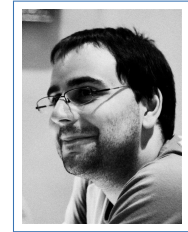


# Mickael Randour

PhD in Computer Science

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*Academic CV – updated on June 14, 2019*

## Positions

- Oct. 2017–present **Research Associate**, *Mathematics Department & Complexys Institute, Faculty of Sciences, UMONS - Université de Mons, Belgium*, team of Thomas Brihaye.  
**F.R.S.-FNRS** tenured researcher position.
- Oct. 2015–Sept. 2017 **Postdoctoral researcher**, *Formal Methods and Verification Group, Computer Science Department, Faculty of Sciences, ULB - Université libre de Bruxelles, Belgium*, team of Jean-François Raskin.  
**F.R.S.-FNRS** postdoctoral grant.
- Oct. 2014–Sept. 2015 **Postdoctoral researcher**, *Laboratoire Spécification et Vérification - CNRS & ENS Cachan, France*, team of Patricia Bouyer-Decitre and Nicolas Markey.  
European research project **CASSTING** (FP7-ICT-601148).

## Education

- 2010–2014 **PhD in Computer Science**, *UMONS - Université de Mons, Belgium*.  
**F.R.S.-FNRS** research fellow.
- 2008–2010 **Master's Degree in Computer Science**, *UMONS, Belgium*.  
Specialized in Research. With highest honors.
- 2005–2008 **Bachelor's Degree in Computer Science**, *UMONS, Belgium*.  
With highest honors.

## Main Research Interests

- General Formal methods, verification, complex systems, computer science and mathematics.
- Focus Automated controller synthesis for reactive systems, model checking, game theory, quantitative specifications, stochastic models, multi-criteria objectives, logic.

## Honors

- 2019 **Invited Professor at Ecole Normale Supérieure Paris-Saclay, France**  
One month
- 2016 **Best presentation award at Highlights 2016**  
Highlights of Logic, Games and Automata conference, Brussels (~ 80 talks)

2015 **Ackermann Award**

*Outstanding PhD Dissertation Award for Logic in Computer Science*, worldwide selection by the EACSL – European Association for Computer Science Logic.

2014 **2nd Heidelberg Laureate Forum**

Invited participant (worldwide selection, acceptance rate < 10%).

2010 **Award of the “Fondation Emile Cornez”**

For an outstanding academic background, awarded to the most deserving student graduated in 2010 from UMONS - Université de Mons.

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## Major research grants

2018–2019 **ManySynth – Many-sided Synthesis of Reactive Systems: Foundations, Algorithms, and Tools**

F.R.S.-FNRS Incentive Grant for Scientific Research, project leader, budget of 245.000 euros.

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## Professional Responsibilities

- PC chair MoRe 2018, MoRe 2019.
- PC member SETTA 2019, RP 2019, ICALP 2019, GandALF 2018, V2CPS 2017, GandALF 2017.
- Reviewing LICS, ICALP, STACS, CONCUR, TACAS, FoSSaCS, MFCS, ATVA, GandALF, QEST, TIME, SETTA, Information and Computation, Acta Informatica, Theoretical Computer Science, Information Processing Letters, Formal Methods in System Design, etc. Also contributor to Mathematical Reviews (American Mathematical Society).
- Thesis jury Noémie Meunier, UMONS, 2016; Pierre Carlier, UMONS & ENS Cachan, 2017.
- Organization Young researchers (UMONS, 2014) and research group (ULB 2015–2017, UMONS 2018–present) seminars, MoRe workshops (2018, 2019), GAMENET workshop on Theory and Algorithms in Graph and Stochastic Games (2019).
- University Active member of university councils (research council, faculty council, department council and ICT council) and F.R.S.-FNRS representative council. Founding member and ex-president of a student society.

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## Main collaborations (group leaders)

- Aalborg University: team of K.G. Larsen.
- IRISA - INRIA Rennes: teams of N. Bertrand, N. Markey and O. Sankur.
- IRIF - Université Paris Diderot: team of A. Sangnier.
- LaBRI: team of H. Gimbert, team of N. Fijalkow.
- IST Austria: team of K. Chatterjee.
- LACL - UPEC: teams of Y. Oualhadj and M. Sassolas.
- LSV - ENS Paris-Saclay: teams of P. Bouyer, L. Doyen and S. Le Roux.
- RWTH Aachen: team of J.-P. Katoen.
- Saarland University: team of M. Zimmermann.

- Swansea University: team of A. Pauly.
- ULB: teams of E. Filiot and J.-F. Raskin.
- UMONS: teams of T. Brihaye and V. Bruyère.

*National / international projects I have been part of:* ManySynth - Many-sided Synthesis of Reactive Systems: Foundations, Algorithms, and Tools; CASSTING - Collective Adaptative Systems Synthesis with Non-Zero-Sum Games; CFV - Centre Fédéré en Vérification; GASICS - Games for Analysis and Synthesis of Interactive Computational Systems; ERC inVEST; ERC EQUALLS.

## Research Stays

- ENS Paris-Saclay Invited professor for one month in 2019.
- RWTH Aachen Visit in the team of Joost-Pieter Katoen in 2017.
- INRIA Rennes Research stay in the team of Nathalie Bertrand and Ocan Sankur in 2016.
- ENS Cachan Postdoctoral position in 2014-2015.
- IST Austria Several research stays in the team of Krishnendu Chatterjee since 2011.
- Berkeley Lab Research internship at the Lawrence Berkeley National Laboratory (USA) in 2009.

## Teaching

- 2018–present *Formal methods for system design* (UMONS, 4th and 5th year).
  - ▷ The course material I created is now also taught by Guillermo A. Pérez in UAntwerpen (Antwerpen, Belgium) and Thierry Massart in ULB (Brussels, Belgium).
- 2015–2018 *Formal verification of computer systems* (ULB, 4th year).
  - ▷ Substitute professor (full course supervision).
- 2010–2014 *Software engineering* (UMONS, 2nd and 3rd year).
- 2009–2010 *Algorithmics and programming* (UMONS, 1st year).

## Mentoring

### Postdoc students

- 2018–2019 Frantisek Blahoudek.
- 2018–2019 Adrien Boiret.

### PhD students

- 2018–2022 Florent Delgrange (UMONS - RWTH Aachen, with Joost-Pieter Katoen).
- 2014–2018 Quentin Hautem (UMONS - ULB, with Véronique Bruyère and Jean-François Raskin): *The Complexity of Combining Objectives in Two-Player Games*.

### Master students

- 2018–2019 Pierre Vandenhove (UMONS, 5th year) on many-sided synthesis.

- Dorian Labeeuw (UMONS, 4th year) on partial solvers for parity games.  
 Dimitri Waelkens (UMONS, 4th year) on learning for synthesis.
- 2017–2018 Florent Delgrange (UMONS, 5th year) on multi-objective stochastic systems.  
 Thomas Carlier (UMONS, 5th year) on reachability problems in stochastic systems.
- 2016–2017 Florent Delgrange (UMONS, 4th year) on beyond worst-case shortest path problems.
- 2015–2016 Simon Olbregts (UMONS, 5th year) on developing a tool suite for synthesis in graph games with window objectives.
- 2013–2014 Alexandre Devaux (UMONS, 5th year) on developing a tool suite for synthesis in graph games and beyond worst-case synthesis.
- 2012–2013 Alexandre Devaux (UMONS, 4th year) on multi-dimension energy games.

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### Interns

- 2016–2017 Raphaël Berthon (ENS Rennes) on beyond worst-case synthesis.  
 2015–2016 Jean-Baptiste Courtois (ENS Cachan) on beyond worst-case synthesis.

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### Bachelor students

- 2016–2017 Rémy Detobel (ULB) on studying Monopoly through Markov chains.  
 2016–2017 Thomas Herman (ULB) on simple graph games.  
 2016–2017 Loan Sens (ULB) on stochastic shortest path problems.

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### Miscellaneous

- Oral Skills Regular oral contributions in conferences (52 oral contributions since 2011).  
 Events Attended 57 research events and conferences since 2010.
- Pop. Science Organizer of popular science workshops on game theory in 2013, 2014, 2018 and 2019. Organizer of *Pint of Science* Mons in 2019.
- Programming Developer of `Deciva1`, a tool for learning rational numbers, aimed at primary school  
 Experience students. Large software project (main language: Java) developed for the “CREM - Centre de Recherche sur l’Enseignement des Mathématiques”, Belgium.
- Students’ Coach for students’ team CPUMONS for ACM ICPC programming contests since  
 coaching 2016. Our team won a bronze medal (rank 12/114) during NWERC 2016, 5th place during BAPC 2017, 3rd place during BAPC 2018.

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### PhD Thesis

- Title *Synthesis in Multi-Criteria Quantitative Games*.  
 UMONS - Université de Mons, 330 pages, 2014.
- Description Shift from single-criterion quantitative models for synthesis to multi-criteria ones: multi-dimension specifications, new quantitative frameworks, rich behavioral models combining games and Markov decision processes.
- Supervisors Véronique Bruyère (UMONS) & Jean-François Raskin (ULB).

Jury Véronique Bruyère (UMONS), Jean-François Raskin (ULB), Patricia Bouyer-Decitre (LSV – ENS Cachan, France), Joost-Pieter Katoen (RWTH Aachen, Germany), Thomas A. Henzinger (IST Austria, Austria), Thomas Brihaye (UMONS) and Hadrien Mélot (UMONS).

Graduation April 24, 2014.

## Publications

*Author names are usually ordered alphabetically.* **Total: 23.** All papers are available in full versions on [my website](#) and on arXiv.

### Invited papers in international peer-reviewed conferences (2)

[BCH+16] Romain Brenguier, Lorenzo Clemente, Paul Hunter, Guillermo A. Pérez, Mickael Randour, Jean-François Raskin, Ocan Sankur, Mathieu Sassolas. Non-Zero Sum Games for Reactive Synthesis. *Keynote lecture at LATA'16*, LNCS 9618, pages 3-23, Springer, 2016.

[RRS15a] Mickael Randour, Jean-François Raskin, Ocan Sankur. Variations on the Stochastic Shortest Path Problem. *Keynote lecture at VMCAI'15*, LNCS 8931, pages 1-18, Springer, 2015.

### Peer-reviewed journals (5)

[BMR+18] Patricia Bouyer, Nicolas Markey, Mickael Randour, Kim G. Larsen, Simon Laursen. Average-energy games. *Acta Informatica*, volume 55, issue 2, pages 91-127, Springer, 2018.

[BFRR17] Véronique Bruyère, Emmanuel Filiot, Mickael Randour, Jean-François Raskin. Meet Your Expectations With Guarantees: Beyond Worst-Case Synthesis in Quantitative Games. *Information and Computation*, volume 254, pages 259-295, Elsevier, 2017.

[RRS17] Mickael Randour, Jean-François Raskin, Ocan Sankur. Percentile Queries in Multi-Dimensional Markov Decision Processes. *Formal Methods in System Design*, volume 50, issue 2, pages 207-248, Springer, 2017.

[CDRR15] Krishnendu Chatterjee, Laurent Doyen, Mickael Randour, Jean-François Raskin. Looking at Mean-Payoff and Total-Payoff through Windows. *Information and Computation*, volume 242, pages 25-52, Elsevier, 2015.

[CRR14] Krishnendu Chatterjee, Mickael Randour, Jean-François Raskin. Strategy Synthesis for Multi-Dimensional Quantitative Objectives. *Acta Informatica*, volume 51, issue 3-4, pages 129-163, Springer, 2014.

### International peer-reviewed conference proceedings (15)

[BHRR19] Véronique Bruyère, Quentin Hautem, Mickael Randour, Jean-François Raskin. Energy mean-payoff games. *CONCUR'19*, 28 pages, 2019.

[BDOR19] Thomas Brihaye, Florent Delgrange, Youssouf Oualhadj, Mickael Randour. Life is Random, Time is Not: Markov Decision Processes with Window Objectives. *CONCUR'19*, 23 pages, 2019.

[LPR18] Stéphane Le Roux, Arno Pauly, Mickael Randour. Extending finite-memory determinacy by Boolean combination of winning conditions. *FSTTCS'18*, LIPIcs 122, pages 38:1-38:21, Schloss Dagstuhl, 2018.

[BGMR18] Patricia Bouyer, Mauricio González, Nicolas Markey, Mickael Randour. Multi-weighted Markov decision processes with reachability objectives. *GandALF'18*, EPTCS 277, pages 250-264, 2018.

[BRR17] Raphaël Berthon, Mickael Randour, Jean-François Raskin. Threshold Constraints with Guarantees for Parity Objectives in Markov Decision Processes. *ICALP'17*, LIPIcs 80, pages 121:1-121:15, Schloss Dagstuhl, 2017.

[BHM+17] Patricia Bouyer, Piotr Hofman, Nicolas Markey, Mickael Randour, Martin Zimmermann. Bounding Average-energy Games. *FoSSaCS'17*, LNCS 10203, pages 179-195, Springer, 2017.

[BHR16] Véronique Bruyère, Quentin Hautem, Mickael Randour. Window parity games: an alternative approach toward parity games with time bounds. *GandALF'16*, EPTCS 226, pages 135-148, 2016.

[BMR+16] Patricia Bouyer, Nicolas Markey, Mickael Randour, Arnaud Sangnier, Daniel Stan. Reachability in Networks of Register Protocols under Stochastic Schedulers. *ICALP'16*, LIPIcs 55, pages 106:1-106:14, Schloss Dagstuhl, 2016.

[BMR+15] Patricia Bouyer, Nicolas Markey, Mickael Randour, Kim G. Larsen, Simon Laursen. Average-energy games. *GandALF'15*, EPTCS 193, pages 1-15, 2015.

[RRS15b] Mickael Randour, Jean-François Raskin, Ocan Sankur. Percentile Queries in Multi-Dimensional Markov Decision Processes. *CAV'15*, LNCS 9206, pages 123-139, Springer, 2015.

[BFRR14b] Véronique Bruyère, Emmanuel Filiot, Mickael Randour, Jean-François Raskin. Expectations or Guarantees? I Want It All! A crossroad between games and MDPs. *SR'14*, EPTCS 146, pages 1-8, 2014.

[BFRR14a] Véronique Bruyère, Emmanuel Filiot, Mickael Randour, Jean-François Raskin. Meet Your Expectations With Guarantees: Beyond Worst-Case Synthesis in Quantitative Games. *STACS'14*, LIPIcs 25, pages 199-213, Schloss Dagstuhl, 2014.

[CDRR13] Krishnendu Chatterjee, Laurent Doyen, Mickael Randour, Jean-François Raskin. Looking at Mean-Payoff and Total-Payoff through Windows. *ATVA'13*, LNCS 8172, pages 118-132, Springer, 2013.

[Ran13] Mickael Randour. Automated synthesis of reliable and efficient systems through game theory: a case study. Proceedings of the *European Conference on Complex Systems 2012*, Springer Proceedings in Complexity XVII, pages 731-738, Springer, 2013.

[CRR12] Krishnendu Chatterjee, Mickael Randour, Jean-François Raskin. Strategy Synthesis for Multi-Dimensional Quantitative Objectives. *CONCUR'12*, LNCS 7454, pages 115-131, Springer, 2012.

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### International peer-reviewed conferences without proceedings (1) —

[Ran16] Mickael Randour. Reconciling Rationality and Stochasticity: Rich Behavioral Models in Two-Player Games. *GAMES 2016, 5th World Congress of the Game Theory Society*, 16 pages, 2016.

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### Talks

**Total: 52.** All slides are available on [my website](#).

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### Invited talks (16)

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2019

- o Rich behavioral models: illustration on journey planning, *LSV seminar*, 24/04, Ecole Normale Supérieure de Paris-Saclay, Cachan, France.

- Rich behavioral models: illustration on journey planning, *GAMENET Workshop – Theory and Algorithms in Graph and Stochastic Games*, 14/03, Université de Mons, Mons, Belgium.

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#### 2018

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- Rich behavioral models: illustration on journey planning, *GT Vérif invited session*, 29/05, Université Grenoble Alpes, Grenoble, France.
- Rich behavioral models: illustration on journey planning, *verification seminar*, 18/01, University of Oxford, Oxford, UK.

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#### 2017

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- Rich behavioral models: illustration on journey planning, *invited session talk*, 13/09, *HIGHLIGHTS 2017*, Queen Mary University, London, UK.
- Rich behavioral models: illustration on journey planning and focus on multi-constraint percentile queries in Markov decision processes, *Informatik Kolloquium*, 20/03, RWTH Aachen, Aachen, Germany.

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#### 2016

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- Reachability in Networks of Register Protocols under Stochastic Schedulers, *IRISA - INRIA Rennes seminar*, 07/04, IRISA, Rennes, France.

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#### 2015

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- Synthesis in Multi-Criteria Quantitative Games, *Ackermann Award lecture*, 11/09, CSL'15, Berlin, Germany.
- Percentile Queries in Multi-Dimensional Markov Decision Processes, *LACL seminar*, 01/06, UPEC - Université Paris-Est Créteil Val-de-Marne, Créteil, France.

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#### 2014

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- Planning a Journey in an Uncertain Environment: The Stochastic Shortest Path Problem Revisited, *LIF seminar - MOVE research group*, 11/12, Université d'Aix-Marseille, Marseille, France.
- Meet Your Expectations With Guarantees: Beyond Worst-Case Synthesis in Quantitative Games, *IST Austria seminar*, 17/06, IST Austria, Vienna, Austria.
- Meet Your Expectations With Guarantees: Beyond Worst-Case Synthesis in Quantitative Games, *GT Jeux*, 24/01, Université Paris Diderot - Paris 7, Paris, France.
- Meet Your Expectations With Guarantees: Beyond Worst-Case Synthesis in Quantitative Games, *LaBRI seminar*, 16/01, Université de Bordeaux, Bordeaux, France.

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#### 2013

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- Looking at Mean-Payoff and Total-Payoff through Windows, *LIAFA seminar*, 16/12, Université Paris Diderot - Paris 7, Paris, France.
- Meet Your Expectations With Guarantees: Beyond Worst-Case Synthesis in Quantitative Games, *LSV seminar*, 26/11, LSV - CNRS & ENS Cachan, Cachan, France.
- Meet Your Expectations With Guarantees: Beyond Worst-Case Synthesis in Quantitative Games, *Nord Pas de Calais / Belgium Congress of Mathematics*, 28/10, Université de Valenciennes, Valenciennes, France.

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## Other oral contributions: conferences, seminars, etc (36)

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2019

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- Journey planning in uncertain environments, the multi-objective way, *Complex Systems think tank*, 15/01, Mons, Belgium.

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2018

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- Answering reachability problems in Markov decision processes using learning algorithms, *L<sup>2</sup> meeting*, 19/10, Mons, Belgium.

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2017

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- Bounding Average-Energy Games, *FoSSaCS'17*, 25/04, Uppsala, Sweden.
- Bounding Average-Energy Games, *MFV seminar*, 29/03, ULB, Brussels, Belgium.

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2016

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- Average-energy games, *HIGHLIGHTS 2016*, 09/09, Brussels, Belgium.
- Reconciling Rationality and Stochasticity: Rich Behavioral Models in Two-Player Games, *GAMES 2016 - 5th World Congress of the Game Theory Society*, 24/07, Maastricht, Netherlands.
- Reachability in Networks of Register Protocols under Stochastic Schedulers, *MFV seminar*, 19/05, ULB, Brussels, Belgium.
- Planning a journey in an uncertain environment: variations on the stochastic shortest path problem, *INFORTECH Scientific Day*, 21/04, UMONS, Mons, Belgium.
- Planning a journey in an uncertain environment, *Modeling & Simulation Day - Energie and Complexys Institutes*, 28/01, UMONS, Mons, Belgium.

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2015

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- Percentile Queries in Multi-Dimensional Markov Decision Processes, *HIGHLIGHTS'15*, 16/09, Prague, Czech Republic.
- Percentile Queries in Multi-Dimensional Markov Decision Processes, *CAV'15*, 21/07, San Francisco, USA.
- Average-energy games, *annual seminar of the LSV*, 09/06, Dourdan, France.
- Average-energy games, *5th CASSTING meeting*, 18/05, Brussels, Belgium.
- Planning a journey in an uncertain environment: variations on the stochastic shortest path problem, *EDT Complex Meeting*, 13/05, UNamur, Namur, Belgium.
- Average-energy games, *ERC Workshop in Verification*, 12/03, IST Austria, Vienna, Austria.
- Games with Window Quantitative Objectives, *FFM 2015*, 25/02, Aachen, Germany.
- Percentile Queries in Multi-Dimensional Markov Decision Processes, *Dagstuhl seminar on "Non-zero-sum games and control"*, 05/02, Leibniz-Zentrum für Informatik, Dagstuhl, Germany.
- Percentile Queries in Multi-Dimensional Markov Decision Processes, *CFV seminar*, 23/01, ULB, Brussels, Belgium.

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2014

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- Meet Your Expectations With Guarantees: Beyond Worst-Case Synthesis in Quantitative Games, *HIGHLIGHTS'14*, 03/09, Paris, France.



- Synthesis in Multi-Criteria Quantitative Games, *public PhD defense*, 24/04, UMONS, Mons, Belgium.
- Synthesis in Multi-Criteria Quantitative Games, *private PhD defense*, 18/04, UMONS, Mons, Belgium.
- Expectations or Guarantees? I Want It All! A crossroad between games and MDPs, *SR'14*, 05/04, Grenoble, France.
- Meet Your Expectations With Guarantees: Beyond Worst-Case Synthesis in Quantitative Games, *STACS'14*, 06/03, Lyon, France.

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### 2013

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- Meet Your Expectations With Guarantees: Beyond Worst-Case Synthesis in Quantitative Games, *FM&V seminar*, 19/11, ULB, Brussels, Belgium.
- Looking at Mean-Payoff and Total-Payoff through Windows, *ATVA'13*, 16/10, Hanoi, Vietnam.
- Meet Your Expectations With Guarantees: Beyond Worst-Case Synthesis in Quantitative Games, *CASSTING 2nd meeting*, 01/10, Aalborg, Denmark.
- Looking at Mean-Payoff and Total-Payoff through Windows, *HIGHLIGHTS conference*, 20/09, Paris, France.
- Looking at Mean-Payoff and Total-Payoff through Windows, *ERC Workshop on Quantitative Models*, 09/05, Jerusalem, Israel.
- Looking at Mean-Payoff and Total-Payoff through Windows, *CASSTING kick-off meeting*, 12/04, Paris, France.
- Looking at Mean-Payoff and Total-Payoff through Windows, *CFV seminar*, 29/03, ULB, Brussels, Belgium.
- Looking at Mean-Payoff and Total-Payoff through Windows, *FM&V seminar*, 08/02, ULB, Brussels, Belgium.

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### 2012

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- Strategy Synthesis for Multi-dimensional Quantitative Objectives, *CONCUR'12*, 04/09, Newcastle, United Kingdom.
- Automated synthesis of reliable and efficient systems through game theory: a case study, *ECCS'12*, 03/09, Brussels, Belgium.
- Strategy Synthesis for Multi-dimensional Quantitative Objectives, *ERC Workshop on Synthesis*, 08/06, Brussels, Belgium.
- Strategy Synthesis for Multi-dimensional Quantitative Objectives, *FM&V seminar*, 18/04, ULB, Brussels, Belgium.

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### 2011

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- Strategy Synthesis for Quantitative Objectives, *GASICS Meeting*, 30/11, Brussels, Belgium.