André Platzer

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Contact Information

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Research Interests

- Logical foundations of cyber-physical systems
- Logic in computer science, programming languages & formal methods
- Logic of multi-dynamical systems: hybrid systems, distributed hybrid systems, stochastic hybrid systems, hybrid games
- Proof theory
- Automated theorem proving & model checking
- Computer algebra & symbolic computation

Academic Appointments

Carnegie Mellon University, Pittsburgh, PA
Associate Professor of Computer Science *7/2014-present*
Assistant Professor of Computer Science *10/2008-6/2014*
Courtesy appointment in Electrical and Computer Engineeering
Courtesy appointment in the Robotics Institute

Visiting Positions

Cornell University, Ithaca, NY
Visiting Associate Professor of Computer Science *5/2015-08/2015*

Education

- **Ph.D. Computer Science, University of Oldenburg**, Germany, 12/2008
  Title: "Differential Dynamic Logics: Automated Theorem Proving for Hybrid Systems"
  Advisor: Professor Ernst-Rüdiger Olderog
  Referee: Professor George J. Pappas, University of Pennsylvania, Philadelphia, PA
  Referee: Professor Tobias Nipkow, Technical University of Munich, Germany
  Grade: *summa cum laude*
  Award: ACM Doctoral Dissertation Honorable Mention Award
- **M.Sc. Computer Science, University of Karlsruhe (TH)**, Germany, 09/2004
  Thesis: "An Object-oriented Dynamic Logic with Updates"
  Advisor: Professor Peter H. Schmitt
  Advisor: Professor Bernhard Beckert, University of Koblenz-Landau, Germany
  Grade: *summa cum laude, with distinction*
- Studied Mathematics at Fernuni Hagen, Germany, during social service, 1998-1999

Awards and Honours

1. *NSF CAREER* Award, 2011
2. IEEE Intelligent Systems' *AI's 10 to Watch* Award, 2010
3. *ACM Doctoral Dissertation Honorable Mention* Award, 2009
4. *Brilliant 10* Award of Popular Science Magazine, 2009
5. Best Paper Awards at FM'09 and TABLEAUX'07
6. Award of the Floyd und Lili Biava Stiftung, 09/2006
7. Graduation with distinction, University of Karlsruhe (TH), Germany, 2004
8. Competitively selected for support by the William-Stern-Gesellschaft Mathematical Talent Program for Gifted Pupils, Hamburg, 1991-1998

Teaching Experience

- 15-317/15-357 Constructive Logic (Undergraduate course in the Computer Science Department, Carnegie Mellon University, Fall 2015)
- 15-824 Programming Language Semantics (Graduate course in the Computer Science Department, Carnegie Mellon University, Spring 2015)
- 15-424/15-624 Foundations of Cyber-Physical Systems (Undergraduate course in the Computer Science Department, Carnegie Mellon University, Fall 2013, ENS Lyon Spring 2014, MAP-i Braga Portugal Spring 2014, CMU Fall 2014, CMU Spring 2016)
- 15-122 Principles of Imperative Computation (Introductory course in the Computer Science Department at Carnegie Mellon University, Spring 2012, Spring 2013, Spring 2014)
- 15-411 Compiler Design (Undergraduate course in the Computer Science Department, Carnegie Mellon University, Fall 2010, Fall 2011, Fall 2012)
- 15-816 Modal Logic (Graduate course in the Computer Science Department, Carnegie Mellon University, co-taught with Frank Pfenning, Spring 2010)
- 15-819M Data, Code, Decisions (Graduate course in the Computer Science Department, Carnegie Mellon University, Fall 2009)
- 15-819N/18-879L Logical Analysis of Hybrid Systems (Graduate course in the Computer Science Department and the Electrical Engineering Department, Carnegie Mellon University, Spring 2009 and Spring 2011)

Ph.D. Student & Postdoc Advising

- Brandon Bohrer, Ph.D., since F'15
- Ran Ji, postdoc, since F'14
- Nathan Fulton, Ph.D., present
- Marcus Völp, postdoc F'13–S'14,
- Jean-Baptiste Jeannin, postdoc F'13–S'15,
- Jan-David Quesel, postdoc F'13–S'14,
- Stefan Mitsch, postdoc F'12-S'15,
- Khalil Ghorbal, postdoc F'12–S'15,
- Grant Olney Passmore, visiting postdoc during F'12,
- João Guerra Martins, Ph.D., present
- Ping Hou, postdoc, S'11–S'12,
- Erik Peter Zawadzki, Ph.D., present, co-advised with Geoff Gordon
- Sarah Michelle Loos, "Differential Refinement Logic", Ph.D., 09/2015,

Undergraduate & Masters Advising

- David Bayani, "Implementing Invariant Generation in the KeYmaera X Prover for Hybrid Systems Verification", since F'15
- Catarina Lobo do Souto Ferreira, internship F'15, "Applying Dynamic Doxastic Differential Dynamic Logic to the AF-447 Incident", University of Porto, Portugal
- Annika Peterson, senior thesis, S'15, "Formal Verification of a Controlled Flight Between Two Robots: A Case Study", Allen Newell Award for Excellence in Undergraduate Research and Second place in the Boeing Blue Skies Competition with special mention for "Most Creative" project.
- Annika Peterson, independent study, S'14, "Formal Verification of a Controlled Flight Between Two Robots: A Case Study", Second place in the SRC-URO Poster Competition.
- Jordan Williams, independent study, S'14, "Variable Dependence in Hybrid Programs"

- Bill Zorn, independent study, S'14, "Execution-based Debugging for Hybrid Programs"
- David Vogelbacher, bachelor's thesis, Karlsruhe Institute of Technology, Karlsruhe, Germany, S'14.
- Il Suk Lyu, undergraduate project, S'13, "Simulating Hybrid Programs in Mathematica"
- Matt McKay, independent study, S'13, "Static Verification of C0 Programs Using the Z3 Theorem Prover"
- Jean-Bastien Grill, internship, S'12, "Extending Logic for Stochastic Hybrid Programs" from École Normale Supérieure, Paris, France
- Alex Crichton and Robbie McElrath, independent study, "Joule – a JIT for Lua", S'12
- Romuald Brillout, M.Sc., Karlsruhe Institute of Technology, 04/2012, "Using Theorem Provers as Preprocessors for Hybrid Systems Model Checking" from Karlsruhe Institute of Technology, Germany
- Jingyi Ni, undergraduate project, "Search-based Bug Finding in Hybrid Programs"
- Lesley Linné, independent study, S'10, co-advised with Edmund M. Clarke, "Logic and Model Checking"
- Jan-David Quesel, "A theorem prover for differential dynamic logic", M.Sc., 04/2007
- Stephanie Kemper, "SAT-based verification for abstraction-refinement", M.Sc., 01/2006

Longer-term Visitors

- Lorenz Sahlmann, École Polytechnique, Paris, France, S'16–SU'16
- Andreas Müller, Johannes Kepler University, Linz, Austria, F'13, S'15.
- Yanni Kouskoulas, Johns Hopkins University Applied Physics Lab, S'12,F'12,S'14
- Stefan Mitsch, Johannes Kepler University, Linz, Austria
- Romuald Brillout, Karlsruhe Institute of Technology, Karlsruhe, Germany, F'11–S'12

Ph.D. Committees

- Ivan Ruchkin, present
- Jiaqi Tan, present
- Henry DeYoung, present
- Chris Martens, Ph.D., "Programming Interactive Worlds with Linear Logic", S'15
- Nikos Aréchiga, Ph.D., "Controller Verification and Design with Logical Analysis Support", S'15
- Aaron Kane, Ph.D., "Runtime Monitoring for Safety-Critical Embedded Systems", S'15
- Thanassis Avgerinos, Ph.D., "Exploiting Trade-offs in Symbolic Execution for Identifying Security Bugs", S'14
- Akshay Rajhans, Ph.D., "Multi-model heterogeneous verification of cyber-physical systems", S'13
- Pongsin Poosankam, Ph.D., "Scaling Concolic Execution of Binary Programs for Security Applications", F'13
- Robert Simmons, Ph.D., "Substructural logical specifications", F'12

Undergraduate & Masters Committee

- Jason Koenig, "Program Analysis for Introductory Education: Leveraging Programmer Specifications", Masters, 08/2014
- Sicun Gao, "Counting zeros over finite fields with Gröbner Bases", Masters, 05/2009
- Johannes Rieken, "Design by contract for Java - revised", M.Sc.,04/2007
- Martin Schnaidt, "Runtime-checking of JML-specifications with Jass", M.Sc., 02/2006

Software Development

KeYmaera X: An aXiomatic tactical theorem prover for hybrid systems	*2014-*
KeYmaeraD: Distributed hybrid theorem prover for distributed hybrid systems	*2009*
KeYmaera: A hybrid theorem prover for hybrid systems	*2006-*
AMC: Approximation refinement model checker for hybrid systems	*2006*
SAAtRe: SAT-based abstraction refinement model checker, real-time systems	*2005*
Orbital library: Computer algebra and theorem proving	*1996-*

Professional Service

Editorial Board: Acta Informatica since 2014
Grant proposal reviewing: National Science Foundation NSF, Natural Sciences and Engineering Research Council of Canada (NSERC), Advanced Research Projects Agency - Energy (ARPA-E), German Research Council (DFG)
PC chair: Logics for System Analysis LfSA'10 at IJCAR&LICS with FLoC, and LfSA'12 at CAV
PC member: Numerical Software Verification workshop 2009, HSCC 2010, IJCAR 2010, FORMATS 2010, HSCC 2011, TABLEAUX 2011, FMOODS/FORTE 2011, FTP 2011, HSCC 2012, FM 2012, SVARM-VERIFY 2012, HSCC 2013, ICALP 2013 Track B, SCSS 2013, Statistical Model Checking workshop 2013, Analytic Virtual Integration of Cyber-Physical Systems workshop AVICPS 2013, FM 2014, Nasa Formal Methods NFM 2014, GandALF 2014, Applied Verification for Continuous and Hybrid Systems ARCH 2014, JELIA 2014, HSCC 2015, CAV 2015, CADE 2015, HotSOS 2016, Applied Verification for Continuous and Hybrid Systems ARCH 2015+2016, Workshop on Embedded and Cyber-Physical Systems Education 2016
Journal referee: Journal of Automated Reasoning, Formal Methods in System Design, Discrete Event Dynamic Systems, ACM Transactions on Embedded Computing Systems, Journal of Symbolic Computation, ACM Transactions on Software Engineering and Methodology, IEEE Transactions on Software Engineering, Autonomous Robots, Theoretical Computer Science, Journal of the ACM, ACM Transactions on Computational Logic
Book referee: Springer
Conference referee: MoDELs'05, LPAR'05, ICTAC'05, FASE'06, SEFM'06, EDCC'06, SEFM'07, AiML'08, ACC'09, HSCC'09, CAV'09, TACAS'11, VMCAI'10, CAV'11, ISSAC'11, SNC'11, CDC-ECC'11, MACIS'11, ISSAC'12, CAV'12, CPP'12, FoSSaCS'13, TACAS'15
Community service: NSF Young Professional Workshop on Exploring New Frontiers in Cyber-physical Systems 2014, NSF Workshop for Aspiring PIs in Cyber-Physical Systems 2014, IEEE CSS Technical Committee on Hybrid Systems 2014
Reviewing service: ACM Reviewer for Computing Reviews, Reviewer for AMS Mathematical Reviews
Educational service: Education Co-director for the NSF EXPEDITION CMACS
University service: Committee for restructuring undergraduate education at CMU, Speakers Club, Ph.D. Admissions Committee, Faculty Search Committee, Microsoft Fellowship Nomination Committee, Sandia Fellowship Nomination Committee, IBM Fellowship Nomination Committee, Open House 2014 & 2015

Memberships ACM'05, ACM SIGLOG & SIGACT & SIGBED & SIGPLAN, IEEE'06, IEEE Computer Systems Society & Control Society & Intelligent Transportation Systems Society, Gesellschaft für Informatik'02, Association for Symbolic Logic'06, Association for Automated Reasoning'06

Languages English, German, basics in French

Invited Talks, Tutorials, Courses & Lectures

1. "Logic of Hybrid Systems", Marktoberdorf Summer School, 08/2017.
2. "Logic & Proofs for Cyber-Physical Systems", International Joint Conference on Automated Reasoning (IJCAR), Coimbra, Portugal, 06/2016.
3. "How to Prove Hybrid Systems and Why that Matters", International Conference on Complex Systems Engineering (ICCSE), Storrs, Connecticut, 11/2015.
4. "Logical Foundations of Cyber-Physical Systems", Invited lecture at AVACS Autumn School, Oldenburg, Germany, 10/2015.
5. "Differential Game Logic", Invited presentation at AVACS Concluding Colloquium, Oldenburg, Germany, 09/2015.
6. "Proving Hybrid Systems", Invited tutorial at FMCAD, Austin, TX, 09/2015.
7. "Logical Foundations of Cyber-Physical Systems: The Basis for Correctness", Invited talk at NITRD HCSS, NSF, Arlington, VA, 04/2015.
8. "Logical Foundations of Cyber-Physical Systems", Invited talk at QuantLA Workshop, Dresden, Germany, 10/2014.
9. "Logical Foundations of Cyber-Physical Systems", Invited talk at HCSS'14, Annapolis, MD, USA, 05/2014.
10. "Foundations of Cyber-Physical Systems", Invited course at MAP-i, Universities of Minho, Braga, Porto and Aveiro, Portugal, 03/2014.
11. "Logical Foundations of Cyber-Physical Systems" and "Developing a Successful NSF Proposal", NSF Workshop for Aspiring PIs in Cyber-Physical Systems, 02/2014.
12. "Logic of Dynamical Systems", Invited Research School at École Normale Supérieure (ENS) de Lyon, France, 01/2014.
13. "Hybrid Systems Verification", Invited talk at Formal Methods for Robotics and Automation, Berlin, Germany, 06/2013.
14. "How to Explain Cyber-Physical Systems to Your Verifier", invited talk at VSTTE'13, Atherton, CA, USA, 05/2013.
15. "Logic of Hybrid Games", invited talk at LCCC Focus Period and Workshop on Formal Verification of Embedded Control Systems, Lund, Sweden, 04/2013.
16. "Logic of Dynamical Systems", invited course at European PhD Program in Computational Logic, Basic Training Camp, Dresden, Germany, 12/2012.
17. "Logical Analysis of Hybrid Systems: The KeYmaera Approach", invited course at Verified Software Summer School at 2nd Verified Software Workshop by East China Normal University and Microsoft Research Asia, Shanghai, 08/2012.
18. "Differential Dynamic Logic and Differential Invariants for Hybrid Systems", Invited talk at ITP'12, Princeton, NJ, 08/2012.
19. "Logical Analysis of Hybrid Systems: A Completeness Answer to a Complexity Challenge", Keynote speaker at Descriptional Complexity of Formal Systems (DCFS), Braga, Portugal, 07/2012.
20. "Logics of dynamical systems", Invited tutorial at LICS'12, Dubrovnik, Croatia, 06/2012.

21. "Logical Analysis of Hybrid Systems: The KeYmaera Approach", Invited tutorial at FroCoS'11, Saarbrücken, Germany, 10/2011.
22. "The Correct Future of Intelligent Transportation Systems", Invited talk at Intelligent Transportation Society Tri-Chapter Annual Meeting, Hagerstown, MD, 09/2011.
23. "Logic and Compositional Verification of Hybrid Systems", Invited tutorial at CAV'11, Snowbird, UT, 07/2011.
24. "Logical Analysis of Hybrid Systems: How Logic and Computer Algebra Help Save the World", Invited talk at Applications of Computer Algebra ACA'11, Houston, TX, 06/2011.
25. "Logical Analysis of Hybrid Systems", Verification of Control Systems at CDC, 12/2010.
26. "Real Analysis for Complex Systems", Keynote speaker at VERIFY'10, Edinburgh, 07/2010.
27. "Proof Systems for Hybrid System Logics", Invited talk at Proof Systems for Program Logics PSPL'10, Edinburgh, 07/2010.
28. "Hybrid Logical Verification for Hybrid Systems", Caltech Workshop on Verification and Validation, Pasadena, CA, 09/2009.
29. "Differential Dynamic Logics: Automated Theorem Proving for Hybrid Systems", GI-Kolloquium, Dagstuhl, Germany, 5/2009.
30. "Symbolic Computations in Hybrid Systems Verification: Why symbolic computations are required for hybrid systems analysis", NSF Workshop on Symbolic Computation for Constraint Satisfaction Problems, Arlington, VA, 11/2008
31. "Differential dynamic logic for verifying parametric hybrid systems", German Verification Day at Conference on Computer Aided Verification, CAV 2007, Berlin, 07/2007
32. "Differential dynamic logic for hybrid systems", 6th KeY Symposium 2007, Eisenbachtal, Germany, 06/2007
33. "Abstraction refinement for hybrid systems", 4th KeY Symposium, Gothenburg, Sweden, 06/2005

Colloquia & Seminar Talks

1. "Logic of Hybrid Games", TU Munich, 04/2016.
2. "Logical Foundations of Cyber-Physical Systems and How They Help Prove Aircraft", MIT, 11/2015.
3. "A Uniform Substitution Calculus for Differential Dynamic Logic. or: How I Learned to Stop Instantiating and Love the Substitution", Cornell, 05/2015.
4. "Logical Foundations of Cyber-Physical Systems", École Polytechnique, 10/2014.
5. "Logic of Hybrid Games", École Polytechnique, 10/2014.
6. "Logic of Hybrid Games", Cornell University, 08/2014.
7. "Proving Cyber-Physical Systems with KeYmaera", Safe and Secure Systems and Software Symposium (S5), Dayton, OH, 06/2014.
8. "Logic of Hybrid Games", Dagstuhl Seminar on Cyber-Physical Systems, 03/2014.
9. "Logic of Hybrid Games", Dagstuhl Seminar on Deduction & Arithmetic, 10/2013.
10. "Logic of Hybrid Games", University of Cambridge, 10/2013.
11. "Logic of Hybrid Games", UC Berkeley, 05/2013.
12. "Logic of Hybrid Games", IST, Austria, 04/2013.
13. "How to Prove Your Robot Safe", TU Wien, Austria, 04/2013.
14. "Toward a Driver's License Test for Robotic Cars: How to Prove Your Car Correct", Invited talk at McMaster University department seminar, 03/2012.

15. "Logical Analysis of Hybrid Systems: Proving Theorems for Complex Dynamics", Invited talk at MsSCert Seminar, McMaster University, 03/2012.
16. "Logical Analysis of Hybrid Systems", Distinguished lecture, Model Based Systems Engineering Colloquium, University of Maryland, College Park, MD, 09/2011.
17. "Logical Analysis of Hybrid Systems", Mathematics Colloquium, University of Pittsburgh, PA, 09/2011.
18. "Logical Analysis of Hybrid Systems", SRI, 06/2010.
19. "Logical Analysis of Hybrid Systems", UC Berkeley, 12/2009.
20. "Automated Deduction for Hybrid Systems", Interaction versus Automation - The Two Faces of Deduction, Dagstuhl, 10/2009.
21. "Hybrid Systems Verification and Collision Avoidance for Aircraft", NIA + NASA, Hampton, VA, 06/2009.
22. "Saturation-based Scaling Techniques for Symbolic Verification of Hybrid Systems", University of California, Berkeley, CA, 10/2008
23. "Hybrid-differential logic for parametric verification", University of Koblenz-Landau, Germany, 03/2006

Book Publications

1. **André Platzer**. *Logical Analysis of Hybrid Systems: Proving Theorems for Complex Dynamics*. Springer, 2010; 426 pages.

Refereed Book Chapters

1. Laurent Doyen, Goran Frehse, George J. Pappas and **André Platzer**. Verification of hybrid systems. In Edmund M. Clarke, Thomas A. Henzinger and Helmut Veith, editors, *Handbook of Model Checking*. Springer, 2017.

Refereed Journal Publications

1. Stefan Mitsch and **André Platzer**. ModelPlex: Verified runtime validation of verified cyber-physical system models. *Formal Methods in System Design*, 42 pp. , 2016. Special issue for selected papers from RV'14.
2. Khalil Ghorbal, Andrew Sogokon and **André Platzer**. A hierarchy of proof rules for checking positive invariance of algebraic and semi-algebraic sets. *Computer Languages, Systems & Structures*, 2016. Special issue for selected papers from VMCAI'15.
3. Jan-David Quesel, Stefan Mitsch, Sarah Loos, Nikos Aréchiga, and **André Platzer**. How to model and prove hybrid systems with KeYmaera: A tutorial on safety. *Software Tools for Technology Transfer*, **18**(1), pp. 67–91, 2016.
4. **André Platzer**. Differential game logic. *ACM Trans. Comput. Log.*, **17**(1), pp. 1:1–1:52, 2015.
5. Stefan Mitsch, **André Platzer**, Werner Retschitzegger and Wieland Schwinger. Logic-based modeling approaches for qualitative and hybrid reasoning in dynamic spatial systems. *ACM Computing Surveys*, **48**(1), pp. 3:1–3:40, 2015.
6. Khalil Ghorbal, Jean-Baptiste Jeannin, Erik P. Zawadzki, **André Platzer**, Geoffrey J. Gordon, and Peter Capell. Hybrid theorem proving of aerospace systems: Applications and challenges. *Journal of Aerospace Information Systems*, **11**, pp. 702–713, 2014. Special issue on Software Challenges in Aerospace.
7. Akshay Rajhans, Ajinkya Bhave, Ivan Ruchkin, Bruce H. Krogh, David Garlan, **André Platzer** and Bradley Schmerl. Supporting heterogeneity in cyber-physical systems architectures. *IEEE Transactions on Automatic Control*. **59**(12), pp. 3178–3193, 2014. Special issue on Control of Cyber-Physical Systems.

8. Stefan Mitsch, Grant Olney Passmore and **André Platzer**. Collaborative verification-driven engineering of hybrid systems. *Mathematics in Computer Science*, **8**(1), pp. 71–97, 2014. Special issue on Enabling Domain Experts to use Formalized Reasoning.
9. Paolo Zuliani, **André Platzer** and Edmund M. Clarke. Bayesian statistical model checking with application to Stateflow/Simulink verification. *Formal Methods in System Design*, **43**(2), pp. 338-367, 2013. Special issue on Probabilistic Model Checking.
10. **André Platzer**. A complete axiomatization of quantified differential dynamic logic for distributed hybrid systems. *Logical Methods in Computer Science*, **8**(4), pp. 1-44, 2012. Special issue for selected papers from CSL'10.
11. **André Platzer**. The structure of differential cuts and differential cut elimination. *Logical Methods in Computer Science*, **8**(4), pp. 1-38, 2012.
12. **André Platzer** and Edmund M. Clarke. Computing differential invariants of hybrid systems as fixedpoints. *Formal Methods in System Design*, **35**(1), pp. 98-120, 2009. Special issue for selected papers from CAV'08.
13. **André Platzer**. Differential-algebraic dynamic logic for differential-algebraic programs. *Journal of Logic and Computation*, **20**(1), pp. 309-352, 2010. Advance Access published on November 18, 2008.
14. **André Platzer**. Differential dynamic logic for hybrid systems. *Journal of Automated Reasoning*, **41**(2), pp. 143–189, 2008.

Refereed Conference Publications

1. Sarah M. Loos and **André Platzer**. Differential refinement logic. *ACM/IEEE Symposium on Logic in Computer Science, LICS 2016, July 5–8, 2016, New York, NY, USA*. ACM, 2016.
2. Andreas Müller, Stefan Mitsch, Werner Retschitzegger, Wieland Schwinger and **André Platzer**. A component-based approach to hybrid systems safety verification. In Erika Abraham and Marieke Huisman, editors, *Integrated Formal Methods - 12th International Conference, IFM 2016, Reykjavik, Iceland, June 1-4, 2016, Proceedings*, *LNCS*. Springer, 2016.
3. Nathan Fulton and **André Platzer**. A logic of proofs for differential dynamic logic: Toward independently checkable proof certificates for dynamic logics. In Jeremy Avigad and Adam Chlipala, editors, *Certified Programs and Proofs - 5th ACM SIGPLAN Conference on Certified Programs and Proofs, CPP, Saint Petersburg, Florida, USA - January 18-19, 2016. Proceedings*, pp. 110–12. ACM, 2016.
4. Andrew Sogokon, Khalil Ghorbal, Paul B. Jackson and **André Platzer**. A method for invariant generation for polynomial continuous systems. In Barbara Jobstmann and K. Rustan M. Leino, editors, *Verification, Model Checking, and Abstract Interpretation - 17th International Conference, VMCAI 2016, St. Petersburg, Florida, USA, January 17-19, 2016, Proceedings*, volume 9583 of *LNCS*, pp. 268–288. Springer, 2016.
5. Andreas Müller and Stefan Mitsch and **André Platzer**. Verified traffic networks: Component-based verification of cyber-physical flow systems. In *Intelligent Transportation Systems (ITSC), 2015 IEEE 18th International Conference on*, pp. 757–764. 2015.
6. Nikos Aréchiga, James Kapinski, Jyotirmoy V. Deshmukh, **André Platzer**, Bruce Krogh. Forward invariant cuts to simplify proofs of safety. In Alain Girault and Nan Guan, editors, *International Conference on Embedded Software, EMSOFT'15, Amsterdam, The Netherlands, Proceedings*, pp. 227–236. IEEE, 2015.
7. **André Platzer**. A uniform substitution calculus for differential dynamic logic. In Amy P. Felty and Aart Middeldorp, editors, *International Conference on Automated Deduction, CADE'15, Berlin, Germany, Proceedings*, volume 9195 of *LNCS*, pp. 467–481. Springer, 2015.

8. Jean-Baptiste Jeannin, Khalil Ghorbal, Yanni Kouskoulas, Ryan Gardner, Aurora Schmidt, Erik Zawadzki and **André Platzer**. A formally verified hybrid system for the next-generation airborne collision avoidance system. In Christel Baier and Cesare Tinelli, editors, *Tools and Algorithms for the Construction and Analysis of Systems - 21st International Conference, TACAS 2015, London, UK, April 11-18, 2015, Proceedings*, volume 9035 of *LNCS*, pp. 21–36. Springer, 2015.
9. Khalil Ghorbal, Andrew Sogokon and **André Platzer**. A hierarchy of proof rules for checking differential invariance of algebraic sets. In Deepak D'Souza, Akash Lal, and Kim Guldstrand Larsen, editors, *Verification, Model Checking, and Abstract Interpretation - 16th International Conference, VMCAI 2015, Mumbai, India, January 12-14, 2015, Proceedings*, volume 8931 of *LNCS*, pp. 431–448. Springer, 2015.
10. Stefan Mitsch and **André Platzer**. ModelPlex: Verified runtime validation of verified cyber-physical system models. In Borzoo Bonakdarpour and Scott A. Smolka, editors, *Runtime Verification - 5th International Conference, RV 2014, Toronto, Canada, September 22–25, 2014. Proceedings*, volume 8734 of *LNCS*, pp. 199–214. Springer, 2014. *Best paper nomination.*
11. Khalil Ghorbal, Andrew Sogokon and **André Platzer**. Invariance of conjunctions of polynomial equalities for algebraic differential equations. In Markus Müller-Olm and Helmut Seidl, editors, *21st International Static Analysis Symposium*, volume 8723 of *LNCS*, pp. 151–167. Springer, 2014.
12. Jean-Baptiste Jeannin and **André Platzer**. dTL^2: Differential temporal dynamic logic with nested modalities for hybrid systems. In Stéphane Demri, Deepak Kapur and Christoph Weidenbach, editors, *7th International Joint Conference on Automated Reasoning (IJCAR 2014)*, volume 8562 of *LNCS*, pp. 292–306. Springer, 2014.
13. Stefan Mitsch, Jan-David Quesel and **André Platzer**. Refactoring, refinement, and reasoning: A logical characterization for hybrid systems. In Cliff B. Jones, Pekka Pihlajasaari and Jun Sun, editors, *19th International Symposium on Formal Methods, FM, Singapore, Proceedings*, volume 8442 of *LNCS*, pp. 481-496. Springer, 2014.
14. Khalil Ghorbal and **André Platzer**. Characterizing algebraic invariants by differential radical invariants. In Erika Ábrahám and Klaus Havelund, editors, *20th International Conference on Tools and Algorithms for the Construction and Analysis of Systems, TACAS, Proceedings*, volume 8413 of *LNCS*, pp. 279–294. Springer, 2014.
15. Sarah M. Loos, David Witmer, Peter Steenkiste and **André Platzer**. Efficiency analysis of formally verified adaptive cruise controllers. In *16th International IEEE Annual Conference on Intelligent Transportation Systems, ITSC'13, The Hague, Netherlands, Proceedings*, IEEE, 2013.
16. Stefan Mitsch, Khalil Ghorbal and **André Platzer**. On provably safe obstacle avoidance for autonomous robotic ground vehicles. In Paul Newman, Dieter Fox, and David Hsu, editors, *Robotics: Science and Systems*, 2013.
17. Erik P. Zawadzki, **André Platzer** and Geoffrey J. Gordon. A generalization of SAT and #SAT for policy evaluation. In Francesca Rossi, editor, *IJCAI 2013, Proceedings of the 23nd International Joint Conference on Artificial Intelligence, Beijing, China, August 3-9, 2013*, pp. 2583–2589, IJCAI/AAAI, 2013.
18. Yanni Kouskoulas, David W. Renshaw, **André Platzer** and Peter Kazanzides. Certifying the safe design of a virtual fixture control algorithm for a surgical robot. In Calin Belta and Franjo Ivancic, editors, *Hybrid Systems: Computation and Control (part of CPS Week 2013), HSCC'13, Philadelphia, PA, USA, April 8-13, 2013*, pp. 263-272. ACM, 2013.

19. Sarah Loos, David W. Renshaw and **André Platzer**. Formal verification of distributed aircraft controllers. In Calin Belta and Franjo Ivancic, editors, *Hybrid Systems: Computation and Control (part of CPS Week 2013), HSCC'13, Philadelphia, PA, USA, April 8-13, 2013*,pp. 125-130. ACM, 2013.

20. David Henriques, João G. Martins, Paolo Zuliani, **André Platzer** and Edmund M. Clarke. Statistical model checking for Markov decision processes. In Giuliano Casale, Lucy Cherkasova and Holger Hermanns, editors, *9th International Conference on Quantitative Evaluation of SysTems, QEST, London, UK, Proceedings*, pp. 84-93, IEEE Computer Society, 2012.

21. Jan-David Quesel and **André Platzer**. Playing hybrid games with KeYmaera. In Bernhard Gramlich, Dale Miller and Ulrike Sattler, editors, *Automated Reasoning, 6th International Joint Conference, IJCAR'12, Manchester, UK, Proceedings*, volume 7364 of *LNCS*, pp. 439–453. Springer, 2012.

22. **André Platzer**. The complete proof theory of hybrid systems. *ACM/IEEE Symposium on Logic in Computer Science, LICS 2012, June 25–28, 2012, Dubrovnik, Croatia*, pp. 541-550. IEEE, 2012.

23. Nikos Aréchiga, Sarah M. Loos, **André Platzer** and Bruce H. Krogh. Using theorem provers to guarantee closed-loop system properties. In Dawn Tilbury, editor, *American Control Conference, ACC, Montréal, Canada, June 27-29*, pp. 3573-3580. IEEE, 2012. *(Accepted into invited session)*.

24. Stefan Mitsch, Sarah M. Loos, and **André Platzer**. Towards formal verification of freeway traffic control. In Chenyang Lu, editor, *ACM/IEEE Third International Conference on Cyber-Physical Systems*, pp. 171-180, IEEE, 2012.

25. Akshay Rajhans, Ajinkya Bhave, Sarah Loos, Bruce H. Krogh, **André Platzer**, and David Garlan. Using parameters in architectural views to support heterogeneous design and verification. *50th IEEE Conference on Decision and Control and European Control Conference*, pp. 2705-2710, IEEE, 2011.

26. Sarah M. Loos and **André Platzer**. Safe intersections: At the crossing of hybrid systems and verification. In Kyongsu Yi, editor, *14th International IEEE Conference on Intelligent Transportation Systems, ITSC'11, Washington, DC, USA, Proceedings*, pp. 1181-1186, IEEE, 2011.

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