

Curriculum Vitae - Erika Ábrahám

Contact information

Name	Erika Ábrahám
Title	Univ.-Prof. Dr.
Affiliation	RWTH Aachen University Informatik 2, LuFG Theory of Hybrid Systems 52056 Aachen, Germany
Phone	+49 241 80-21242
Fax	+49 241 80-22217
Email	abraham@informatik.rwth-aachen.de
Home page	http://ths.rwth-aachen.de/
ORCID ID:	https://orcid.org/0000-0002-5647-6134
ResearcherID:	G-5259-2012
Scopus Author ID:	8730197200

Personal details

Date and place of birth	November 9, 1970, Szeged, Hungary
Nationality	Hungarian and German
Sex	female
Family status	unmarried, two children

Education

Jan 2005	Ph.D. received from the University of Leiden, The Netherlands
Promotors:	Prof. W.-P. de Roever and Prof. J. N. Kok
Co-Promotors:	Prof. F. S. de Boer and Prof. M. Steffen
Feb 1999	Diploma received from the Christian-Albrechts-University of Kiel, Germany
Major/Minor:	Computer Science / Physics
Average mark:	1.0 (distinguishing award)

Positions

2013-today	Full professor, RWTH Aachen University, Germany Head of the research group “Theory of Hybrid Systems”
2008-2013	Junior professor, RWTH Aachen University, Germany Head of the junior research group “Theory of Hybrid Systems”
2007-2008	Postdoctoral researcher, Jülich Research Centre, Germany
2005-2007	Postdoctoral researcher, Albert-Ludwigs-University Freiburg, Germany
1999-2005	Ph.D. student, Christian-Albrechts-University Kiel, Germany

Ten selected publications

- Satisfiability checking

Erika Ábrahám, Gereon Kremer, James Davenport and Matthew England: *Deciding the Consistency of Non-Linear Real Arithmetic Constraints with a Conflict Driven Search Using Cylindrical Algebraic Coverings*. Journal of Logical and Algebraic Methods in Programming 119:100633, Elsevier, 2021. <https://doi.org/10.1016/j.jlamp.2020.100633>

Erika Ábrahám: *Building bridges between symbolic computation and satisfiability checking*. Proc. of the 2015 ACM on Int. Symp. on Symbolic and Algebraic Computation (ISSAC'15), pages 1–6, ACM, 2015. <https://doi.org/10.1145/2755996.2756636>.

Florian Corzilius, Gereon Kremer, Sebastian Junges, Stefan Schupp and Erika Ábrahám. *SMT-RAT: An open source C++ toolbox for strategic and parallel SMT solving*. Proc. of the 18th Int. Conf. on Theory and Applications of Satisfiability Testing (SAT'15), Volume 9340 of LNCS, pages 360–368, Springer, 2015. https://doi.org/10.1007/978-3-319-24318-4_26.

- Hybrid systems

Stefan Schupp, Erika Ábrahám, Ibtissem Ben Makhoul and Stefan Kowalewski: *HyPro: A C++ library for state set representations for hybrid systems reachability analysis*. Proc. of the 9th NASA Formal Methods Symp. (NFM'17), Volume 10227 of LNCS, pages 288–294, Springer, 2017. https://doi.org/10.1007/978-3-642-39799-8_18.

Xin Chen, Erika Ábrahám and Sriram Sankaranarayanan: *Flow*: An analyzer for non-linear hybrid systems*. Proc. of the 25th Int. Conf. on Computer Aided Verification (CAV'13), Volume 8044 of LNCS, pages 258–263, Springer, 2013. https://doi.org/10.1007/978-3-642-39799-8_18.

- Probabilistic systems

Christian Dehnert, Sebastian Junges, Nils Jansen, Florian Corzilius, Matthias Volk, Harold Bruintjes, Joost-Pieter Katoen and Erika Ábrahám: *PROPhESY: A probabilistic parameter synthesis tool*. Proc. of the 27th Int. Conf. on Computer Aided Verification (CAV'15), Volume 9206 of LNCS, pages 214–231, Springer, 2015. https://doi.org/10.1007/978-3-319-21690-4_13.

Shashank Pathak, Erika Ábrahám, Nils Jansen, Armando Tacchella and Joost-Pieter Katoen: *A greedy approach for the efficient repair of stochastic models*. Proc. of the 7th NASA Formal Methods Symp. (NFM'15), Volume 9058 of LNCS, pages 295–309, Springer, 2015. DOI: https://doi.org/10.1007/978-3-319-17524-9_21.

- Solar plants

Pascal Richter, David Laukamp, Levin Gerdes, Martin Frank and Erika Ábrahám: *Heliostat field layout optimization with evolutionary algorithms*. Proc. of the 2nd Global Conf. on Artificial Intelligence (GCAI'16), Volume 41 of EPiC Series in Computing, pages 240–252, EasyChair, 2016. <https://doi.org/10.29007/7p6t>

- Supercomputing

Markus Geimer, Felix Wolf, Brian J. N. Wylie, Erika Ábrahám, Daniel Becker and Bernd Mohr: *The Scalasca performance toolset architecture*. Concurrency and Computation: Practice and Experience 22(6):702–719, 2010. <https://doi.org/10.1002/cpe.1556>.

- Deductive proof systems

Erika Ábrahám, Frank S. de Boer, Willem-Paul de Roever and Martin Steffen: *An assertion-based proof system for multithreaded Java*. Theoretical Computer Science 331(2-3):251–290, 2005. <https://doi.org/10.1016/j.tcs.2004.09.019>.

Project acquisition – running projects

ReallySt 2022-2025	<i>Reachability Analysis for Stochastic Hybrid Systems</i>	DFG project
REMARO 2020-2024	<i>Reliable AI for Marine Robotics</i>	EU Horizon2020 MSCA-ITN-ETN Marie-Sklodowska-Curie Innovative Training Network
UnRAVeL 2017-2026	<i>Uncertainty and Randomness in Algorithms, Verification and Logic</i>	DFG Research Training Group
EuroProofNet 2021-2025	European Research Network on Formal Proofs (COST Action CA20111, Management Committee member)	
EUGAIN 2020-2024	European Network for Gender Balance in Informatics (COST Action CA19122, Management Committee Member)	

Project acquisition – completed projects

Industrial project 2020-2022	<i>Digitalization and Energy Optimization in Buildings using Artificial Intelligence</i>	BMW/DEOKI research project with the MeteoViva company
ARC 2020-2022	<i>Automated Reasoning in the Class</i>	EU Erasmus+ project (KA203 - Strategic Partnerships for Higher Education)
Industrial project 2018-2020	<i>Safety Verification for Mixed Discrete-Continuous Automotive Systems</i>	Research project with Ford
CAP 2015-2018	<i>Composition, Abstraction, and Parametrization for the Verification of Probabilistic and Hybrid Systems</i>	CDZ Sino-German cooperation project
HyPro 2013-2016, 2017-2018	<i>A Toolbox for the Reachability Analysis of Hybrid Systems using Geometric Approximations</i>	DFG project, coordinator
Industrial project 2016-2018	<i>Simulink Formal Verification</i>	Industrial research project with Ford
Industrial project 2018	<i>SMT Solving for Configuration Management</i>	Industrial research project with Siemens
Industrial project 2018	<i>SMT Solving for Productline Optimisation</i>	Research project with Bosch
SC ² 2016-2018	<i>Satisfiability Checking and Symbolic Computation – Uniting Two Communities to Solve Real Problems</i>	H2020 FETOPEN CSA
SMT4ROB 2016-2017	<i>Optimizing the Performance of Robot Fleets in Production Logistics Scenarios Using SMT</i>	RWTH ICT Funds
SMT4ABS 2015-2016	<i>Combining SMT-Solving with Type Checking for Real-Time ABS Programs</i>	(German project coordinator) Norwegian-German DAAD ppp project
OASys 2012-2016	<i>Online Algorithms for Optimal Control of Hybrid Propulsion Systems</i>	(project coordinator) DFG project, coordinator
AlgoSyn 2011-2015	<i>Algorithmic Synthesis of Reactive and Discrete-Continuous Systems</i>	DFG Research Training Group

2015-2015	<i>Modeling and Optimisation of Offshore Wind Farms</i>	RWTH Seed Funds
ROCKS 2009-2013	<i>Rigorous Dependability Analysis using Model Checking Techniques for Stochastic Systems</i> (German site coordinator)	Dutch-German NWO-DFG bilateral cooperation program, German coordinator
CeBUG 2010-2013	<i>Counterexample Generation for Stochastic Systems using Bounded Model Checking</i>	DFG project, coordinator
HySmart 2010-2011	<i>Hybrid Systems Modeling and Analysis with Rewriting Techniques</i> (German project coordinator)	Norwegian-German DAAD ppp project

Awards

Brigitte-Gilles award	from RWTH Aachen University
Guest professor	at TU Wien, March 2020
First place	SMT Competition 2020, category QF_NIRA (quantifier-free non-linear mixed integer-real arithmetic)
First place	SMT Competition 2019, category QF_NIRA (quantifier-free non-linear mixed integer-real arithmetic)
First place	SMT Competition 2018, category QF_NIRA (quantifier-free non-linear mixed integer-real arithmetic)
First place	Planning and Execution Competition for Logistics Robots in Simulation 2018
Best paper award	CSI Int. Symp. on Computer Science and Software Engineering (CSSE'11)
Best presentation award	Int. Conf. on Engineering of Complex Computer Systems (ICECCS'01)
Distinguishing award	for Diploma thesis, Christian-Albrechts-University of Kiel, 1999

Invited talks and invited tutorials

1. *Automated Exercise Generation for Satisfiability Checking*, Formal Methods Teaching Workshop (FMTea'23), 03/2023
2. *I completed my Master! — And now? PhD as a career path for women in CS*, Interdisciplinary Symposium for Women in STEM Fields (ISINA'23), 03/2023
3. *Automated Exercise Generation for Satisfiability Checking*, Friedrich-Alexander-Universität Erlangen-Nürnberg, 03/2023
4. *Probabilistic Hyperproperties*, Lorentz Seminar on New Challenges in Programming Language Semantics, 11/2022
5. *SMT solving for Arithmetic Theories*, Conference on Intelligent Computer Mathematics (CICM'22), 09/2022
6. *Recent Advances for Hybrid Systems Verification with HyPro*, International Workshop on Numerical Software Verification (NSV'22), 08/2022
7. *Probabilistic Hyperproperties*, Workshop on Verification of Probabilistic Programs (VeriProP'22), 08/2022
8. *SMT Solving: Historical Review and New Developments*, Computability in Europe (CiE'22), 07/2022

9. *Recent Advances for Hybrid Systems Verification with HyPro*, International Workshop on Formal Engineering of Cyber-Physical Systems (FE-CPS@TASE'22), 07/2022
10. *Automatic Exercise Generation for Satisfiability Checking*, Formal Methods Europe (FME) Teaching Tutorials 07/2022
11. *Automatic Exercise Generation for Satisfiability Checking*, Training Event on Automated Reasoning in the Class (ARC), 07/2022
12. *SMT Solving: Past, Present and Future*, International Symposium on Theoretical Aspects of Software Engineering (TASE'22), 07/2022
13. *The Challenge of Compositionality for Stochastic Hybrid Systems*, UnRAVeL Research Training Group at RWTH Aachen University, 05/2022
14. *Delay Propagation in Railway Networks*, Workshop on Rigorous Dependability Analysis using Model Checking Techniques for Stochastic Systems (ROCKS'22), 05/2022
15. *How my Hobby Turned into being my Job*, Mentoring Workshop at ETAPS 2022, 04/2022
16. *Analysing Hybrid Systems with HyPro*, USC CCI-MHI Cyber-Physical Systems Seminar, Aarhus University, 11/2021
17. *Inspiration Talk*, Doctoral Symposium at the International Symposium on Formal Methods (PhD@FM'21), 11/2021
18. *Frauenmangel in technischen Fächern - wieso eigentlich?*, Days of Diversity, RWTH Aachen University, 11/2021
19. *SMT Solving: Past, Present and Future*, Informatics Europe Webinar, 10/2021
20. *SMT-based Planning - Some recent developments*, Workshop on Reliable AI for Marine Robotics: Challenges and Opportunities (REMARO@IROS'21), 10/2021
21. *SMT Solving: Past, Present and Future*, NASA Formal Methods Symp. (NFM'21), 05/2021
22. *Symbolic Computation Techniques in SMT Solving: Mathematical Beauty meets Efficient Heuristics*, Simons Institute at Berkeley, Seminar on SAT/SMT for Math and Computer Algebra Systems, 04/2021
23. *Reachability Analysis Techniques for Hybrid Systems*, European Joint Conferences on Theory and Practice of Software (ETAPS'21), 03/2021
24. *Abstract Domains in SMT Solving for Real Algebra*, Int. Workshop on Numerical and Symbolic Abstract Domains (NSAD'20), 11/2020
25. *Probabilistic Hyperproperties*, Int. Symp. on Games, Automata, Logics, and Formal Verification (GandALF'20), 09/2020
26. *Solving Real-Algebraic Formulas with SMT-RAT*, Int. Congress of Mathematical Software (ICMS'20), Braunschweig, Germany, 07/2020
27. *The Power of Satisfiability Checking*, TU Wien, Vienna, Austria, 03/2020
28. *Women in Computer Science*, Women in Computability at CiE'19, 07/2019
29. *Reachability Analysis Techniques for Hybrid Systems*, Summer School on Formal Methods for Cyber-Physical Systems, Verona, Italy, 06/2019
30. *Hybrid Systems Reachability Analysis*, Open Problems in Concurrency Theory (IFIP WG 1.8 at POPL'19), Cascais, Portugal, 01/2019
31. *Formal Verification of Automotive Simulink Controller Models: Empirical Technical Challenges, Evaluation and Recommendations*, 7th Int. Workshop on Cross-layer Resiliency (IWCR'19), Stuttgart, Germany, 07/2019.

32. *Women in Computer Science: Do We Still Need Equality Measures?*, Computing Is Too Important to Be Left to Men, Vienna, Austria, 12/2019.
33. *SMT Solving: Matematikai szépség és informatikai hatékonyság*, Debreceni ADA Konferencia (ADA'18), Debrecen, Hungary, 11/2018.
34. *Symbolic Computation Techniques in SMT Solving: Mathematical Beauty meets Efficient Heuristics*, 30th Nordic Workshop on Programming Theory (NWPT'18), Oslo, Norway, 10/2018.
35. *Symbolic Computation Techniques in SMT Solving: Mathematical Beauty meets Efficient Heuristics*, 9th Int. Joint Conf. on Automated Reasoning (IJCAR'18), Oxford, UK, 07/2018
36. *Old-established Methods in a New Look: How HyPro Speeds up Reachability Computations for Hybrid Systems*, IFAC Conf. on Analysis and Design of Hybrid System (ADHS'18), Oxford, UK, 07/2018
37. *Reachability Analysis Techniques for Hybrid Systems*, Summer School on Cyber-Physical Systems (CPS'18), Halmstad, Sweden, 06/2018
38. *SMT Solving for AI Planning: Theory, Tools and Applications*, 28th Int. Conf. on Automated Planning and Scheduling (ICAPS'18), Delft, The Netherlands, 06/2018
39. *Symbolic Computation Techniques in SMT Solving: Mathematical Beauty meets Efficient Heuristics*, FBK, Trento, Italy, 05/2018
40. *Frauen in der Informatik: Brauchen wir noch Gleichstellung?*, Gender x Informatik, Chemnitz, Germany, 05/2018
41. *The Informatics Europe Working Group Women in Informatics Research and Education*, Gender Action Webinar, 03/2018
42. *Symbolic Computation Techniques in SMT Solving*, Evening Seminar of the London Mathematical Society and the British Computer Society, London, UK, 11/2017
43. *SMT Solving for Real Algebra*, Int. Conf. on Mathematics and Informatics (MathInfo'17), Târgu Mureş/Marosvásárhely, Romania, 09/2017
44. *SMT Solving for Arithmetic Theories: Theory and Tool Support*, 19th Int. Symp. on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC'17), Timisoara, Romania, 09/2017
45. *Techniques and Tools for Hybrid Systems Reachability Analysis*, Int. Workshop on Formal Methods for Rigorous Systems Engineering of Cyber-Physical Systems (RISE4CPS), Heidelberg, Germany, 07/2017
46. *Divide and Conquer: Variable Set Separation in Hybrid Systems Reachability Analysis*, 15th Int. Workshop on Quantitative Aspects of Programming Languages and Systems (QAPL'17), Uppsala, Sweden, 04/2017
47. *Exploiting Symbolic Computation Techniques in SAT-Modulo-Theories Solving*, University of Waterloo, Waterloo, Canada, 03/2017
48. *Symbolic Computation Techniques in Satisfiability Checking*, Johannes Kepler University, RISC, Linz, Austria, 11/2016
49. *Combining Static and Runtime Methods to Achieve Safe Standing-Up for Humanoid Robots*, 6th Int. Symp. on Leveraging Applications of Formal Methods, Verification and Validation (ISoLA'16), Track: Static and Runtime Verification: Competitors or Friends?, Crete, Greece, 10/2016
50. *The Power of Satisfiability Checking*, European Computer Science Summit (ECSS'16), Budapest, Hungary, 10/2016
51. *Computation Techniques in SAT-Modulo-Theories Solving*, University of Kassel, Kassel, Germany, 10/2016

52. *Symbolic Computation Techniques in Satisfiability Checking*, 18th Symp. of Symbolic and Numeric Algorithms for Scientific Computing (SYNASC'16), Timisoara, Romania, 09/2016
 53. *Satisfiability Checking: Theory and Applications*, 14th Int. Conf. on Software Engineering and Formal Methods (SEFM'16), Vienna, Austria, 07/2016
 54. *SMT Solving for Non-Linear Arithmetic Theories*, IST Austria, Vienna, Austria, 05/2016
 55. *Building Bridges between Symbolic Computation and Satisfiability Checking*, Int. Symp. of Symbolic and Algebraic Computation (ISSAC'15), Bath, UK, 07/2015
 56. *A Greedy Approach for the Efficient Repair of Stochastic Controller Models*, Abstraction and Synthesis of Correct-by-Construction Robotics Software: Reuniting Formal Methods with Model-Driven Software Engineering (AbSynth'15), Workshop at Robotics Science and Systems (RSS'15), Rome, Italy, 07/2015
 57. *Model Repair for Probabilistic Controller*, NII Shonan Meeting "Static Analysis meets Runtime Verification", Shonan Village Center, Japan, 03/2015
 58. *Current Challenges in the Verification of Hybrid Systems*, 5th Int. Workshop on Cyber Physical Systems (CyPhy'16), Amsterdam, The Netherlands, 10/2015
 59. *Modeling and Verification of Hybrid Systems*, University of Genoa, Genoa, Italy, 10/2015
 60. *Some Thoughts about Formal Methods in Robotics*, University of Genoa, Genoa, Italy, 10/2015
 61. *SMT Solving for Real Arithmetic: What are the Challenges?*, CDZ Workshop "Computation and Reasoning with Constraints", Beijing, China, 11/2014
 62. *Probabilistic Model Checking and Counterexample Generation*, IFIP WG2.2 Meeting on "Formal Description of Programming Concepts", Munich, Germany, 09/2014
 63. *Reachability Analysis of Hybrid Systems*, INRIA, France, 06/2014
 64. *Modeling and Analyzing Probabilistic Systems*, NVTI Theory Day, Utrecht, The Netherlands, 05/2014
 65. *Reachability Analysis for Hybrid Systems*, Workshop on Computable Analysis and Rigorous Numerics, Maastricht, The Netherlands, 12/2013
 66. *Formal Methods for Hybrid Systems*, University of Passau, Passau, Germany, 11/2013
 67. *Modeling and Analysis of Hybrid Systems*, Formal Description of Programming Concepts (IFIP Working Group 2.2), Lisbon, Portugal, 09/2013
 68. *Reachability Analysis for Hybrid Systems*, CDZ Workshop on "Probabilistic and Hybrid System Verification", Beijing, China, 09/2013
 69. *Computing Counterexamples for Discrete-Time Probabilistic Systems*, ROCKS Autumn School "Rigorous Dependability Analysis for Stochastic Systems", Vahrn, Italy, 10/2012
 70. *Hybrid Systems*, University of Twente, Enschede, The Netherlands, 08/2012
 71. *SMT Solving Mechanisms for Non-Linear Real Arithmetic*, Albert-Ludwigs-University, Freiburg, Germany, 05/2012
 72. *Heap-abstraction for a Multi-Threaded Object-Oriented Calculus*, Workshop on Automata and Logic for Data Manipulating Programs (LIAFA'10), Paris, France, 12/2010
 73. *SMT-Solving for the Reals*, University of Karlsruhe, Germany, 09/2010
 74. *SMT-Solving in the Verification and Synthesis of Hybrid Systems*, University of Freiburg, Germany, 07/2010
- A Lazy SMT-Solver for a Non-Linear Subset of Real Algebra*, Dagstuhl Seminar "Verification over Discrete-Continuous Boundaries", Dagstuhl, Germany, 07/2010

75. *SMT-Solving for the First-Order Theory of the Reals*, Dagstuhl Seminar “Algorithms and Applications for the Next Generation of SAT Solvers”, Dagstuhl, Germany, 11/2009
76. *SAT-Modulo-Theories Solving in the Context of Bounded Model Checking*, CWI Amsterdam, Amsterdam, The Netherlands, 06/2009
77. *SMT-solving in the Context of Bounded Model Checking*, University of Oslo, Oslo, Norway, 04/2009
78. *Heap-Abstraction for an Object-Oriented Calculus with Thread Classes*, Computability in Europe (CiE’06), Swansea, Great Britain, 07/2006
79. *A Proof System for Exception Handling in Multithreaded Java*, Christian-Albrechts-University, Kiel, Germany, 05/2004
80. *A Hoare Logic for Monitors in Java*, ICASE - NASA LaRC, 11/2002
81. *Verification for Java’s Monitor Concept*, Int. Symp. on Formal Methods for Components and Objects (FMCO’02), Leiden, The Netherlands, 11/2002

Organisation of scientific events (since 2014)

- **Co-organiser** IPAM Workshop *Machine Assisted Proofs*, Los Angeles, USA, 02/2023
- **Co-organiser** Dagstuhl Seminar *New Perspectives in Symbolic Computation and Satisfiability Checking*, Dagstuhl, Germany, 02/2022
- **Co-organiser** 4th Workshop *Women in Informatics Research and Education*, online, 10/2020
- **Co-organiser** 2nd Workshop *Women in Informatics Research and Education*, Rome, Italy, 10/2018
- **Co-organiser** Summer School *Satisfiability Checking and Symbolic Computation*, Saarbrücken, Germany, 07-08/2017
- **Co-organiser** 1st Workshop *Women in Informatics Research and Education*, Gothenburgh, Sweden, 10/2017
- **Co-organiser** Dagstuhl Seminar *Computer-Assisted Engineering for Robotics and Autonomous Systems*, Dagstuhl, Germany, 02/2017
- **Co-organiser** *Festschrift and Celebration Event for Frank de Boer’s 60th Birthday*, Eindhoven, the Netherlands, 04/2016
- **Co-organiser** GI-Dagstuhl Seminar *Formal Evaluation of Critical Infrastructures*, Dagstuhl, Germany, 12/2015
- **Co-organiser** Dagstuhl Seminar *Symbolic Computation and Satisfiability Checking*, Dagstuhl, Germany, 11/2015
- **Co-organiser** Dagstuhl Seminar *Randomized Timed and Hybrid Models for Critical Infrastructures*, Dagstuhl, Germany, 01/2014 (41 participants)
- **Organiser** of several workshops (see section *Program Committee co-chair* below)
- **Editor** of journal special issues (LMCS, STTT)

Scientific society memberships

- Since 2009: Member of the *German Association of University Professors and Lecturers (DHV)*
- Since 2009: Member of the *German Informatics Society (GI)*

- Since 2013: Member of the *Computability in Europe (CiE)* Association

Steering Committee memberships

- **SMT** (2018-2022): Int. Workshop on Satisfiability Modulo Theories
- **GE@ICSE** (since 2018): Workshop on Gender Equality in Software Engineering
- **SNR** (since 2017): Int. Workshop on Symbolic and Numerical Methods for Reachability Analysis
- **iFM** (since 2016): Int. Conf. on integrated Formal Methods
- **SC²** (2016-2019): Int. Workshop on Satisfiability Checking and Symbolic Computation
- **FORTE** (2014-2017): IFIP Int. Conf. on Formal Techniques for Distributed Objects, Components and Systems
- **ETAPS** (2013-2014): European Joint Conferences on Theory and Practice of Software

Program Committee co-chair

1. Int. Colloquium on Theoretical Aspects of Computing (**ICTAC'23**)
2. Int. Workshop on Satisfiability Checking and Symbolic Computation (**SC²'23**)
3. Int. Conf. on Fundamentals of Software Engineering (**FSEN'23**)
4. Software Verification and Testing Track at the ACM Symp. on Applied Computing (**SVT-SAC'22**)
5. Conf. on Quantitative Evaluation of SysTems (**QEST'22**)
6. Software Verification and Testing Track at the ACM Symp. on Applied Computing (**SVT-SAC'21**)
7. Industry Day at Formal Methods (**Industry@FM'21**)
8. Session on Real Algebraic Geometry at the Int. Congress on Mathematical Software (**ICMS'20**)
9. Int. Symp. on Symbolic and Numeric Algorithms for Scientific Computing (**SYNASC'18**)
10. Pre-Summit Workshop for Deans and Department Heads at the European Computer Science Summit (**ECSS'18**)
11. PhD Symp. at iFM'18 on Formal Methods: Algorithms, Tools and Applications (**PhD-iFM'18**)
12. Workshop on Gender Equality in Software Engineering (**GE@ICSE'18**)
13. PhD Symp. at iFM'17 on Formal Methods: Algorithms, Tools and Applications (**PhD-iFM'17**)
14. Int. Workshop on Symbolic and Numerical Methods for Reachability Analysis (**SNR'17**)
15. Int. Conf. on integrated Formal Methods (**iFM'16**)
16. Int. Workshop on Satisfiability Checking and Symbolic Computation (**SC²'16**)
17. Int. Workshop on Symbolic and Numerical Methods for Reachability Analysis (**SNR'16**)
18. IFIP Int. Conf. on Formal Techniques for Distributed Objects, Components and Systems (**FORTE'14**)
19. Int. Conf. on Tools and Algorithms for the Construction and Analysis of Systems (**TACAS'14**)

Program Committee member

1. Design, Automation and Test in Europe Conference (**DATE'23**)

2. Int. Conf. on Fundamental Approaches to Software Engineering (**FASE'23**)
3. Int. Conf. on Hybrid Systems: Computation & Control (**HSCC'23**)
4. Software Verification and Testing Track at the ACM Symp. on Applied Computing (**SAC-SVT'23**)
5. Int. Conf. on Computer Aided Verification (**CAV'22**)
6. Int. Conf. on Coordination Models and Languages (**COORDINATION'22**)
7. Int. Conf. on Fundamental Approaches to Software Engineering (**FASE'22**)
8. Int. Workshop on Formal Engineering of Cyber-Physical Systems (**FE-CPS@TASE'22**)
9. Int. Conf. on Formal Methods in Computer-Aided Design (**FMCAD'22**)
10. Int. Conf. on Formal Methods for Industrial Critical Systems (**FMICS'22**)
11. Int. Conf. on Formal Modeling and Analysis of Timed Systems (**FORMATS'22**)
12. Int. Conf. on Hybrid Systems: Computation & Control (**HSCC'22**)
13. Workshop on Advances in Human-Centric Experiments in Software Engineering (**HUMAN'22**)
14. Int. Conf. on integrated Formal Methods (**iFM'22**)
15. Int. Joint Conf. on Automated Reasoning (**IJCAR'22**)
16. Int. Symp. on NASA Formal Methods (**NFM'22**)
17. Parallel and Distributed Automated Reasoning (**PDAR'22**)
18. IEEE Real-Time Systems Symposium (**RTSS'22**)
19. Int. Workshop on Satisfiability Checking and Symbolic Computation (**SC²'22**)
20. Theoretical Aspects of Software Engineering Conf. (**TASE'22**)
21. Int. Workshop on Algebraic Development Techniques (**WADT'22**)
22. Int. Workshop on Rewriting Logic and its Applications (**WRLA'22**)
23. IFAC Conf. on Analysis and Design of Hybrid Systems (**ADHS'21**)
24. Int. Symp. on Automated Technology for Verification and Analysis (**ATVA'21**)
25. Int. Conf. on Computer Aided Verification (**CAV'21**)
26. Int. Conf. on Formal Methods in Computer-Aided Design (**FMCAD'21**)
27. Int. Conf. on Formal Methods for Industrial Critical Systems (**FMICS'21**)
28. Int. Conf. on Fundamentals of Software Engineering (**FSEN'21**)
29. Int. Conf. on Hybrid Systems: Computation & Control (**HSCC'21**)
30. Int. Colloquium on Theoretical Aspects of Computing (**ICTAC'21**)
31. Int. Symp. on NASA Formal Methods (**NFM'21**)
32. ACM SIGPLAN Conf. on Object-Oriented Programming, Systems, Languages, and Applications (**OOPSLA'21**)
33. Int. Conf. on Software Engineering and Formal Methods (**SEFM'21**)
34. Int. Workshop on Symbolic and Numerical Methods for Reachability Analysis (**SNR'21**)
35. Theoretical Aspects of Software Engineering Conf. (**TASE'21**)
36. Int. Symp. on Automated Technology for Verification and Analysis (**ATVA'20**)

37. Int. Conf. on Formal Methods in Computer-Aided Design (**FMCAD'20**)
38. Int. Colloquium on Theoretical Aspects of Computing (**ICTAC'20**)
39. Int. Conf. on integrated Formal Methods (**iFM'20**)
40. Int. Conf. on Logic for Programming, Artificial Intelligence and Reasoning (**LPAR-23**)
41. Int. GI/ITG Conf. on Measurement, Modelling and Evaluation of Computing Systems (**MMB'20**)
42. Int. Symp. on NASA Formal Methods (**NFM'20**)
43. Int. Workshop on Satisfiability Checking and Symbolic Computation (**SC²'20**)
44. Int. Conf. on Software Engineering and Formal Methods (**SEFM'20**)
45. Int. Workshop on Symbolic and Numerical Methods for Reachability Analysis (**SNR'20**)
46. Int. Symp. on Theoretical Aspects of Software Engineering (**TASE'20**)
47. Int. Workshop on Rewriting Logic and its Applications (**WRLA'20**)

48. Debreceni ADA Konferencia (**ADA'19**)
49. Int. Symp. on Automated Technology for Verification and Analysis (**ATVA'19**)
50. Computability in Europe (**CiE'19**)
51. Int. Workshop on Model-Based Design of Cyber Physical Systems (**CyPhy'19**)
52. Int. Conf. on Formal Methods in Computer-Aided Design (**FMCAD'19**)
53. Student Forum at Int. Conf. on Formal Methods in Computer-Aided Design (**Student@FMCAD'19**)
54. Int. Conf. on Fundamentals of Software Engineering (**FSEN'19**)
55. Int. Conf. on Hybrid Systems: Computation & Control (**HSCC'19**)
56. Int. Conf. on integrated Formal Methods (**iFM'19**)
57. Int. Symp. on NASA Formal Methods (**NFM'19**)
58. Int. Symp. on Practical Aspects of Declarative Languages (**PADL'19**)
59. Int. Workshop on Satisfiability Checking and Symbolic Computation (**SC²'19**)
60. Int. Conf. on Software Engineering and Formal Methods (**SEFM'19**)
61. Int. Workshop on Symbolic and Numerical Methods for Reachability Analysis (**SNR'19**)
62. Int. Symp. on Theoretical Aspects of Software Engineering (**TASE'19**)

63. Debreceni ADA Konferencia (**ADA'18**)
64. IFAC Conf. on Analysis and Design of Hybrid Systems (**ADHS'18**)
65. Int. Workshop on Model-Based Design of Cyber Physical Systems (**CyPhy'18**)
66. IEEE Int. Workshop on Formal Methods Integration (**FMi'18**)
67. Int. Conf. on Hybrid Systems: Computation & Control (**HSCC'18**)
68. Int. Congress on Mathematical Software (**ICMS'18**)
69. Int. Conf. on integrated Formal Methods (**iFM'18**)
70. Methoden und Beschreibungssprachen zur Modellierung und Verifikation von Schaltungen und Systemen (**MBMV'18**)
71. Int. Symp. on NASA Formal Methods (**NFM'18**)

72. Int. Symp. on Practical Aspects of Declarative Languages (**PADL'18**)
73. Int. Conf. on Quantitative Evaluation of SysTems (**QEST'18**)
74. Int. Workshop on Satisfiability Checking and Symbolic Computation (**SC²'18**)
75. Int. Conf. on Software Engineering and Formal Methods (**SEFM'18**)
76. Studierendenkonferenz Informatik (**SKILL'18**)
77. Int. Workshop on Satisfiability Modulo Theories (**SMT'18**)
78. Int. Workshop on Symbolic and Numerical Methods for Reachability Analysis (**SNR'18**)
79. Int. Symp. on Theoretical Aspects of Software Engineering (**TASE'18**)

80. IEEE Int. Workshop on Formal Methods Integration (**FMi'17**)
81. Int. Conf. on Formal Modeling and Analysis of Timed Systems (**FORMATS'17**)
82. Int. Conf. on Fundamentals of Software Engineering (**FSEN'17**)
83. Int. Conf. on Hybrid Systems: Computation & Control (**HSCC'17**)
84. Int. Conf. on integrated Formal Methods (**iFM'17**)
85. Methoden und Beschreibungssprachen zur Modellierung und Verifikation von Schaltungen und Systemen (**MBMV'17**)
86. Int. Symp. on Practical Aspects of Declarative Languages (**PADL'17**)
87. Int. Conf. on Quantitative Evaluation of SysTems (**QEST'17**)
88. Int. Workshop on Satisfiability Checking and Symbolic Computation (**SC²'17**)
89. Symp. on Dependable Software Engineering: Theories, Tools and Applications (**SETTA'17**)
90. Int. Conf. on Simulation and Modeling Methodologies, Technologies and Applications (**SIMULTECH'17**)
91. Int. Conf. on Current Trends in Theory and Practice of Computer Science (**SOFSEM'17**)
92. Int. SPIN Symp. on Model Checking of Software (**SPIN'17**)
93. Int. Symp. on Theoretical Aspects of Software Engineering (**TASE'17**)
94. Int. Conf. on Tools and Methods of Program Analysis (**TMPA'17**)
95. Int. Conf. on Verification, Model Checking, and Abstract Interpretation (**VMCAI'17**)

96. Int. Workshop on Exascale Multi/many Core Computing Systems (**E-MuCoCoS'16**)
97. Int. Symp. on Formal Methods (**FM'16**)
98. IEEE Int. Workshop on Formal Methods Integration (**FMi'16**)
99. Int. Conf. on Formal Techniques for Distributed Objects, Components and Systems (**FORTE'16**)
100. Int. Workshop Methoden und Beschreibungssprachen zur Modellierung und Verifikation von Schaltungen und Systemen (**MBMV'16**)
101. PhD Symp. at iFM'16 on Formal Methods: Algorithms, Tools and Applications (**PhD-iFM'16**)
102. Int. Conf. on Runtime Verification (**RV'16**)
103. Symp. on Dependable Software Engineering: Theories, Tools and Applications (**SETTA'16**)
104. Int. Workshop on Satisfiability Modulo Theories (**SMT'16**)
105. Int. SPIN Symp. on Model Checking Software (**SPIN'16**)
106. Int. Symp. on Theoretical Aspects of Software Engineering (**TASE'16**)

107. IFAC Conf. on Analysis and Design of Hybrid Systems (**ADHS'15**)
108. Int. Symp. on Automated Technology for Verification and Analysis (**ATVA'15**)
109. Int. Workshop on Design and Implementation of Formal Tools and Systems (**DIFTS'15**)
110. Int. Workshop on Exascale Multi/many Core Computing Systems (**E-MuCoCoS'15**)
111. Young Researchers' Conf. Frontiers of Formal Methods (**FFM'15**)
112. Int. Symp. on Formal Methods (**FM'15**)
113. IEEE Int. Workshop on Formal Methods Integration (**FMi'15**)
114. Int. Conf. on Formal Techniques for Distributed Objects, Components and Systems (**FORTE'15**)
115. IARCS Annual Conf. on Foundations of Software Technology and Theoretical Computer Science (**FSTTCS'15**)
116. Int. Conf. on Hybrid Systems: Computation and Control (**HSCC'15**)
(Additionally, **chair** of the HSCC'15 commission for the **Best Student Paper Award**)
117. Int. Symp. on NASA Formal Methods (**NFM'15**)
118. Int. Conf. Quantitative Evaluation of SysTems (**QEST'15**)
119. Summer Computer Simulation Conf. (**SCSC'15**)
120. Int. Conf. on Advances in System Simulation (**SIMUL'15**)
121. Int. Conf. on Tools and Algorithms for the Construction and Analysis of Systems (**TACAS'15**)
122. Int. Conf. on Verification, Model checking, and Abstract Interpretation (**VMCAI'15**)
123. Int. Workshop on Design and Implementation of Formal Tools and Systems (**DIFTS'14**)
124. IEEE Int. Workshop on Formal Methods Integration (**FMi'14**)
125. Int. Conf. on Formal Modeling and Analysis of Timed Systems (**FORMATS'14**)
126. Int. Workshop on Formal Techniques for Safety-Critical Systems (**FTSCS'14**)
127. Workshop on Hybrid Autonomous Systems (**HAS'14**)
128. Int. Conf. on Hybrid Systems: Computation and Control (**HSCC'14**)
129. Int. Conf. on integrated Formal Methods (**iFM'14**)
130. Summer Computer Simulation Conf. (**SCSC'14**)
131. Int. Conf. on Advances in System Simulation (**SIMUL'14**)
132. Int. Conf. on Simulation and Modeling Methodologies, Technologies and Applications (**SIMULTECH'14**)
133. Int. Workshop on Harnessing Theories for Tool Support in Software (**TTSS'14**)
134. IEEE Int. Workshop on Formal Methods Integration (**FMi'13**)
135. Int. Conf. on Formal Modeling and Analysis of Timed Systems (**FORMATS'13**)
136. Int. Workshop on Formal Techniques for Safety-Critical Systems (**FTSCS'13**)
137. Int. Conf. on Hybrid Systems: Computation and Control (**HSCC'13**)
138. Int. Conf. on integrated Formal Methods (**iFM'13**)
139. Int. Conf. on Advances in System Simulation (**SIMUL'13**)
140. Int. Conf. on Simulation and Modeling Methodologies, Technologies and Applications (**SIMULTECH'13**)

141. Int. Conf. on Tools and Algorithms for the Construction and Analysis of Systems (**TACAS'13**)
142. Int. Symp. on Formal Aspects of Component Software (**FACS'12**)
143. Int. Workshop on Formal Techniques for Safety-Critical Systems (**FTSCS'12**)
144. Int. Conf. on Hybrid Systems: Computation and Control (**HSCC'12**)
145. Int. Workshop on Numerical Software Verification (**NSV'12**)
146. Int. Conf. on Quantitative Evaluation of Systems (**QEST'12**)
147. Int. Conf. on Simulation and Modeling Methodologies, Technologies and Applications (**SIMULTECH'12**)
148. Int. Symp. on Formal Aspects of Component Software (**FACS'11**)
149. Int. Symp. on Fundamentals of Computation Theory (**FCT'11**)
150. Int. Conf. on Simulation and Modeling Methodologies, Technologies and Applications (**SIMULTECH'11**)
151. Int. Workshop on Rewriting Techniques for Real-Time Systems (**RTRTS'10**)
152. Int. Symp. on Theoretical Aspects of Software Engineering (**TASE'10**)

Further reviewing activities

- Since 2021: ToCL editorial board member
- 2021-2023: FMSD editorial board member
- 2020-2021: Member of the Evaluation Panel for INRIA Project Teams
- 2018: Member of the NSERC (Natural Sciences and Engineering Research Council of Canada) Evaluation Group for Computer Science
- Further project reviews: European Commission; German Research Council DFG, Germany; Bavarian Research Institut for Digital Transformation (bidt), Germany; Israel Science Foundation; FFG, Austria; Stadt Wien, Austria; FWF, Austria; Linz Institute of Technology, Austria; FEMtech, Austria; City University of Hong Kong, China
- Book reviewer for Springer International Publishing
- Reviewer for numerous journals (computer science, mathematics)

Commission work

Since 2018	Editorial Board member of <i>Progress in Computer Science and Applied Logic (PCSAL)</i> , Springer International Publishing
Since 2017	Representative of the German Informatics Society at the Fachgruppe Computeralgebra
2018-2019	Board member Informatics Europe
Since 2017	Member and 2018-2019 leader of the Informatics Europe Working Group <i>Women in Informatics Research and Education</i>
2016	Jury member for the <i>2016 Minerva Informatics Equality Award</i>

Since 2012	Deputy equal opportunity commissioner of the RWTH Aachen University
2010-2011	Speaker of the young scientists at RWTH Aachen University
Since 2008	Member of different commissions at RWTH Aachen University

Supervision of Ph.D. students

- Current supervision: László Antal, Lina Gerlach, József Kovács, Jasper Nalbach, Valentin Promies, Nicolai Radke (RWTH Aachen University, Aachen, Germany)
- Graduated 10/2022: Rebecca Haehn (RWTH Aachen University, Aachen, Germany)
- Graduated 05/2020: Francesco Leofante (co-tutelle: RWTH Aachen University, Aachen, Germany and Università di Genova, Genoa, Italy)
Optimal Planning Modulo Theories
- Graduated 03/2020: Gereon Kremer (RWTH Aachen University, Aachen, Germany)
Cylindrical Algebraic Decomposition for Nonlinear Arithmetic Problems
- Graduated 09/2019: Stefan Schupp (RWTH Aachen University, Aachen, Germany)
State Set Representations and their Usage in the Reachability Analysis of Hybrid Systems
- Graduated 12/2018: Ulrich Loup (RWTH Aachen University, Aachen, Germany)
On Solving Real-algebraic Formulas in a Satisfiability-Modulo-Theories Framework
- Graduated 12/2016: Johanna Nellen (RWTH Aachen University, Aachen, Germany)
Analysis and Synthesis of Hybrid Systems in Control Engineering
- Graduated 10/2016: Florian Corzilius (RWTH Aachen University, Aachen, Germany)
Integrating Virtual Substitution into Strategic SMT Solving
- Graduated 04/2015: Daniela Lepri (University of Oslo, Oslo, Norway)
Timed Temporal Logic Model Checking of Real-Time Systems – A Rewriting-Logic-Based Approach
- Graduated 03/2015: Xin Chen (RWTH Aachen University, Aachen, Germany)
Reachability Analysis of Non-Linear Hybrid Systems Using Taylor Models
- Graduated 03/2015: Nils Jansen (RWTH Aachen University, Aachen, Germany)
Counterexamples in Probabilistic Verification
- Graduated 09/2014: Muhammad Fadlisyah (University of Oslo, Oslo, Norway)
A Rewriting-Logic-Based Approach for the Formal Modeling and Analysis of Interacting Hybrid Systems

Evaluation commissions

- Ph.D. reviewer:
- Peter Varnai, KTH Royal Institute of Technology, 2022
 - Guillaume Dupont, National Polytechnic Institute, Toulouse, France, 2021
 - Vicktorio El Hakim, University of Twente, the Netherlands, 2021
 - Andreas Humenberger, TU Wien, Austria, 2021
 - Carina Pilch, TU Münster, Germany, 2021
 - Anton Pirogov, RWTH Aachen University, Germany, 2021
 - Siham Khoussi, Verimag Grenoble, France, 2021
 - Shukun Tokas, University of Oslo, Norway, 2021
 - Jannik Hüls, University of Münster, Germany, 2020
 - Andrei Sandler, University of Hertfordshire, UK, 2020
 - Bruto Da Costa Antonio Anastasio, Indian Institute of Technology Kharagpur, India, 2020

Bjornat Luteberget, University of Oslo, Norway, 2019
 Braham Lotfi Mediouni, Université Grenoble-Alpes, France
 Leonhard Asselborn, University of Kassel, Germany, 2018
 Ahmed Irfan, University of Trento, Italy, 2018
 Hadi Zaatiti, University Paris-Sud, France, 2018
 Ayman Aljarboub, INRIA Rennes / IRISA, France, 2017
 Haniel Barbose, INRIA Nancy, France, 2017
 Curtis Bright, University of Waterloo, Canada, 2017
 Christian Meirich, RWTH Aachen University, Germany, 2017
 Yuliia Romenska, VERIMAG Grenoble, France, 2017
 Niloofar Safiran, RWTH Aachen University, Germany, 2017
 Souha Ben-Rayana, VERIMAG Grenoble, France, 2016
 Crystal Din, University of Oslo, Norway, 2014
 Georgeta Igna, University of Nijmegen, the Netherlands, 2013
 Melanie Winkler, RWTH Aachen University, Germany, 2013
 Romain Testylier, VERIMAG Grenoble, France, 2013

Appointment committees:

University of Braunschweig, Germany (2022); University of Bremen, Germany (2022), KIT, Germany (2021); University of Cyprus (2021); Western Norway University of Applied Sciences (2021); Universität Oldenburg, Germany (2019); University of Halmstad (2019); TU Wien, Austria (2019); TU München, Germany (2019); MPI Saarbrücken, Germany (2019); Chalmers University of Technology, Sweden (2018); Radboud University Nijmegen, the Netherlands (2016); University of Twente, the Netherlands (2015-2016); Aarhus University, Denmark (2013-2014); RWTH Aachen University, Germany (numerous since 2008)

Teaching since 2008

Bachelor/Master at RWTH Aachen University:

Summer term 2014:	<i>Data Structures and Algorithms</i> (~600 students) Average evaluation: 1.7 (scale 1-5 with 1 being the best)
Winter term 2017/18:	Bridging Course <i>Foundations of Informatics</i>
Summer term 2020:	<i>Algorithms and Data Structures (Service)</i> (~150 students)
Annually since 2009 (winter term):	Lecture on <i>Satisfiability Checking</i> (~200 students) Average evaluation: 1.5 (scale 1-5 with 1 being the best)
Annually since 2010 (summer term):	Lecture on <i>Modeling and Analysis of Hybrid Systems</i> (~150 students) Average evaluation: 1.6 (scale 1-5 with 1 being the best)
Each semester:	<i>Seminars and practical courses</i>

Doctoral studies:

09/2022:	One-day tutorial <i>SMT Solving</i> at the Summer School of the European Research Training Network on Reliable AI for Marine Robotics (REMARO), Aachen, Germany
07/2022:	One-day tutorial <i>Understanding and Using SMT Solving</i> at the Summer School on Automated Reasoning in the Class (ARC), Linz, Austria
03/2020:	10-days doctoral course <i>Reachability Analysis Techniques for Hybrid Systems</i> at TU Wien, Austria

- 06/2018: Half-day tutorial *Reachability Analysis Techniques for Hybrid Systems* at the 2018 Summer School on Cyber-physical Systems, Halmstad, Sweden
- 09-10/2017: Doctoral course *Modeling and Analysis of Hybrid Systems* at the University of Szeged, Hungary
- 10/2015: Doctoral course *Formal Methods for Hybrid Systems* at the University of Genoa, Italy
- 06/2014: Half-day tutorial *Probabilistic Modeling and Model Checking* at the Int. School on Formal Methods for the Design of Computer, Communication and Software Systems: Executable Software Models (SFM-14:ESM), Bertinoro, Italy

High-school activities:

Organisation of annual events for high-school students: Lecture series “What is Computer Science?”, Summer University, Aachen Computer Science Days

Contribution to different events for pupils and high-school students: Girls’ Day, Helle Köpfe, Cybermentor

March 30, 2023