André Platzer

Last updated: October 18, 2021

Contact Information

Computer Science Department
Carnegie Mellon University
Pittsburgh, PA 15213, USA

Phone: +1 (412) 268-1558
Email: aplatzer@cs.cmu.edu
Web: https://lfcps.org/

Research Interests

- Logical foundations of cyber-physical systems
- Logic in computer science, theorem proving, programming languages & formal methods
- Logic of multi-dynamical systems: hybrid systems, distributed hybrid systems, hybrid games
- Proof theory

Academic Appointments

Carnegie Mellon University, Pittsburgh, PA
Professor of Computer Science *7/2020-present*
Associate Professor of Computer Science *7/2014-6/2020*
Assistant Professor of Computer Science *10/2008-6/2014*
Courtesy appointment in Electrical and Computer Engineeering
Courtesy appointment in the Robotics Institute

Visiting Positions

Technical University Munich
Visiting Professor of Computer Science *1/2019-08/2019*
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
- Abitur (Grade: 1.1, very good), Hamburg, Germany, 07/1998

Awards and Honours

1. *Humboldt Research Fellowship* for Experienced Researchers, 2019, Carl Friedrich von Siemens Research Fellowship, 2019, DFG Mercator Fellow
2. *NSF CAREER* Award, 2011
3. IEEE Intelligent Systems' *AI's 10 to Watch* Award, 2010
4. *ACM Doctoral Dissertation Honorable Mention* Award, 2009
5. *Brilliant 10* Award of Popular Science Magazine, 2009
6. Best Paper Awards at FM'09 and TABLEAUX'07 and FM'19
7. Award of the Floyd und Lili Biava Stiftung, 09/2006
8. Graduation with distinction, University of Karlsruhe (TH), Germany, 2004
9. Support by the William-Stern-Gesellschaft Mathematical Talent Program for Gifted Pupils, Hamburg, 1991-1998

Teaching Experience

- 15-414/15-614 Bug Catching: Automated Program Verification (Undergraduate course in the Computer Science Department, Fall 2017, co-developed with Matt Fredrikson)
- 15-317/15-357 Constructive Logic (Undergraduate course in the Computer Science Department, Carnegie Mellon University, Fall 2015, Fall 2016, Spring 2020, Spring 2021)
- 15-824 Programming Language Semantics (Graduate course in the Computer Science Department, Carnegie Mellon University, Spring 2015, Spring 2018)
- 15-424/15-624/15-824 (Logical) 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 Summer 2014, CMU Fall 2014, CMU Spring 2016, CMU Spring 2017, CMU Fall 2018, CMU Fall 2019, CMU Fall 2020, CMU Fall 2021)
- 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

- William Simmons, postdoc, since S'21
- Aditi Kabra, Ph.D., since F'20
- Jonathan Laurent, Ph.D., since 11/2018
- Fabian Immler, postdoc, SU'18–S'20,
- Katherine Cordwell, Ph.D., since F'17, NSF GRFP Fellowship
- Andrew Sogokon, postdoc, S'17–S'19
- Yong Kiam Tan, Ph.D., since F'16, A*STAR Fellowship
- Brandon Bohrer, "Practical End-to-End Verification of Cyber-Physical Systems", Ph.D., F'15–05/2021, Alan J. Perlis Graduate Student Teaching Award, Siebel Scholar, NDSEG Fellowship,
- Ran Ji, postdoc, F'14–S'16,
- Nathan Fulton, "Verifiably Safe Autonomy for Cyber-Physical Systems", Ph.D., F'13–11/2018,
- 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 F'12,
- David Henriques, "Formal Reasoning About Temporal Properties in Dynamic Stochastic Systems", 10/2015, graduated at CMU|Portugal partner IST Superiore, co-advisor Paulo Mateus, CMU|Portugal fellowship,
- João Guerra Martins, "Changing Beliefs in a Changing World", Ph.D., since F'10, co-advised with João Leite, U. Nova de Lisboa, CMU|Portugal fellowship,
- Ping Hou, postdoc, S'11–S'12,

- Erik Peter Zawadzki, "Linear Approximations for Monotone Affine Variational Inequalities", Ph.D. candidate, since S'10, co-advised with Geoff Gordon, All but dissertation,
- Sarah Michelle Loos, "Differential Refinement Logic", Ph.D. S'10–11/2015, Teaching Award, CMU SCS Thesis Award Honorable Mention, NSF GRFP Fellowship, DOE CSGF Fellowship,

Undergraduate & Masters Advising

- Megan Strauss, independent study, F'21, "Verifying Responsibility-Sensitive Safety Model for Self Driving Cars"
- Marvin Brieger, M.Sc. S'21-F'21, "Communicating Hybrid Programs", University of Augsburg
- James Gallicchio, S'21, "Implicit definitions in KeYmaera X"
- Anita Li, independent study S'21, "Discrete Games on Graphs Modeled in Game Logic"
- Brian Wei, independent study S'21, "Analysis of Models in dL"
- Rachel Cleaveland, senior thesis F'20–S'21, "Formal Verification of Next-Generation Airborne Collision Avoidance System with Adversarial Intruder Behavior" CMU SCS Alumni Award for Undergraduate Excellence 2021 and CRA Outstanding Researcher Award Honorable Mention 2021
- Matias Scharager, independent study F'20, "Verified Executable Quadratic Virtual Substitution for Quantifier"
- Anita Li, independent study F'20, "Use game logic to model real life security-related problems"
- David Bayani, senior thesis F'15–S'16, "Implementing Invariant Generation in the KeYmaera X Prover for Hybrid Systems Verification"
- 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 2015 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 S'14, "Formal Verification of Collision Avoidance for Controllers of Robotic Ground Vehicles" Karlsruhe Institute of Technology, Germany
- 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 thesis S'12, "Extending Logic for Stochastic Hybrid Programs" École Normale Supérieure, Paris, France
- Alex Crichton and Robbie McElrath, independent study S'12, "Joule – a JIT for Lua"
- Romuald Brillout, M.Sc. 04/2012, "Using Theorem Provers as Preprocessors for Hybrid Systems Model Checking" Karlsruhe Institute of Technology, Germany
- Jingyi Ni, undergraduate project S'10, "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, M.Sc. 04/2007, "A theorem prover for differential dynamic logic"

- Stephanie Kemper, M.Sc. 01/2006, "SAT-based verification for abstraction-refinement",

Longer-term Visitors

- Cláudio Gomes, University of Antwerp, F'19,
- Luis Garcia, Rutgers University, SU'17–F'17,
- Lorenz Sahlmann, École Polytechnique, Paris, France, S'16–SU'16
- David Vogelbacher, Karlsruhe Institute of Technology, Germany, S'14
- 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,F'16
- Stefan Mitsch, Johannes Kepler University, Linz, Austria,
- Romuald Brillout, Karlsruhe Institute of Technology, Germany, F'11–S'12

Ph.D. Committees

- Cláudio Gomes, Ph.D., "Property Preservation in Co-simulation", Universiteit Antwerpen, Belgium, S'19.
- Sarah Grebing, Ph.D., "User Interaction in Deductive Interactive Program Verification", Karlsruhe Institute of Technology, S'19.
- Ivan Ruchkin, Ph.D., "Integration of Modeling Methods for Cyber-Physical Systems", F'18
- Andreas Müller, Ph.D., "Component-based Deductive Verification of Cyber-physical Systems", Johannes Kepler University, Linz, F'17
- Xian Li, Ph.D., "Induction-based Verification of Synchronous and Hybrid Programs", Technical University of Kaiserslautern, F'17
- Richard Bubel, Habilitation, "Deductive Verification: From Theory to Practice", Technical University of Darmstadt, S'17
- Jiaqi Tan, Ph.D., "Provable, Preventative Control-Flow Integrity for Open and Connected Embedded Software", F'16
- Henry DeYoung, Ph.D., "Session-Typed Ordered Logical Specifications", F'20
- 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

- Seulkee Baek, "Reflected Decision Procedures in Lean", Masters, 12/2018
- 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

Professional Service

Editorial Board: Acta Informatica since 2014, Journal of Automated Reasoning since 2020
Grant proposal reviewing: National Science Foundation NSF CPS CNS CCF CAREER SHF, Natural Sciences and Engineering Research Council of Canada (NSERC), Advanced Research Projects Agency - Energy (ARPA-E), German Research Council (DFG), Exzellenzcluster
PC chair: LfSA 2010, LfSA 2012, CADE 2021
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, HSCC 2017, Workshop DaLí - Dynamic Logic 2017, MEMOCODE 2017, HSCC 2018, ITP 2018, IJCAI-ECAI 2018, ARCH 2018, CICM 2018, FASE 2019, CPP 2019, CADE 2019, FM 2019, Doctoral Symposium @ FM 2019, ICCPS 2020, LICS 2020, ICCPS 2021, ICCPS 2022
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, Communications of the ACM
Book referee: Springer
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 SM'17 SIGLOG & SIGACT & SIGBED & SIGPLAN, IEEE'06 SM'17 Computer Systems Society & Control Society & Intelligent Transportation Systems Society, Association for Symbolic Logic'06, American Association for the Advancement of Science'17, DAAD Alumni Association of the USA

Languages

English, German, basics in French

Textbook Publications

1. **André Platzer**. *Logical Foundations of Cyber-Physical Systems*. Springer, Cham, 2018. 659 pages.
   Lecture Videos: `http://video.lfcps.org/`

Book Publications

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

Book Chapters

1. Stefan Mitsch and **André Platzer**. A Retrospective on Developing Hybrid System Provers in the KeYmaera Family: A Tale of Three Provers. In Wolfgang Ahrendt, Bernhard Beckert, Richard Bubel, Reiner Hähnle, and Mattias Ulbrich, editors, *Deductive Software Verification: Future Perspectives*, volume 12345 of *LNCS*, pp. 21-64. Springer, 2020.

2. **André Platzer**. Overview of Logical Foundations of Cyber-Physical Systems. In Helmut Seidl, editor, *Post-proceedings of the Summer School Marktoberdorf: Safety and Security of Software Systems - Logics, Proofs, Applications*. TUM University Press, 2020.
3. Laurent Doyen, Goran Frehse, George J. Pappas and **André Platzer**. Verification of Hybrid Systems. In Edmund M. Clarke, Thomas A. Henzinger, Helmut Veith and Roderick Bloem, editors, *Handbook of Model Checking*. Springer, 2018.

Refereed Journal Publications

1. Brandon Bohrer and **André Platzer**. Structured proofs for adversarial cyber-physical systems. *ACM Trans. Embed. Comput. Syst.* **20**(5s), 2021. Special issue on EMSOFT 2021.
2. Yong Kiam Tan and **André Platzer**. An axiomatic approach to existence and liveness for differential equations. *Formal Aspects of Computing* **33**(4), pp. 461–518, 2021. Special issue for selected papers from FM'19.
3. Andrew Sogokon, Stefan Mitsch, Yong Kiam Tan, Katherine Cordwell and **André Platzer**. Pegasus: Sound continuous invariant generation. *Formal Methods in System Design*, To appear. Special issue for selected papers from FM'19.
4. **André Platzer** and Yong Kiam Tan. Differential equation invariance axiomatization. *J.ACM*, **67**(1), pp. 6:1–6:66, 2020.
5. Brandon Bohrer, Yong Kiam Tan, Stefan Mitsch, Andrew Sogokon and **André Platzer**. A formal safety net for waypoint following in ground robots. *IEEE Robotics and Automation Letters*, **4**(3), pp. 2910–2917, 2019.
6. Andreas Müller, Stefan Mitsch, Werner Retschitzegger, Wieland Schwinger and **André Platzer**. Tactical contract composition for hybrid system component verification. *Software Tools for Technology Transfer*, **20**(6), pp. 615–643, 2018. Special issue for selected papers from FASE'17.
7. Stefan Mitsch, Khalil Ghorbal, David Vogelbacher and **André Platzer**. Formal verification of obstacle avoidance and navigation of ground robots. *International Journal of Robotics Research*, **36**(12), pp. 1312-1340, 2017.
8. **André Platzer**. Differential hybrid games. *ACM Trans. Comput. Log.*, **18**(3), pp. 19:1–19:44, 2017.
9. Jean-Baptiste Jeannin, Khalil Ghorbal, Yanni Kouskoulas, Aurora Schmidt, Ryan Gardner, Stefan Mitsch and **André Platzer**. A formally verified hybrid system for safe advisories in the next-generation airborne collision avoidance system. *Software Tools for Technology Transfer*, **19**(6), pp. 717-741, 2017. Special issue for selected papers from TACAS'15.
10. **André Platzer**. A complete uniform substitution calculus for differential dynamic logic. *Journal of Automated Reasoning*, **59**(2), pp. 219-265, 2017.
11. Stefan Mitsch and **André Platzer**. ModelPlex: Verified runtime validation of verified cyber-physical system models. *Formal Methods in System Design*, **49**(1), pp. 33-74, 2016. Special issue for selected papers from RV'14.
12. 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*, **47**(1), pp. 19-43, 2017. Special issue for selected papers from VMCAI'15.
13. 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.
14. **André Platzer**. Differential game logic. *ACM Trans. Comput. Log.*, **17**(1), pp. 1:1–1:52, 2015.
15. 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.

16. 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**(10), pp. 702–713, 2014. Special issue on Software Challenges in Aerospace.
17. 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.
18. 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.
19. 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.
20. **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.
21. **André Platzer**. The structure of differential cuts and differential cut elimination. *Logical Methods in Computer Science*, **8**(4), pp. 1-38, 2012.
22. **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.
23. **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.
24. **André Platzer**. Differential dynamic logic for hybrid systems. *Journal of Automated Reasoning*, **41**(2), pp. 143–189, 2008.

Refereed Conference Publications

1. Matias Scharager, Katherine Cordwell, Stefan Mitsch and **André Platzer**. Verified quadratic virtual substitution for real arithmetic. In Marieke Huisman, Corina Pasareanu, and Naijun Zhan, editors, volume 13047 of ***FM** 2021: Formal Methods*, *LNCS*. Springer, 2021.
2. Katherine Cordwell, Yong Kiam Tan and **André Platzer**. A verified decision procedure for univariate real arithmetic with the BKR algorithm. In Liron Cohen and Cezary Kaliszyk, editors, *12th International Conference on Interactive Theorem Proving, **ITP 2021**, Proceedings*, volume 193 of *LIPIcs*, pp. 14:1–14:20. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2021.
3. Yong Kiam Tan and **André Platzer**. Switched systems as hybrid programs. In Raphaël M. Jungers , Necmiye Ozay and Alessandro Abate, editors, *7th IFAC Conference on Analysis and Design of Hybrid Systems **ADHS***. volume 54(5) of *IFAC-PapersOnLine*, pp. 247-252, 2021.
4. Yong Kiam Tan and **André Platzer**. Deductive stability proofs for ordinary differential equations. In Jan Friso Groote and Kim G. Larsen, editors, *Tools and Algorithms for the Construction and Analysis of Systems, **TACAS 2021**, Proceedings*, volume 12652 of *LNCS*, pp. 181–199, Springer, 2021.
5. Brandon Bohrer and **André Platzer**. Refining constructive hybrid games. In Zena M. Ariola, editor, *5th International Conference on Formal Structures for Computation and Deduction, **FSCD 2020**, Proceedings*, volume 167 of *LIPIcs*, pp. 14:1–14.19. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2020.
6. Brandon Bohrer and **André Platzer**. Constructive hybrid games. In Nicolas Peltier and Viorica Sofronie-Stokkermans, editors, *Automated Reasoning, 10th International Joint Conference, **IJCAR 2020**, Proceedings, Part I*, volume 12166 of *LNCS*. pp. 454–473, Springer, 2020.

7. Brandon Bohrer and **André Platzer**. Constructive game logic. In Peter Müller, editor, *Programming Languages and Systems - 29th European Symposium on Programming, **ESOP 2020**, Proceedings*, volume 12075 of *LNCS*. pp. 84–111. Springer, 2020.
8. João Martins, **André Platzer** and João Leite. Dynamic doxastic differential dynamic logic for belief-aware cyber-physical systems. In Serenella Cerrito and Andrei Popescu, editors, *Automated Reasoning with Analytic Tableaux and Related Methods, 27th International Conference, **TABLEAUX**, Proceedings*, volume 11714 of *LNCS*, pp. 428–445. Springer, 2019.
9. Andrew Sogokon, Stefan Mitsch, Yong Kiam Tan, Katherine Cordwell and **André Platzer**. Pegasus: A framework for sound continuous invariant generation. In Maurice ter Beek, Annabelle McIver, and José N. Oliviera, editors, ***FM** 2019: Formal Methods – The Next 30 Years*, volume 11800 of *LNCS*, pp. 138–157. Springer, 2019.
This paper was awarded the FM ***Best Tool Paper Award***.
10. Yong Kiam Tan and **André Platzer**. An axiomatic approach to liveness for differential equations. In Maurice ter Beek, Annabelle McIver, and José N. Oliviera, editors, ***FM** 2019: Formal Methods – The Next 30 Years*, volume 11800 of *LNCS*, pp. 371–388. Springer, 2019.
11. Brandon Bohrer, Manuel Fernández and **André Platzer**. dL_ι: Definite descriptions in differential dynamic logic. In Pascal Fontaine, editor, *International Conference on Automated Deduction, **CADE-27**, Proceedings*, volume 11716 of *LNCS*, pp. 94–110. Springer, 2019.
12. Katherine Cordwell and **André Platzer**. Towards physical hybrid systems. In Pascal Fontaine, editor, *International Conference on Automated Deduction, **CADE-27**, Proceedings*, volume 11716 of *LNCS*, pp. 216–232. Springer, 2019.
13. **André Platzer**. Uniform substitution at one fell swoop. In Pascal Fontaine, editor, *International Conference on Automated Deduction, **CADE-27**, Proceedings*, volume 11716 of *LNCS*, pp. 425–441. Springer, 2019.
14. Nathan Fulton and **André Platzer**. Verifiably safe off-model reinforcement learning. In Tomas Vojnar and Lijun Zhang, editors, *Tools and Algorithms for the Construction and Analysis of Systems, **TACAS 2019**,, Proceedings, Part I*, volume 11427 of *LNCS*, pp. 413-430, Springer, 2019.
15. Luis Garcia, Stefan Mitsch and **André Platzer**. HyPLC: Hybrid programmable logic controller program translation for verification. In Linda Bushnell and Miroslav Pajic, editors, *10th ACM/IEEE International Conference on Cyber-Physical Systems **ICCPS***, pp. 47-56, 2019. *Best paper finalist*.
16. Brandon Bohrer, Adriel Luo, Xue An Chuang and **André Platzer**. CoasterX: A case study in component-driven hybrid systems proof automation. In Maurice Heemels and Antoine Girard, editors, *6th IFAC Conference on Analysis and Design of Hybrid Systems **ADHS***. volume 51(16) of *IFAC-PapersOnLine*, pp. 55-60, 2018.
17. Andrew Sogokon, Khalil Ghorbal, Yong Kiam Tan and **André Platzer**. Vector barrier certificates and comparison systems. In Klaus Havelund, Bill Roscoe, and Jan Peleska, editors, *22nd International Symposium on Formal Methods, **FM**, Proceedings*, volume 10951 of *LNCS*, pp. 418–437. Springer, 2018.
18. Brandon Bohrer and **André Platzer**. A hybrid, dynamic logic for hybrid-dynamic information flow. In Anuj Dawar and Erich Grädel, editors, *Proceedings of the 33rd Annual ACM/IEEE Symposium on Logic in Computer Science, **LICS '18***, pp. 115–124. ACM 2018.
19. **André Platzer** and Yong Kiam Tan. Differential equation axiomatization: The impressive power of differential ghosts. In Anuj Dawar and Erich Grädel, editors, *Proceedings of the 33rd Annual ACM/IEEE Symposium on Logic in Computer Science, **LICS '18***, pp. 819–828. ACM 2018.
20. **André Platzer**. Uniform substitution for differential game logic. In Didier Galmiche, Stephan Schulz and Roberto Sebastiani, editors, *Automated Reasoning, 9th International Joint Conference, **IJCAR 2018**, Proceedings*, volume 10900 of *LNCS*, pp. 211–227. Springer 2018.

21. Brandon Bohrer, Yong Kiam Tan, Stefan Mitsch, Magnus O. Myreen and **André Platzer**. VeriPhy: Verified controller executables from verified cyber-physical system models. In Dan Grossman, editor, *Proceedings of the 39th ACM SIGPLAN Conference on Programming Language Design and Implementation, **PLDI 2018***, pp. 617–630. ACM 2018.

22. Nathan Fulton and **André Platzer**. Safe reinforcement learning via formal methods: Toward safe control through proof and learning. In Sheila A. McIlraith and Kilian Q. Weinberger, editors, ***AAAI** Conference on Artificial Intelligence*. pp. 6485–6492. AAAI 2018. Selected for talk presentation

23. Stefan Mitsch, Marco Gario, Christof J. Budnik, Michael Golm and **André Platzer**. Formal verification of train control with air pressure brakes. In Alessandro Fantechi, Thierry Lecomte, Alexander Romanovsky, editors, ***RSSRail 2017**: Reliability, Safety, and Security of Railway Systems*, volume 10598 of *LNCS*, pp. 173–191. Springer, 2017.

24. Nathan Fulton, Stefan Mitsch, Brandon Bohrer and **André Platzer**. Bellerophon: Tactical theorem proving for hybrid systems. In Mauricio Ayala-Rincón and César A. Muñoz, editors, *Interactive Theorem Proving. **ITP 2017***, volume 10499 of *LNCS*, pp. 207–224. Springer, 2017.

25. Andreas Müller, Stefan Mitsch, Werner Retschitzegger, Wieland Schwinger and **André Platzer**. Change and delay contracts for hybrid system component verification. In Marieke Huisman and Julia Rubin, editors, *Fundamental Approaches to Software Engineering. **FASE 2017***, volume 10202 of *LNCS*, pp. 134–151. Springer, 2017.

26. Brandon Bohrer, Vincent Rahli, Ivana Vukotic, Marcus Völp and **André Platzer**. Formally verified differential dynamic logic. In Yves Bertot and Viktor Vafeiadis, editors, *Certified Programs and Proofs - 6th ACM SIGPLAN Conference, **CPP**, Proceedings*, pp. 208–221. ACM, 2017.

27. Sarah M. Loos and **André Platzer**. Differential refinement logic. *ACM/IEEE Symposium on Logic in Computer Science, **LICS 2016***, pp. 505–514. ACM, 2016.

28. 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**, Proceedings*, volume 9681 of *LNCS*, pp. 441–456. Springer, 2016.

29. 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**, Proceedings*, pp. 110–12. ACM, 2016.

30. 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**, Proceedings*, volume 9583 of *LNCS*, pp. 268–288. Springer, 2016.

31. 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.

32. 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**, Proceedings*, pp. 227–236. IEEE, 2015.

33. **André Platzer**. A uniform substitution calculus for differential dynamic logic. In Amy P. Felty and Aart Middeldorp, editors, *International Conference on Automated Deduction, **CADE-25**, Proceedings*, volume 9195 of *LNCS*, pp. 467–481. Springer, 2015.

34. 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**, Proceedings*, volume 9035 of *LNCS*, pp. 21–36. Springer, 2015.

35. 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**, Proceedings*, volume 8931 of *LNCS*, pp. 431–448. Springer, 2015.
36. 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**, Proceedings*, volume 8734 of *LNCS*, pp. 199–214. Springer, 2014. *Best paper finalist*.
37. 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 **SAS***, volume 8723 of *LNCS*, pp. 151–167. Springer, 2014.
38. 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.
39. 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**, Proceedings*, volume 8442 of *LNCS*, pp. 481-496. Springer, 2014.
40. 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.
41. 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**, Proceedings*, IEEE, 2013.
42. 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 **RSS***, 2013.
43. 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*, pp. 2583–2589, IJCAI/AAAI, 2013.
44. 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***, pp. 263-272. ACM, 2013.
45. 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***,pp. 125-130. ACM, 2013.
46. 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**, Proceedings*, pp. 84-93, IEEE Computer Society, 2012.
47. 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**, Proceedings*, volume 7364 of *LNCS*, pp. 439–453. Springer, 2012.

48. **André Platzer**. The complete proof theory of hybrid systems. *ACM/IEEE Symposium on Logic in Computer Science, **LICS 2012***, pp. 541-550. IEEE, 2012.
49. 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 **ICCPS***, pp. 171-180, IEEE, 2012.
50. 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 **CDC-ECC***, pp. 2705-2710, IEEE, 2011.
51. 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**, Proceedings*, pp. 1181-1186, IEEE, 2011.
52. João G. Martins, **André Platzer**, and João Leite. Statistical model checking for distributed probabilistic control hybrid automata with smart grid applications. In Shengchao Qin and Zongyan Qiu, editors, *International Conference on Formal Engineering Methods, **ICFEM'11**, Proceedings*, volume 6991 of *LNCS*, pp. 131–146. Springer, 2011.
53. David W. Renshaw, Sarah M. Loos, and **André Platzer**. Distributed theorem proving for distributed hybrid systems. In Shengchao Qin and Zongyan Qiu, editors, *International Conference on Formal Engineering Methods, **ICFEM'11**, Proceedings*, volume 6991 of *LNCS*, pp. 356–371. Springer, 2011.
54. **André Platzer**. Stochastic differential dynamic logic for stochastic hybrid programs. In Nikolaj Bjørner and Viorica Sofronie-Stokkermans, editors, *International Conference on Automated Deduction, **CADE-23**, Proceedings*, volume 6803 of *LNCS*, pp. 446–460. Springer, 2011.
55. Sicun Gao, **André Platzer**, and Edmund M. Clarke. Quantifier elimination over finite fields with Gröbner bases. In Franz Winkler, editor, *Algebraic Informatics, Fourth International Conference, **CAI 2011**, Proceedings*, volume 6742 of *LNCS*, pp. 140–157. Springer, 2011.
56. Sarah M. Loos, **André Platzer**, and Ligia Nistor. Adaptive cruise control: Hybrid, distributed, and now formally verified. In Michael Butler and Wolfram Schulte, editors, *17th International Symposium on Formal Methods, **FM**, Proceedings*, volume 6664 of *LNCS*, pp. 42–56. Springer, 2011.
57. Erik P. Zawadzki, Geoffrey J. Gordon, and **André Platzer**. An instantiation-based theorem prover for first-order programming. ***AISTATS***, JMLR W&CP **15**, pp. 855–863, 2011. Accepted for poster presentation.
58. **André Platzer**. Quantified differential invariants. In Emilio Frazzoli and Radu Grosu, editors, *Hybrid Systems: Computation and Control, 14th International Conference, **HSCC'11**, Proceedings*, pp. 63–72. ACM, 2011.
59. **André Platzer**. Quantified differential dynamic logic for distributed hybrid systems. In Anuj Dawar and Helmut Veith, editors, *Computer Science Logic, 19th EACSL Annual Conference, **CSL 2010**, Proceedings*, volume 6247 of *LNCS*, pp. 469–483. Springer, 2010.
60. Paolo Zuliani, **André Platzer**, and Edmund M. Clarke. Bayesian statistical model checking with application to Simulink/Stateflow verification. In Karl-Henrik Johansson and Wang Yi, editors, *Hybrid Systems: Computation and Control, 13th International Conference, **HSCC'10**, Proceedings*, pp. 243–252. ACM, 2010.
61. **André Platzer** and Jan-David Quesel. European Train Control System: A case study in formal verification. In Karin Breitman and Ana Cavalcanti, editors, *11th International Conference on Formal Engineering Methods, **ICFEM**, Proceedings*, volume 5885 of *LNCS*, pp. 246–265. Springer, 2009.

62. **André Platzer** and Edmund M. Clarke. Formal verification of curved flight collision avoidance maneuvers: A case study. In Ana Cavalcanti and Dennis Dams, editors, *16th International Symposium on Formal Methods, **FM**, Proceedings*, volume 5850 of *LNCS*, pp. 547–562. Springer, 2009.
This paper was awarded the FM ***Best Paper Award***.
63. Sumit Kumar Jha, Edmund M. Clarke, Christopher J. Langmead, Axel Legay, **André Platzer**, and Paolo Zuliani. A Bayesian approach to model checking biological systems. In Pierpaolo Degano and Roberto Gorrieri, editors, *Conference on Computational Methods in Systems Biology, **CMSB**, Proceedings*, volume 5688 of *LNCS*, pp. 218–234. Springer, 2009.
64. **André Platzer**, Jan-David Quesel, and Philipp Rümmer. Real world verification. In Renate A. Schmidt, editor, *International Conference on Automated Deduction, **CADE-22**, Proceedings*, volume 5663 of *LNCS*, pp. 485–501. Springer, 2009.
65. **André Platzer** and Edmund M. Clarke. Computing differential invariants of hybrid systems as fixedpoints. In Aarti Gupta and Sharad Malik, editors, *International Conference on Computer Aided Verification, **CAV'08**, Proceedings*, volume 5123 of *LNCS*, pp. 176–189. Springer, 2008.
66. **André Platzer**. Differential dynamic logic for verifying parametric hybrid systems. In Nicola Olivetti, editor, *Automated Reasoning with Analytic Tableaux and Related Methods, 16th International Conference, **TABLEAUX'07**, Proceedings*, volume 4548 of *LNCS*, pp. 216–232. Springer, 2007.
This paper was awarded the TABLEAUX ***Best Paper Award***.
67. **André Platzer**. A temporal dynamic logic for verifying hybrid system invariants. In Sergei N. Artëmov and Anil Nerode, editors, *Logical Foundations of Computer Science, 5th International Symposium, **LFCS'07**, Proceedings*, volume 4514 of *LNCS*, pp. 457–471. Springer, 2007.
68. **André Platzer** and Edmund M. Clarke. The image computation problem in hybrid systems model checking. In Alberto Bemporad, Antonio Bicchi, and Giorgio Buttazzo, editors. *Hybrid Systems: Computation and Control, 10th International Conference, **HSCC'07**, Proceedings*, volume 4416 of *LNCS*, pp. 473–486. Springer, 2007.
69. Bernhard Beckert and **André Platzer**. Dynamic logic with non-rigid functions: A basis for object-oriented program verification. In Ulrich Furbach and Natarajan Shankar, editors, *Automated Reasoning, Third International Joint Conference, **IJCAR'06**, Proceedings*, volume 4130 of *LNCS*, pp. 266–280. Springer, 2006.

Refereed Short & Tool Conference Publications

1. Nathan Fulton, Stefan Mitsch, Jan-David Quesel, Marcus Völp and **André Platzer**. KeYmaera X: An aXiomatic tactical theorem prover for hybrid systems. In Amy P. Felty and Aart Middeldorp, editors, *International Conference on Automated Deduction, **CADE-25**, Proceedings*, volume 9195 of *LNCS*, pp. 527–538. Springer, 2015.
2. **André Platzer** and Jan-David Quesel. KeYmaera: A hybrid theorem prover for hybrid systems. In Alessandro Armando, Peter Baumgartner, and Gilles Dowek, editors, *Automated Reasoning, Third International Joint Conference, **IJCAR'08**, Proceedings*, volume 5195 of *LNCS*, pp. 171–178. Springer, 2008.
3. **André Platzer** and Jan-David Quesel. Logical verification and systematic parametric analysis in train control. In Magnus Egerstedt and Bud Mishra, editors. *Hybrid Systems: Computation and Control, 11th International Conference, **HSCC'08**, Proceedings*, volume 4981 of *LNCS*, pp. 646–649. Springer, 2008.
4. **André Platzer**. Differential logic for reasoning about hybrid systems. In Alberto Bemporad, Antonio Bicchi, and Giorgio Buttazzo, editors. *Hybrid Systems: Computation and Control, 10th International Conference, **HSCC'07**, Proceedings*, volume 4416 of *LNCS*, pp. 746–749. Springer, 2007.

Refereed Workshop Publications

1. Stefan Mitsch and **André Platzer**. The KeYmaera X proof IDE: Concepts on usability in hybrid systems theorem proving. In Catherine Dubois, Paolo Masci, and Dominique Méry, editors. *3rd Workshop on Formal Integrated Development Environment F-IDE 2016*, volume 240 of *EPTCS*, pp. 67-81, 2017.
2. Stefan Mitsch, Jan-David Quesel, and **André Platzer**. From safety to guilty & from liveness to niceness. In *5th Workshop on Formal Methods for Robotics and Automation*, 2014.
3. Erik P. Zawadzki, Geoffrey J. Gordon and **André Platzer**. A projection algorithm for strictly monotone linear complementarity problems. In *6th NIPS Workshop on Optimization for Machine Learning*, 2013.
4. **André Platzer**. Teaching CPS foundations with contracts. In *First Workshop on Cyber-Physical Systems Education*, pp. 7–10. 2013.
5. Stefan Mitsch, Grant Olney Passmore and **André Platzer**. A vision of collaborative verification-driven engineering of hybrid systems. In Manfred Kerber, Christoph Lange and Colin Rowat, editors, *AISB Workshop on Enabling Domain Experts to use Formalised Reasoning (Do-Form)*, 2013.
6. **André Platzer**. Combining deduction and algebraic constraints for hybrid system analysis. In Bernhard Beckert, editor, *4th International Verification Workshop VERIFY'07*, volume 259 of *CEUR Workshop Proceedings*, pp. 164–178. CEUR-WS.org, 2007.
7. Stephanie Kemper and **André Platzer**. SAT-based abstraction refinement for real-time systems. In Frank S. de Boer and Vladimir Mencl, editors, *Formal Aspects of Component Software, Third International Workshop, FACS'06, Proceedings*, volume 182 of *ENTCS*, pp. 107–122, 2007.
8. **André Platzer**. Towards a hybrid dynamic logic for hybrid dynamic systems. In Patrick Blackburn, Thomas Bolander, Torben Braüner, Valeria de Paiva, and Jørgen Villadsen, editors, *International Workshop on Hybrid Logic, HyLo'06, Proceedings*, volume 174 of *ENTCS*, pp. 63–77, 2007.

Invited Publications

1. **André Platzer**. The logical path to autonomous cyber-physical systems. In David Parker and Verena Wolf, editors, *International Conference on Quantitative Evaluation of SysTems, **QEST**, Proceedings*, volume 11785 of *LNCS*, pp. 25–33. Springer, 2019.
2. Nathan Fulton and **André Platzer**. Safe AI for CPS. *International Testing Conference (**ITC 2018**)*, IEEE, 2018.
3. Franz Franchetti, Tze Meng Low, Stefan Mitsch, Juan Paolo Mendoza, Liangyan Gui, Amarin Phaosawasdi, David Padua, Soummya Kar, José M. F. Moura, Mike Franusich, Jeremy Johnson, **André Platzer** and Manuela Veloso. High-assurance SPIRAL: End-to-end guarantees for robot and car control. *IEEE Control Systems*, **37**(2), pp. 82–103. 2017.
4. **André Platzer**. Logic & proofs for cyber-physical systems. In Nicola Olivetti and Ashish Tiwari, editors, *8th International Joint Conference on Automated Reasoning (**IJCAR 2016**)*, volume 9706 of *LNCS*, pp. 15–21. Springer, 2016.
5. Jean-Baptiste Jeannin, Khalil Ghorbal, Yanni Kouskoulas, Ryan Gardner, Aurora Schmidt, Erik Zawadzki and **André Platzer**. Formal verification of ACAS X, an industrial airborne collision avoidance system. In Alain Girault and Nan Guan, editors, *International Conference on Embedded Software, **EMSOFT'15**, Proceedings*, pp. 127–136. ACM, 2015.
6. **André Platzer**. Analog and hybrid computation: Dynamical systems and programming languages. *Bulletin of the EATCS*, **114**, 2014. Invited paper in *The Logic in Computer Science Column* by Yuri Gurevich.
7. **André Platzer**. Logical analysis of hybrid systems: A complete answer to a complexity challenge. *Journal of Automata, Languages and Combinatorics*, **17**(2–4), pp. 265–275. 2012.

8. **André Platzer**. Logical analysis of hybrid systems: A complete answer to a complexity challenge. In Martin Kutrib, Nelma Moreira, and Rogério Reis, editors, *Descriptional Complexity of Formal Systems - 14th International Workshop, **DCFS 2012***. volume 7386 of *LNCS*, pp. 43–49. Springer, 2012.
9. **André Platzer**. A differential operator approach to equational differential invariants. In Lennart Beringer and Amy Felty, editors, *Interactive Theorem Proving, International Conference, **ITP 2012***. volume 2406 of *LNCS*, pp. 28–48. Springer, 2012.
10. 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***, pp. 3573-3580. IEEE, 2012. *(Accepted into invited session)*.
11. **André Platzer**. Logics of dynamical systems (*Invited Tutorial*). *ACM/IEEE Symposium on Logic in Computer Science, **LICS 2012***, pp. 13-24. IEEE, 2012.
12. **André Platzer**. Logic and Compositional Verification of Hybrid Systems (*Invited Tutorial*). In Ganesh Gopalakrishnan and Shaz Qadeer, editors, *International Conference on Computer Aided Verification, **CAV'11**, Proceedings*, volume 6806 of *LNCS*, pp. 28–43. Springer, 2011.
13. AI's 10 to Watch, *IEEE Intelligent Systems*, **26**(1), pp. 5–15, Jan./Feb. 2011.
14. **André Platzer**. Differential dynamic logics: Automated theorem proving for hybrid systems. *Künstliche Intelligenz*, **24**(1), pp. 75–77, 2010.
15. **André Platzer**. Verification of cyberphysical transportation systems. *IEEE Intelligent Systems*, **24**(4), pp. 10–13, Jul/Aug, 2009.
16. Werner Damm, Alfred Mikschl, Jens Oehlerking, Ernst-Rüdiger Olderog, Jun Pang, **André Platzer**, Marc Segelken, and Boris Wirtz. Automating verification of cooperation, control, and design in traffic applications. In Cliff B. Jones, Zhiming Liu, and Jim Woodcock, editors, *Formal Methods and Hybrid Real-Time Systems*, volume 4700 of *LNCS*, pp. 115–169. Springer, 2007.

Theses

1. **André Platzer**. *Differential Dynamic Logics: Automated Theorem Proving for Hybrid Systems*. Ph.D. thesis, Department of Computing Science, University of Oldenburg. 299 pages, 2008. Appeared with Springer as *Logical Analysis of Hybrid Systems: Proving Theorems for Complex Dynamics*. Springer, 2010.
2. **André Platzer**. *An object-oriented dynamic logic with updates*. Master's thesis, University of Karlsruhe, Department of Computer Science. Institute for Logic, Complexity and Deduction Systems. 193 pages, Sep 2004.
3. **André Platzer**. *Using a program verification calculus for constructing specifications from implementations*. Minor thesis, University of Karlsruhe, Department of Computer Science. 83 pages, Feb 2004.

Other

1. Stefan Mitsch and **André Platzer**. Verified runtime validation for partially observable hybrid systems. arXiv:1811.06502, November 2018.
2. **André Platzer**. Dynamic logics of dynamical systems. arXiv:1205.4788, May 2012. Long version of invited tutorial at LICS 2012.
3. Edmund M. Clarke, Bruce Krogh, **André Platzer**, and Raj Rajkumar. Analysis and verification challenges for cyber-physical transportation systems. In *NITRD National Workshop for Research on Transportation Cyber-Physical Systems: Automotive, Aviation, and Rail*, 2008. (*Position paper*)

Editor

1. **André Platzer** and Geoff Sutcliffe. *Automated Deduction - CADE 28 - 28th International Conference on Automated Deduction, Virtual Event, July 12–15, 2021, Proceedings*, volume 12699 of *LNCS*. Springer, 2021.
2. Roland Meyer, **André Platzer**, and Heike Wehrheim. *Correct System Design. Symposium in Honor of Ernst-Rüdiger Olderog on the Occasion of His 60th Birthday, Oldenburg, Germany, September 8–9, 2015. Proceedings*, volume 9360 of *LNCS Festschrift*. Springer, 2015.

Software Artifacts

KeYmaera X: An aXiomatic tactical theorem prover for hybrid systems	*2014–*
KeYmaeraD: Distributed hybrid theorem prover for distributed hybrid systems	*2009–2013*
KeYmaera: A hybrid theorem prover for hybrid systems	*2006–2014*
AMC: Approximation refinement model checker for hybrid systems	*2006–2009*
SAAtRe: SAT-based abstraction refinement model checker, real-time systems	*2005–2008*
Orbital library: Computer algebra and theorem proving	*1996–2011*

Video Productions

1. **André Platzer**. Logical Foundations of Cyber-Physical Systems, April 2019: Videos for 22 lectures of about an hour each. YouTube `http://video.lfcps.org/`

Invited Talks, Tutorials, Courses & Lectures

1. "Programming and Proving with Dynamical Systems", Invited tutorial, Continuity, Computability, Constructivity From Logic to Algorithms, CCC, Virtual at the University of Birmingham, 09/2021.
2. "Stochastic Differential Dynamic Logic for Stochastic Hybrid Programs", Invited talk, Symposium on Stochastic Hybrid Systems and Applications, University of Connecticut, 07/2021.
3. "The Logical Path to Autonomous Cyber-Physical Systems", Invited talk, Verified Software: Tools and Experiments, Isaac Newton Institute, Cambridge, UK, 06/2021.
4. "Cyber-Physical Systems Verification with KeYmaera X", Keynote, Logical Foundations of Computer Science, LFCS, Dearfield Beach, FL, 01/2020.
5. "Safe AI for CPS", Lightning talk, Trustworthy AI Symposium, Columbia University, New York, 11/2019.
6. "Modular Formal Verification of Cyber-Physical Systems", Contributed tutorial, Formal Methods Symposium, Porto, Portugal, 10/2019.
7. "The Logical Path to Autonomous Cyber-Physical Systems", Keynote, International Conference on Quantitative Evaluation of SysTems, QEST, Glasgow, UK, 09/2019.
8. "Logical Foundations of Cyber-Physical Systems", Invited course, Marktoberdorf Summer School on Safety and Security of Software Systems: Logics, Proofs, Applications, Marktoberdorf, Germany, 08/2019.
9. "Programming Cyber-Physical Systems with Logic", Contributed tutorial, Symposium on Principles of Programming Languages POPL, Lisbon, Portugal, 01/2019.
10. "Safe AI in CPS", Invited talk, International Test Conference ITC, Phoenix, AZ, USA, 10/2018.
11. "Safe Reinforcement Learning via Formal Methods", Invited talk, Summit on Machine Learning Meets Formal Methods, Oxford, UK, 07/2018.
12. "Logic of Distributed Hybrid Games", Invited talk, International Workshop on Methods and Tools for Distributed Hybrid Systems, Ecole polytechnique, Paris, France, 07/2018.
13. "Wie gut sind selbstfahrende Autos?", Invited talk, William-Stern-Gesellschaft und Mathematische Gesellschaft, Hamburg, Germany, 06/2018.
14. "Logical Foundations of Cyber-Physical Systems", Keynote, Logical Foundations of Computer Science LFCS, Nerode 85 Session, Dearfield Beach, FL, 01/2018.

15. "Logic & Proofs for Cyber-Physical Systems with KeYmaera X", Keynote, Integrated Formal Methods iFM, Turin, Italy, 09/2017.
16. "Dynamic Logic for Dynamical Systems", Invited course, Marktoberdorf Summer School on Logical Methods for Safety and Security of Software Systems, Marktoberdorf, Germany, 08/2017.
17. "Logical Foundations of Cyber-Physical Systems", Invited lectures, Summer School on Cyber-Physical Systems, Halmstad, Sweden, 07/2017.
18. "Lessons from the Formal Verification of the Next-generation Airborne Collision Avoidance System ACAS X", Invited talk, Verification vs. Certification for Software Intense Systems, 4th AIAA SciTech Software Challenges in Aerospace symposium, Grapevine, TX, 01/2017.
19. "How to Prove Hybrid Systems", Keynote, MEMOCODE, IIT Kanpur, India, 11/2016.
20. Stefan Mitsch, Nathan Fulton, André Platzer. "KeYmaera X Tutorial: Tactics and Proofs for Cyber-Physical Systems", Contributed tutorial, Formal Methods FM 2016, Cyprus, 11/2016.
21. "Logic & Proofs for Cyber-Physical Systems", Keynote, International Joint Conference on Automated Reasoning (IJCAR), Coimbra, Portugal, 06/2016.
22. Nathan Fulton, Stefan Mitsch, André Platzer. "From Idea to Provably Safe Implementation: Modeling, Proving, Simulation, and Synthesis in KeYmaera X", Contributed tutorial, CPSWEEK 2016, Vienna, Austria, 04/2016.
23. "How to Prove Hybrid Systems and Why that Matters", Invited talk, International Conference on Complex Systems Engineering (ICCSE), Storrs, Connecticut, 11/2015.
24. "Logical Foundations of Cyber-Physical Systems", Invited lectures, AVACS Autumn School, Oldenburg, Germany, 10/2015.
25. "Differential Game Logic", Invited talk, AVACS Concluding Colloquium, Oldenburg, Germany, 09/2015.
26. "Proving Hybrid Systems", Invited tutorial, FMCAD, Austin, TX, 09/2015.
27. "Logical Foundations of Cyber-Physical Systems: The Basis for Correctness", Invited talk, NITRD HCSS, NSF, Arlington, VA, 04/2015.
28. "Logical Foundations of Cyber-Physical Systems", Keynote, QuantLA Workshop, Dresden, Germany, 10/2014.
29. "Logical Foundations of Cyber-Physical Systems", Keynote, HCSS'14, Annapolis, MD, USA, 05/2014.
30. "Foundations of Cyber-Physical Systems", Invited course, MAP-i, Universities of Minho, Braga, Porto and Aveiro, Portugal, 03/2014.
31. "Logical Foundations of Cyber-Physical Systems" and "Developing a Successful NSF Proposal", Invited talk, NSF Workshop for Aspiring PIs in Cyber-Physical Systems, 02/2014.
32. "Logic of Dynamical Systems", Invited Research School at École Normale Supérieure (ENS) de Lyon, France, 01/2014.
33. "Hybrid Systems Verification", Invited talk, Formal Methods for Robotics and Automation, Berlin, Germany, 06/2013.
34. "How to Explain Cyber-Physical Systems to Your Verifier", Keynote, VSTTE'13, Atherton, CA, USA, 05/2013.
35. "Logic of Hybrid Games", Invited talk, LCCC Focus Period and Workshop on Formal Verification of Embedded Control Systems, Lund, Sweden, 04/2013.
36. "Logic of Dynamical Systems", Invited course, European PhD Program in Computational Logic, Basic Training Camp, Dresden, Germany, 12/2012.

37. "Logical Analysis of Hybrid Systems: The KeYmaera Approach", Invited course, Verified Software Summer School at 2nd Verified Software Workshop by East China Normal University and Microsoft Research Asia, Shanghai, 08/2012.
38. "Differential Dynamic Logic and Differential Invariants for Hybrid Systems", Keynote, ITP'12, Princeton, NJ, 08/2012.
39. "Logical Analysis of Hybrid Systems: A Completeness Answer to a Complexity Challenge", Keynote, Descriptional Complexity of Formal Systems (DCFS), Braga, Portugal, 07/2012.
40. "Logics of dynamical systems", Invited tutorial, LICS'12, Dubrovnik, Croatia, 06/2012.
41. "Logical Analysis of Hybrid Systems: The KeYmaera Approach", Invited tutorial, FroCoS'11, Saarbrücken, Germany, 10/2011.
42. "The Correct Future of Intelligent Transportation Systems", Keynote, Intelligent Transportation Society Tri-Chapter Annual Meeting, Hagerstown, MD, 09/2011.
43. "Logic and Compositional Verification of Hybrid Systems", Invited tutorial, CAV'11, Snowbird, UT, 07/2011.
44. "Logical Analysis of Hybrid Systems: How Logic and Computer Algebra Help Save the World", Invited talk, Applications of Computer Algebra ACA'11, Houston, TX, 06/2011.
45. "Logical Analysis of Hybrid Systems", Invited talk, Verification of Control Systems at CDC, 12/2010.
46. "Real Analysis for Complex Systems", Keynote, VERIFY'10, Edinburgh, 07/2010.
47. "Proof Systems for Hybrid System Logics", Keynote, Proof Systems for Program Logics PSPL'10, Edinburgh, 07/2010.
48. "Hybrid Logical Verification for Hybrid Systems", Invited talk, Caltech Workshop on Verification and Validation, Pasadena, CA, 09/2009.
49. "Symbolic Computations in Hybrid Systems Verification: Why symbolic computations are required for hybrid systems analysis", Invited talk, NSF Workshop on Symbolic Computation for Constraint Satisfaction Problems, Arlington, VA, 11/2008.
50. "Differential dynamic logic for verifying parametric hybrid systems", Invited talk, German Verification Day at Conference on Computer Aided Verification, CAV 2007, Berlin, 07/2007.
51. "Differential dynamic logic for hybrid systems", 6th KeY Symposium 2007, Eisenbachtal, Germany, 06/2007
52. "Abstraction refinement for hybrid systems", 4th KeY Symposium, Gothenburg, Sweden, 06/2005

Colloquia & Seminar Talks

1. "Logical Foundations of Cyber-Physical Systems", Max Planck Institute for Software Systems (MPI-SWS), Distinguished Lecture Series, 04/2021.
2. "Logical Foundations of Cyber-Physical Systems", IFIP WG1.3 Foundations of System Specification, 03/2021.
3. "Logical Foundations of Cyber-Physical Systems", Universidad Nacional - Bogotá, 09/2020.
4. "Logical Foundations of Cyber-Physical Systems", Deutsche Gesellschaft der Humboldtianer e.V., München, Germany, 06/2020.
5. "Logical Foundations of Cyber-Physical Systems", University of Southern California, Center for Cyber-Physical Systems and the Internet-of-Things, 04/2020.
6. "Cyber-Physical System Safety", Institute for Advanced Studies, Munich, 07/2019.
7. "Differential Equation Axiomatization", Technical University of Darmstadt, 07/2019.
8. "Logical Foundations of Cyber-Physical Systems", Technical University of Dortmund, 07/2019.
9. "Safe AI for CPS", Max Planck Institute, Saarbrücken, 07/2019.
10. "Logical Foundations of Cyber-Physical Systems", University of Aarhus, 06/2019.

11. "Safe AI for CPS", University of Aalborg, 06/2019.
12. "Safe AI for Cyber-Physical Systems", University of Oldenburg, Kolloquium, 04/2019.
13. "Differential Equation Axiomatization", IST Austria, 04/2019.
14. "Uniform Substitution for Differential Dynamic Logic", TU Munich, 01/2019.
15. "Logic & Proofs for Cyber-Physical Systems with KeYmaera X", Universidade Nova Lisboa, Lisbon, Portugal, 01/2019.
16. "Differential Equation Axiomatization", University of California, Berkeley, 11/2018.
17. "Differential Equation Axiomatization", University of Pennsylvania, Mathematics Colloquium, 11/2018.
18. "Differential Equation Axiomatization", Cornell University, 10/2018.
19. "Differential Equation Axiomatization", Karlsruhe Institute of Technology, 08/2018.
20. "Differential Equation Axiomatization", Kolchin Seminar, Courant Institute, New York University, 04/2018.
21. "Logic & Proofs for Cyber-Physical Systems", Symbolic-Numeric Computing Seminar, City University New York, 04/2018.
22. "Logic of Dynamical Systems", CMU Center for Nonlinear Analysis, 02/2018.
23. "Logic & Proofs for Cyber-Physical Systems with KeYmaera X", Cornell University, 11/2017.
24. "Logical Foundations of Cyber-Physical Systems", Technical University Darmstadt, 06/2017.
25. "Logic & Proofs for Cyber-Physical Systems", Karlsruhe Institute of Technology, 11/2016.
26. "Logic & Proofs for Cyber-Physical Systems", Technical University Darmstadt, 11/2016.
27. "A Uniform Substitution Calculus for Differential Dynamic Logic. or: How I Learned to Stop Instantiating and Love the Substitution", University of Oldenburg, 07/2016.
28. "Logic of Hybrid Games", TU Berlin, 07/2016.
29. "Logic of Hybrid Games", TU Munich, 04/2016.
30. "Logical Foundations of Cyber-Physical Systems and How They Help Prove Aircraft", MIT, 11/2015.
31. "A Uniform Substitution Calculus for Differential Dynamic Logic. or: How I Learned to Stop Instantiating and Love the Substitution", Cornell, 05/2015.
32. "Logical Foundations of Cyber-Physical Systems", École Polytechnique, 10/2014.
33. "Logic of Hybrid Games", École Polytechnique, 10/2014.
34. "Logic of Hybrid Games", Cornell University, 08/2014.
35. "Proving Cyber-Physical Systems with KeYmaera", Safe and Secure Systems and Software Symposium (S5), Dayton, OH, 06/2014.
36. "Logic of Hybrid Games", Dagstuhl Seminar on Cyber-Physical Systems, 03/2014.
37. "Logic of Hybrid Games", Dagstuhl Seminar on Deduction & Arithmetic, 10/2013.
38. "Logic of Hybrid Games", University of Cambridge, 10/2013.
39. "Logic of Hybrid Games", University of California, Berkeley, 05/2013.
40. "Logic of Hybrid Games", IST, Austria, 04/2013.
41. "How to Prove Your Robot Safe", TU Wien, Austria, 04/2013.
42. "Toward a Driver's License Test for Robotic Cars: How to Prove Your Car Correct", Invited talk at McMaster University department seminar, 03/2012.
43. "Logical Analysis of Hybrid Systems: Proving Theorems for Complex Dynamics", Invited talk at MsSCert Seminar, McMaster University, 03/2012.

44. "Logical Analysis of Hybrid Systems", Distinguished lecture, Model Based Systems Engineering Colloquium, University of Maryland, College Park, MD, 09/2011.
45. "Logical Analysis of Hybrid Systems", Mathematics Colloquium, University of Pittsburgh, PA, 09/2011.
46. "Logical Analysis of Hybrid Systems", SRI, 06/2010.
47. "Logical Analysis of Hybrid Systems", RI Seminar, CMU, 02/2011.
48. "Logical Analysis of Hybrid Systems", University of California, Berkeley, 12/2009.
49. "Automated Deduction for Hybrid Systems", Interaction versus Automation - The Two Faces of Deduction, Dagstuhl, 10/2009.
50. "Hybrid Systems Verification and Collision Avoidance for Aircraft", NIA + NASA, Hampton, VA, 06/2009.
51. "Saturation-based Scaling Techniques for Symbolic Verification of Hybrid Systems", University of California, Berkeley, 10/2008.
52. "Hybrid-differential Logic for Parametric Verification", University of Koblenz-Landau, Germany, 03/2006.

Selected Press

- How to create AI that can safely navigate our world. *Future of Life Institute*, December 12, 2018.
- Damit es nicht knallt. *Allgäuer Zeitung*, August 3, 2017.
- Here's why self-driving cars may never really be self-driving. *ComputerWorld*, February 23, 2017.
- André Platzer on Verifying Cyber-Physical Systems. *Machine Intelligence Research Institute*, February 15, 2014.
- The Technology that Could Save Robotic Surgery Millions: Software diagnostic research debugs robotic surgical systems. *Robotics Business Review*, May 2013.
- Cars of the Future. *ScienceNews for Kids*, October 5, 2011.
- Perfekte Assistenzsysteme, *Technology Review*, Germany, August 2011.
- The Future of AI: AI's 10 to Watch. *IEEE Intelligent Systems*, Jan./Feb., 2011.
- Better Systems Around Us. Featured in *JFK 50 Legacy Gallery*: Celebrate the past to awaken the future feature in Science & Innovation, *John F. Kennedy Presidential Library and Museum*, December 14, 2010.
- Ten Young Geniuses Shaking Up Science Today. *Popular Science Magazine*, Nov. 2009.
- CMU professor recognized for making things miss. *Pittsburgh Post-Gazette*, Oct. 15, 2009.