	2016 – present
Saarland University Saarbrücken, Germany	Adjunct Professor of Computer Science	2016 – present
Oxford University Oxford, UK	Visiting Professor of Computer Science Emmy Network Fellow of Keble College (part-time) Professorial Research Fellow (part-time) Full Professor of Computer Science - Deputy Head of Department 2014 – 2016 Reader¹ in Computer Science University Lecturer² in Computer Science Fellow³ of St John's College	2021 – present 2021 – present 2016 – 2021 2010 – 2016 2008 – 2010 2004 – 2008 2004 – present
Ecole Normale Supérieure Cachan, France	Invited Professor (1-month appointment, twice)	2006, 2008
Carnegie Mellon University Pittsburgh, USA	Postdoctoral Fellow (Computer Science Department)	2002 – 2004
Tulane University New Orleans, USA	Instructor (Department of Mathematics)	1999 – 2002

¹Tenure awarded July 2009. 'Reader' is roughly equivalent to Associate Professor in North America.

²'University Lecturer' is roughly equivalent to tenure-track Assistant Professor in North America.

³Emeritus Fellow since 2016.

PUBLICATIONS

Approx. **160 papers** in peer-reviewed conferences and journals, including:

LICS (16), ICALP (18), STACS/MFCS/FSTTCS (19), CONCUR/FoSSaCS (19), CAV/TACAS/POPL (14), STOC/SODA (4), JACM (4)

AWARDS

1. **Elected Fellow of the ACM, 2021.** *“For contributions to algorithmic analysis of dynamical systems.”*
2. **Distinguished Paper Award, LICS 2021**
3. **Arto Salomaa Prize, 2020.** *Annual prize, awarded jointly to James Worrell and myself for “outstanding contributions to Theoretical Computer Science, in particular to the theory of timed automata and to the analysis of dynamical systems.”*
4. **Elected Member of Academia Europaea, 2020**
5. **ERC Consolidator Grant, 2015 – 2021**
6. **Best Paper Award, ICALP 2014**
7. **Best Paper Award, CONCUR 2011**
8. **Roger Needham Award, 2010.** *Annual prize given by the British Computer Society for “a distinguished research contribution in computer science by a UK-based researcher within 10 years of their PhD.”*
9. **EPSRC Leadership Fellowship, 2009 – 2014.** *5-year research grant, of total value over £1M, covering among others 100% of my salary and providing complete buy-out from teaching and administrative duties. (Only 17 Leadership Fellowships awarded in 2009 in the UK across all scientific areas covered by EPSRC (the Engineering and Physical Sciences Research Council), of which only 4 in Computer Science.)*
10. **Outstanding Teaching Award, Oxford University, 2008**
11. **Outstanding Teaching Award, Oxford University, 2007**

INVITED PLENARY SPEAKER AT INTERNATIONAL CONFERENCES, ETC.

1. Theoretag Automaten und Formale Sprachen, 2023
2. **ROCKS:** Rigorous Dependability Analysis Using Model Checking Techniques for Stochastic Systems Workshop, 2023
3. Thomas A. Henzinger 60th Birthday Workshop, 2023
4. **WORReLL:** Workshop On Reachability, Recurrences, and Loops, 2023.
5. **ACTS:** Workshop on Automata, Concurrency and Timed Systems, 2023
6. **SynCoP:** 8th Int’l Workshop on Synthesis of Complex Parameters, 2023
7. **FORMATS:** 20th Int’l Conf. on Formal Modeling and Analysis of Timed Systems, 2022
8. **AutoMathA:** Jewels of Automata: from Mathematics to Applications, 2020/21/22
9. **HIGHLIGHTS** of Logic, Games and Automata, 2021
10. **AG:** SIAM Conf. on Applied Algebraic Geometry, 2021
11. **MFCS:** 46th Int’l Symp. on Mathematical Foundations of Computer Science, 2021
12. **CiE:** Computability in Europe, 2021

13. **FSTTCS**: 40th IARCS Annual Conf. on Foundations of Software Technology and Theoretical Computer Science, 2020
14. **LMV**: 5th Logic Mentoring Workshop, 2020
15. **CONCUR**: 30th Int'l Conf. on Concurrency Theory, 2019
16. **CCA**: 16th Int'l Conf. on Computability and Complexity in Analysis, 2019
17. **TCSAG**: MPI-INF and MPI-MiS Joint Workshop on Theoretical Computer Science and Algebraic Geometry, 2019
18. **AVM**: 12th Alpine Verification Meeting, 2018
19. **DIMAP10**: DIMAP 10 Year Anniversary Workshop, 2017
20. **FoSSaCS**: 20th Int'l Conf. on Foundations of Software Science and Computation Structures, 2017
21. **EQINOCs**: Workshop on Entropy and Information in Computational Systems, 2016
22. **Heilbronn Annual Conference**, 2015
23. **FFM**: Conf. on Frontiers of Formal Methods, 2015
24. **Journées nationales du GDR IM**, Bordeaux, 2015
25. **TbiLLC**: 11th Int'l Tbilisi Symp. on Language, Logic and Computation, 2015
26. **London Mathematical Society BCS-FACS Annual Seminar**, 2014
27. **VTSA**: Summer School on Verification Technology, Systems & Applications, 2014
28. **GandALF**: 5th Int'l Symp. on Games, Automata, Logics and Formal Verification, 2014
29. **AISS**: Workshop on Algorithmics on Infinite State Systems, 2014
30. **SCSS**: 5th Int'l Symp. on Symbolic Computation in Software Science, 2013
31. **FroCoS**: 9th Int'l Symp. on Frontiers of Combining Systems, 2013
32. **FCT**: 19th Int'l Symp. on Fundamentals of Computation Theory, 2013
33. **LATA**: 7th Int'l Conf. on Language and Automata Theory and Applications, 2013
34. **RP**: 6th Int'l Workshop on Reachability Problems, 2012
35. **QMC**: ARTIST PhD School on Quantitative Model Checking, 2012
36. **Roger Needham Lecture**, The Royal Society, London, 2010
37. **ICALP**: 37th Int'l Coll. on Automata, Languages and Programming, 2010
38. **MFPS**: 26th Conf. on the Mathematical Foundations of Programming Semantics, 2010
39. **AVACS**: Spring School on Automatic Verification and Analysis of Complex Systems, 2010
40. **VECoS**: 3rd Int'l Workshop on Verification and Evaluation of Computer and Communication Systems, 2009
41. **FORMATS**: 6th Int'l Conf. on Formal Modelling and Analysis of Timed Systems, 2008
42. **QAPL**: 4th Workshop on Quantitative Aspects of Programming Languages, 2006

SERVICE

1. **Organiser, Bellairs Workshop** on Algorithmic Aspects of Dynamical Systems, 2023

2. **Organiser, Gump Research Station Workshop** on Dynamical Systems and Computation, 2019
3. **Steering Committee member, LICS: ACM/IEEE Symp. on Logic in Computer Science**, 2017 – present
4. **PC chair, LICS: 32nd Annual ACM/IEEE Symp. on Logic in Computer Science**, 2017
5. **Organiser, Bellairs Workshop** on Algorithmic Aspects of Dynamical Systems, 2017
6. **Organiser, Bellairs Workshop** on Infinite-State Systems, 2015
7. **PC co-chair and co-organiser, RP: 8th Int’l Workshop on Reachability Problems**, 2014
8. **Co-organiser, Dagstuhl Seminar** on Reachability Problems for Infinite-State Systems, 2014
9. **PC chair, MFPS: 27th Conf. on the Mathematical Foundations of Programming Semantics**, 2011
10. **PC co-chair, FORMATS: 7th Int’l Conf. on Formal Modelling and Analysis of Timed Systems**, 2009
11. **PC member**, multiple international conferences
12. **Associate Editor**, Journal of the ACM, 2023 – present
13. **Associate Editor**, Journal of Computer and System Sciences, Elsevier, 2014 – 2023

RESEARCH GRANTS

1. **PI** (one of 23 PIs), Collaborative Research Centre 248, German Research Foundation (DFG), *Foundations of Pervicuous Software Systems*, 2022 – 2026. **EUR 11,000,000**
2. **PI** (one of 18 PIs), Collaborative Research Centre 248, German Research Foundation (DFG), *Foundations of Pervicuous Software Systems*, 2018 – 2022. **EUR 11,000,000**
3. **PI**, Consolidator Grant: ERC, *Analysis, Verification, and Synthesis of Infinite-State Systems*, 2015 – 2020. **EUR 1,835,000**
4. **Co-I**: EPSRC, UK (PI J. Worrell), *Counter Automata: Verification and Synthesis*, 2014 – 2017. **GBP 242,000**
5. **PI**: EPSRC, UK, *Graph-Theoretic Algorithms for Separation Logic*, 2012 – 2014. **GBP 196,000**
6. **PI**: The Leverhulme Trust, UK (Visiting Professor P. Schnoebelen), *Algorithmic Theory of Well-Structured Systems: Applications to Verification*, 2011 – 2012. **GBP 18,000**
7. **Co-I**: EPSRC, UK (PI D. Kroening), *Verification of Shared-Memory Concurrent Software*, 2009 – 2013. **GBP 560,000**
8. **PI**, Leadership Fellowship: EPSRC, UK, *Quantitative Verification: From Model Checking to Model Measuring*, 2009 – 2014. **GBP 1,019,000**
9. **PI**: EPSRC, UK, *Automated Verification of Probabilistic Programs*, 2009 – 2011. **GBP 360,000**
10. **Co-I**: EPSRC, UK, (PI B. Coecke), *Complexity and Decidability in Unconventional Computational Models*, 2008 – 2011. **GBP 180,000**
11. **PI**: EPSRC, UK, *Model-Checking Algorithms for Timed Systems*, 2007 – 2011. **GBP 135,000**
12. **Co-I**: EPSRC, UK (PI A. W. Roscoe), *CSP Model Checking: New Technology and Techniques*, 2007 – 2011. **GBP 715,000**
13. **Supervisor**, FP6 Marie Curie Intra-European Fellowship: European Commission (Fellow P. Bouyer), *Logical Languages for Embedded Systems*, 2006 – 2007. **EUR 47,000**

SOFTWARE DEVELOPED

1. **SKOLEM:** A certifying solver for the Skolem Problem for simple integer LRS, 2022 –
2. **POROUS:** An invariant builder and reachability checker for affine programs, 2021 –
3. **SLAP:** A static livelock analyser for CSP processes (now bundled within FDR), 2009 –
4. **APEX:** A verification tool for probabilistic programs, 2007 –
5. **MAGIC:** A model checker for sequential and concurrent C programs (implemented by S. Chaki), 2002 –