

Extras din procesul verbal

Încheiat în data de 18.06.2024, ora 9:00, ședința extraordinară a Consiliului Facultății de Matematică și Informatică, prin procedura votului electronic, cu următoarea ordine de zi:

1. **Propunere de acordare a titlului de Doctor Honoris Causa Scientiarum (DHC)- Erika Abraham (Dosar DHC - ErikaAbraham)**
2. **Comisie de echivalări la dep. de Informatică (comisie)**

Comisia de Echivalare a disciplinelor de la departamentul de Informatică a Facultății de Matematică și Informatică

Membrii: Lect. univ. dr. Alexandra Fortis

Lect. univ. dr. Liviu Maftiu-Scai

Asist. univ. dr. Florin Roșu

Vă rog să vă exprimați opțiunile **până mâine ora 09:00**, prin vot electronic AICI

= omis cele de omis =

1. **Propunerea de acordare a titlului de Doctor Honoris Causa Scientiarum (DHC)- Erika Abraham (Dosar DHC - ErikaAbraham)**, a fost avizată cu un număr de 13 voturi de acord.

= omis cele de omis =

Decan,
Conf. univ. dr. Cosmin Bonchiș



Întocmit secretar șef,
Ancuța-Sanda Eduțanu



Anexa 1.

**PROPUNERE DE ACORDARE A TITLULUI DE
DOCTOR HONORIS CAUSA SCIENTIARUM – DHC. SC.**

Nume	Abraham
Prenume	Erika
Titlu complet	Prof. univ. dr.
Data nașterii	9.11.1970
Tara de origine	Germania
Poziția curentă sau trecută	Profesor universitar la RWTH Aachen University
Adresa de corespondență	Informatik 2, LuFG Theory of Hybrid Systems 52056 Aachen, Germany Email abraham@informatik.rwth-aachen.de
Email	
Telefon	Phone +49 241 80-21242
Titlul onorific pentru care e propus	Doctor Honoris Causa Scientiarum – Dhc. Sc.
Scurtă motivație	
Doamna Erika Abraham este profesor universitar la Departamentul de Informatică de la RWTH Aachen University și coordonatoarea grupului de cercetare în Teoria Sistemelor Hibride. A obținut titlul de doctor la Universitatea din Leiden, a efectuat o serie de stagii post-doctorale la universități și institute de cercetare din Germania, iar din 2008 este cadru didactic și cercetător la RWTH Aachen University. Prof. Erika Abraham a obținut o serie de rezultate relevante în domeniul verificării satisfiabilității, a dezvoltării de instrumente software pentru verificarea fiabilității în sisteme hibride și pentru analiza sistemelor probabiliste, precum și aplicații ale tehnicilor de verificare formală în analiza modelelor de învățare automată. A editat 20 de volume și a publicat peste 180 de lucrări științifice. De-a lungul timpului a obținut mai multe premii pentru cea mai bună lucrare precum și în cadrul competițiilor destinate instrumentelor software bazate pe SMT (Satisfiability Modulo Theory). A susținut peste 90 de prezentări invitate și tutoriale la conferințe relevante în domeniul logicii, verificării formale, teoria programării și a raționamentului automat. În ultimii 10 ani a co-organizat 12 evenimente în Germania, Olanda și SUA și a fost co-chair la peste 20 de conferințe. Este membru al consiliului director al Asociației Profesorilor universitari din Germania, iar începând cu 2017 a îndeplinit o serie de roluri în cadrul Societății Europene de Informatică (Informatics Europe). Pe lângă valoroasa activitate de cercetare, prof. Erika Abraham s-a implicat în mai multe acțiuni ale Informatics Europe și ACM-W care au avut în vedere promovarea informaticii și a ingineriei software	

în rândul tinerelor, cu scopul de a echilibra balanța de gen în domeniul informaticii atât în zona academică și de cercetare, cât și în industria IT.

A participat, atât în calitate de invitat cât și în calitate de chair de program, la mai multe ediții ale conferinței internaționale SYNASC, organizată anual în cadrul Facultății de Matematică și Informatică de la Universitatea de Vest din Timișoara și colaborează cu cercetători din cadrul Departamentului de Informatică în cadrul unor proiecte de cercetare.

Referenți care au acceptat să scrie scrisori de recomandare (maxim 3 pentru DHC)

1. Prof. univ. dr. James Davenport – University of Bath, UK
2. Prof. univ. dr. Dorel Lucanu – Universitatea A.I. Cuza, Iasi, Romania
3. Prof. univ. dr. Mircea Marin – Universitatea de Vest din Timișoara România

Persoana care face propunerea

Prof. univ. dr. Daniela ZAHARIE

Facultatea de Matematică și Informatică

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AVIZE

APROBAT /RESPINS În Ședința Consiliului Facultății de Matematică și Informatică din data de 18.06.2024	DECAN, Conf. Univ. Dr. Cosmin BONCHIS 
APROBAT / RESPINS În Ședința Senatului UVT din data de	Președinte Senat,

Anexa 2.

**PROPUNERE COMISIE LAUDATIO
PENTRU ACORDAREA TITLULUI DOCTOR HONORIS CAUSA**

Doamnei Prof.dr. ERIKA ABRAHAM

Președinte (de regulă Rectorul sau decanul facultății care susține propunerea):
Prof.dr. Marilen Gabriel Pirtea, Rectorul Universității de Vest din Timișoara

Prof. dr. Anton Trailescu, Presedinte Senat

Membri (5-7 membri cu titlul didactic de profesor):

1. Prof.dr. James Davenport, University of Bath, UK
2. Prof. dr. Laura Kovacs, Technical University of Vienna, Austria
3. Prof. dr. Dorel Lucanu, Universitatea A.I. Cuza, Iași
4. Prof.dr. Mircea Marin, Universitatea de Vest din Timișoara
5. Prof. dr. Viorel Negru, Universitatea de Vest din Timișoara
6. Prof. dr. Daniela Zaharie, Universitatea de Vest din Timișoara

AVIZE

APROBAT /RESPINS În Ședința Consiliului Facultății de Matematică și Informatică din data de 18.06.2024	DECAN, Conf. Univ. Dr. Cosmin BONCHIS 
APROBAT / RESPINS În Ședința Senatului UVT din data de	Președinte Senat,

Recommendation Letter

Professor Erika Ábrahám from RWTH Aachen University is one of the most important international scientists in the area of Formal Methods, with the focus on: modelling, synthesis, and analysis of hybrid systems; decision procedures for various logics and theories; modeling, synthesis, analysis of probabilistic systems; and research related to programming languages. Erika Abraham's work in the field of hybrid systems is influential and impactful. Hybrid systems combine continuous dynamics (modelled by differential equations) with discrete transitions (modelled by automata or state machines) and therefore ensuring correctness and safety in hybrid systems is challenging. Erika's contributions include new techniques for model checking hybrid systems. Erika Abraham has contributed to the development of tools for analyzing hybrid systems. A distinguished such a tool is Flow*, an analyzer for non-linear hybrid systems. It combines reachability analysis with abstraction techniques. Another notable contribution here is the Taylor model flow-pipe construction, which provides over-approximations of reachable sets for non-linear systems. Erika's research also extends to probabilistic hybrid systems. The PROPhESY tool, designed and built for analyzing parametric Markov chains, had a significant impact in the research community. Erika Ábrahám has also significant contributions to the field of Satisfiability Modulo Theories (SMT), especially on topics including quantifier-free non-linear real arithmetic, SMT problems involving real algebraic theories, SMT-based planning and scheduling. In summary, Erika Ábrahám's research covers both theoretical aspects and practical applications. Her work contributes to advancing the state of the art in all above-mentioned areas.

I personally had the honor and the pleasure to meet and discuss with Erika Ábrahám at several conferences and meetings: SYNASC 2016, where she was invited speaker; SYNASC 2017, where she delivered a tutorial on SMT Solving for Arithmetic Theories, SYNASC 2028, when she was co-chair; WOLLIC 2022, and some Informatics Europe meetings. Every time I appreciated the availability and generosity with which she shared with me her rich knowledge and experience. These are also proven by the large number of presentations he gave at various top conferences, summer schools, or invitations by academic institutions. I am also impressed and personally appreciate her involvement in many activities and projects related to women in computer science.

Erika Ábrahám has been involved in various research projects, including those funded at the European level. In two such projects she had and continues to have strong collaborations with the team from West University of Tmișoara: *Automated Reasoning in the Classroom* (ARC), a project within the EU Erasmus+ program that aims to enhance education in automated reasoning, and *From zero to expert! Introducing the potential of AI and Robotics for all!* (AiRobo), a project that aims to increase the level of competence and skills of the relevant academic staff in the field of AI-based Robotics. By awarding a honorary degree to Erika Ábrahám, I am sure that this will deepen this collaboration, with a mutual benefit.

Concluding, I strongly support and highly recommend the awarding of Doctor Honoris Causa degree to Prof. Erika Ábrahám by the University of Tmișoara.

Dorel Lucanu, PhD
Alexandru Ioan C. [redacted] ași

May 10th, 2024

Univ.-Prof. Dr. Mircea Marin
Department of Computer Science
Faculty of Mathematics and Informatics
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May 29, 2024

Letter of Recommendation: Univ.-Prof. Dr. Erika Ábrahám

It is my great pleasure to support the awarding of the title of Doctor Honoris Causa of the West University of Timișoara to Univ.-Prof. Dr. Erika Ábrahám from RWTH-Aachen University in Germany.

By way of introduction, I am Professor in Computer Science at West University of Timișoara and my main research interests are in symbolic techniques for proving, solving, and computing. A better understanding of my background and qualification may help you in interpreting this recommendation. I received my PhD degree in Computer Science from the Research Institute of Symbolic Computation (RISC-Linz) with a thesis about a computational model for functional logic programming with distributed constraint solving capabilities. After completing my PhD thesis, I joined research groups in Japan (Symbolic Computation Research Group from University of Tsukuba) and Austria (institutes RISC-Linz, and RICAM affiliated with the Austrian Academy of Sciences), and worked with leading experts in symbolic computation, declarative programming, and automated reasoning. In 2011, I returned to Romania and joined the academic staff of Computer Science at West University of Timișoara.

My research achievements are mainly in the design and implementation of computational models for declarative programming, together with symbolic computation techniques for constraint solving in many theories of practical interest. They have been published in more than 50 publications in journals and conference proceedings.

My recent research interests are closely related to Erika's work. Her main interest is in satisfiability modulo theories (SMT), which aims at the design of software tools, called SMT solvers, to solve efficiently satisfiability problems (SAT) in many formal theories of practical interest. Although the SMT problem is typically NP-hard and undecidable for many theories, there are also many decidable theories (fragments of first-order logic) where finding efficient decision procedures is possible and highly desirable.

This is a very important and active line of research where symbolic computation and SMT-solving techniques can be combined efficiently to work together. Nowadays, SMT-solvers are the main building blocks of many applications in Computer Science, including program analysis and verification, software testing, and automated theorem proving.

Erika is a renowned expert in satisfiability checking and SMT-solving. She took the first place at the SMT competitions in 2018, 2019 and 2020 at category quantifier-free non-linear mixed integer-real arithmetic.

Her current research activities don't stop here. They also include the analysis, synthesis, and analysis of hybrid systems; the analysis of probabilistic systems; SMT-base planning and scheduling; and applications related to energy optimization.

In 2018, Erika Ábrahám won a Planning and Execution Competition for Logistics Robots in Simulation.

Univ.-Prof. Dr. Erika Ábrahám has long standing contacts with West University of Timișoara. She participated in 2016, 2017, 2018, and 2023 at the conferences Symbolic and Numerical Algorithms for Scientific Computing (SYNASC) organized by our university, where she talked about SMT-techniques for arithmetic theories, and symbolic computation techniques for SAT solving. I was impressed by her talk at SYNASC 2023, about her insights how to combine SMT-solving with a powerful symbolic computation technique called cylindrical algebraic decomposition. It is a very interesting line of research where the SMT-solving people share interests with the community of symbolic computation.

Since 2019, Prof. Dr. Erika Ábrahám does joint research with members of our Department of Informatics, including me, in the frame of two projects coordinated by Conf. Dr. Isabela Dramnesc:

1. *Automated Reasoning in the Class* (2019-2022), whose goal was to develop teaching material (text and software) and good practice for using automated reasoning tools to teach Mathematical Logic, Automated Theorem Proving, Formal Methods, and related subjects.
2. *Artificial Intelligence based robotics* (2024-2027), whose goal is to increase the quality and the attractivity of related departments at the partner universities by a significant raise of the level of competence and skills of the relevant academic staff in the field of Artificial Intelligence based Robotics

The research interests of Erika are very much aligned with our ongoing research projects, and with the current research interests of our society.

In summary, I warmly recommend Prof. Erika Abraham for the award of the Doctor Honoris Causa Award by our university.

Sincerely,



Mircea Marin



UNIVERSITY OF
BATH

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The Magnificent Rector and the Senate,
Universitatea de Vest din Timișoara

22 May, 2024

JHD/UVT/20240522

Dear Rector

I am writing this letter to recommend Professor Dr Erika Ábrahám of RWTH Aachen as eminently worthy to receive a Doctorate of Science *honoris causa*.

- Her scientific contributions to various areas in computer science are notable. Her initial work was on verifying concurrency in Java, a notoriously tricky task in any language not explicitly designed for verification. She then worked on the Scalasca performance toolset, described in a major 2010 paper (<https://doi.org/10.1002/cpe.1556>). This continues to attract attention (27 citations last year), whereas many similar ideas attract attention at the time but are forgotten five years later.

Then she moved into the area where I know her: the area of Satisfiability Modulo Theories (SMT), particularly the case where the theory is the nonlinear theory of real numbers. The SMT-RAT toolkit developed by her and her students is a significant software package in this area. However, the underlying algorithmic theory of Cylindrical Algebraic Decomposition (initially developed by Collins in 1975) is, in many ways, *too powerful*, and therefore too expensive, so we have developed a theory of Cylindrical Algebraic Coverings, which seems to be both simpler and cheaper, and which has been implemented by Kremer, one of her students, in the popular cvc5 SMT toolkit. This shows her innovation and unwillingness to accept the *status quo* of the subject.

- She is a great motivator of science. I first met her when she gave an invited talk (<https://doi.org/10.1145/2755996.2756636>) on “Building Bridges between Symbolic Computation and Satisfiability Checking” at ISSAC 2015. This inspired us to build that bridge, with an EU-funded project she and I wrote (www.sc-square.org/CSA). This project had its kick-off workshop in connection with SYNASC 2016 in Timișoara. The project lasted two years, but the workshop series is still continuing, showing the need for the bridge Erika envisaged in 2015.
- She is also a great role model. In general (though UVT is a wonderful counter-example) this area is pretty male-dominated, even by the standards of computer science. She does a great deal (see for example <https://acmweurope.acm.org/newsletter-november-2022/#members>) to encourage girls and women in computer science.

I strongly recommend her as a person of outstanding ability who is eminently worthy to receive an honorary degree from UVT. You may wonder why, if I have this opinion, I have not recommended her for an honorary degree from my own University. I am on our Honorary Degrees Committee, so cannot nominate myself. When I

22 May, 2024

leave that committee, I shall be nominating her for an honorary degree from Bath.

Yours faithfully



James Davenport

Curriculum Vitae - Erika Ábrahám

Contact information

Name	Erika Ábrahám
Title	Univ.-Prof. Dr.
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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

Jasper Nalbach, Erika Ábrahám, Philippe Specht, Christopher W. Brown, James H. Davenport and Matthew England: *Levelwise construction of a single cylindrical algebraic cell*. Journal of Symbolic Computation 123:102288, 2024. <https://doi.org/10.1016/j.jsc.2023.102288>

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>.

- Hybrid systems

Stefan Schupp, Erika Ábrahám, Md Tawhid Bin Waez, Thomas Rambow and Zeng Qiu: On the applicability of hybrid systems safety verification tools from the automotive perspective. International Journal on Software Tools for Technology Transfer 26(1): 49-78 (2024). <https://doi.org/10.1007/s10009-023-00707-0>

Stefan Schupp, Erika Ábrahám, Ibtissem Ben Makhlouf 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 Bru-intjes, 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.

- Green energy

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

AIRobo 2023-2026	<i>Artificial Intelligence based Robotics</i>	EU Erasmus+ KA220 Cooperation Partnerships for Higher Education
SMT-ART 2024-2026	<i>SMT Arithmetic Reasoning Techniques</i>	German Research Foundation (DFG)
RealySt 2022-2025	<i>Reachability Analysis for Stochastic Hybrid Systems</i>	German Research Foundation (DFG)
Sim4Dialog 2022-2025	<i>Simulationstool für den regionalen Dialog zum Ausbau erneuerbarer Energien</i>	IN4climate.NRW
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>	Research Training Group, German Research Foundation (DFG)
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>	German Research Foundation (DFG), 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) German Research Foundation (DFG), coordinator
AlgoSyn 2011-2015	<i>Algorithmic Synthesis of Reactive and Discrete-Continuous Systems</i> Research Training Group, German Research Foundation (DFG)
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> German Research Foundation (DFG), coordinator
HySmart 2010-2011	<i>Hybrid Systems Modeling and Analysis with Rewriting Techniques</i> (German project coordinator) Norwegian-German DAAD ppp project

Awards and patents

Brigitte-Gilles award	from RWTH Aachen University, for the development and execution of a program to improve gender balance in computer science
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
Patents	Method and system for controlling loads in a building (EP4145243A1) Steuerung einer Versorgungstechnik eines Gebäudes mittels eines neuronalen Netzwerks (RWTH-AZ 2567)

Invited talks and invited tutorials

1. *TBA*, 36th International Conference on Computer Aided Verification (CAV'24), 07/2024
2. *On the Idea of Exploration-guided Satisfiability Checking*, International Conference on Logic for Programming, Artificial Intelligence and Reasoning (LPAR-25), 05/2024
3. *From Student to Professional: Challenges and Opportunities*, Cyber-Physical Systems and Internet-

of-Things Week, 05/2024

4. *Research on the Theory of Hybrid Systems at RWTH Aachen University*, University of West University of Timisoara, 12/2023
5. *SMT: Something you Must Try*, 18th International Conference on integrated Formal Methods (iFM'23), 11/2023
6. *SMT: Something you Must Try*, Eindhoven University of Technology, 11/2023
7. *SMT Solving*, Shonan Seminar 178, 10/2023
8. *The Story of Undecidability*, Guest lecture at Keio University, 10/2023
9. *Seven Years of SC-Square*, 25th International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC'23), 09/2023
10. *The Theory of Hybrid Systems*, Remaro PhD School, 09/2023
11. *Building Bridges between Symbolic Computation and Satisfiability Checking*, UnRAVeL Talk Series "Biggest Milestones - Research at Its Peak", 04/2023
12. *Automated Exercise Generation for Satisfiability Checking*, Formal Methods Teaching Workshop (FMTea'23), 03/2023
13. *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
14. *Automated Exercise Generation for Satisfiability Checking*, Friedrich-Alexander-Universität Erlangen-Nürnberg, 03/2023
15. *Probabilistic Hyperproperties*, Lorentz Seminar on New Challenges in Programming Language Semantics, 11/2022
16. *SMT solving for Arithmetic Theories*, Conference on Intelligent Computer Mathematics (CICM'22), 09/2022
17. *Recent Advances for Hybrid Systems Verification with HyPro*, International Workshop on Numerical Software Verification (NSV'22), 08/2022
18. *Probabilistic Hyperproperties*, Workshop on Verification of Probabilistic Programs (VeriProP'22), 08/2022
19. *SMT Solving: Historical Review and New Developments*, Computability in Europe (CiE'22), 07/2022
20. *Recent Advances for Hybrid Systems Verification with HyPro*, International Workshop on Formal Engineering of Cyber-Physical Systems (FE-CPS@TASE'22), 07/2022
21. *Automatic Exercise Generation for Satisfiability Checking*, Formal Methods Europe (FME) Teaching Tutorials 07/2022
22. *Automatic Exercise Generation for Satisfiability Checking*, Training Event on Automated Reasoning in the Class (ARC), 07/2022
23. *SMT Solving: Past, Present and Future*, International Symposium on Theoretical Aspects of Software Engineering (TASE'22), 07/2022
24. *The Challenge of Compositionality for Stochastic Hybrid Systems*, UnRAVeL Research Training Group at RWTH Aachen University, 05/2022
25. *Delay Propagation in Railway Networks*, Workshop on Rigorous Dependability Analysis using Model Checking Techniques for Stochastic Systems (ROCKS'22), 05/2022
26. *How my Hobby Turned into being my Job*, Mentoring Workshop at ETAPS 2022, 04/2022
27. *Analysing Hybrid Systems with HyPro*, USC CCI-MHI Cyber-Physical Systems Seminar, Aarhus University, 11/2021

28. *Inspiration Talk*, Doctoral Symposium at the International Symposium on Formal Methods (PhD@FM'21), 11/2021
29. *Frauenmangel in technischen Fächern - wieso eigentlich?*, Days of Diversity, RWTH Aachen University, 11/2021
30. *SMT Solving: Past, Present and Future*, Informatics Europe Webinar, 10/2021
31. *SMT-based Planning - Some recent developments*, Workshop on Reliable AI for Marine Robotics: Challenges and Opportunities (REMARO@IROS'21), 10/2021
32. *SMT Solving: Past, Present and Future*, NASA Formal Methods Symp. (NFM'21), 05/2021
33. *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
34. *Reachability Analysis Techniques for Hybrid Systems*, European Joint Conferences on Theory and Practice of Software (ETAPS'21), 03/2021
35. *Abstract Domains in SMT Solving for Real Algebra*, Int. Workshop on Numerical and Symbolic Abstract Domains (NSAD'20), 11/2020
36. *Probabilistic Hyperproperties*, Int. Symp. on Games, Automata, Logics, and Formal Verification (GandALF'20), 09/2020
37. *Solving Real-Algebraic Formulas wit SMT-RAT*, Int. Congress of Mathematical Software (ICMS'20), Braunschweig, Germany, 07/2020
38. *The Power of Satisfiability Checking*, TU Wien, Vienna, Austria, 03/2020
39. *Women in Computer Science*, Women in Computability at CiE'19, 07/2019
40. *Reachability Analysis Techniques for Hybrid Systems*, Summer School on Formal Methods for Cyber-Physical Systems, Verona, Italy, 06/2019
41. *Hybrid Systems Reachability Analysis*, Open Problems in Concurrency Theory (IFIP WG 1.8 at POPL'19), Cascais, Portugal, 01/2019
42. *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.
43. *Women in Computer Science: Do We Still Need Equality Measures?*, Computing Is Too Important to Be Left to Men, Vienna, Austria, 12/2019.
44. *SMT Solving: Matematikai szépség és informatikai hatékonyság*, Debreceni ADA Konferencia (ADA'18), Debrecen, Hungary, 11/2018.
45. *Symbolic Computation Techniques in SMT Solving: Mathematical Beauty meets Efficient Heuristics*, 30th Nordic Workshop on Programming Theory (NWPT'18), Oslo, Norway, 10/2018.
46. *Symbolic Computation Techniques in SMT Solving: Mathematical Beauty meets Efficient Heuristics*, 9th Int. Joint Conf. on Automated Reasoning (IJCAR'18), Oxford, UK, 07/2018
47. *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
48. *Reachability Analysis Techniques for Hybrid Systems*, Summer School on Cyber-Physical Systems (CPS'18), Halmstad, Sweden, 06/2018
49. *SMT Solving for AI Planning: Theory, Tools and Applications*, 28th Int. Conf. on Automated Planning and Scheduling (ICAPS'18), Delft, The Netherlands, 06/2018

50. *Symbolic Computation Techniques in SMT Solving: Mathematical Beauty meets Efficient Heuristics*, FBK, Trento, Italy, 05/2018
51. *Frauen in der Informatik: Brauchen wir noch Gleichstellung?*, Gender x Informatik, Chemnitz, Germany, 05/2018
52. *The Informatics Europe Working Group Women in Informatics Research and Education*, Gender Action Webinar, 03/2018
53. *Symbolic Computation Techniques in SMT Solving*, Evening Seminar of the London Mathematical Society and the British Computer Society, London, UK, 11/2017
54. *SMT Solving for Real Algebra*, Int. Conf. on Mathematics and Informatics (MathInfo'17), Târgu Mureş/Marosvásárhely, Romania, 09/2017
55. *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
56. *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
57. *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
58. *Exploiting Symbolic Computation Techniques in SAT-Modulo-Theories Solving*, University of Waterloo, Waterloo, Canada, 03/2017
59. *Symbolic Computation Techniques in Satisfiability Checking*, Johannes Kepler University, RISC, Linz, Austria, 11/2016
60. *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
61. *The Power of Satisfiability Checking*, European Computer Science Summit (ECSS'16), Budapest, Hungary, 10/2016
62. *Computation Techniques in SAT-Modulo-Theories Solving*, University of Kassel, Kassel, Germany, 10/2016
63. *Symbolic Computation Techniques in Satisfiability Checking*, 18th Symp. of Symbolic and Numeric Algorithms for Scientific Computing (SYNASC'16), Timisoara, Romania, 09/2016
64. *Satisfiability Checking: Theory and Applications*, 14th Int. Conf. on Software Engineering and Formal Methods (SEFM'16), Vienna, Austria, 07/2016
65. *SMT Solving for Non-Linear Arithmetic Theories*, IST Austria, Vienna, Austria, 05/2016
66. *Building Bridges between Symbolic Computation and Satisfiability Checking*, Int. Symp. of Symbolic and Algebraic Computation (ISSAC'15), Bath, UK, 07/2015
67. *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
68. *Model Repair for Probabilistic Controller*, NII Shonan Meeting "Static Analysis meets Runtime Verification", Shonan Village Center, Japan, 03/2015
69. *Current Challenges in the Verification of Hybrid Systems*, 5th Int. Workshop on Cyber Physical Systems (CyPhy'16), Amsterdam, The Netherlands, 10/2015

70. *Modeling and Verification of Hybrid Systems*, University of Genoa, Genoa, Italy, 10/2015
71. *Some Thoughts about Formal Methods in Robotics*, University of Genoa, Genoa, Italy, 10/2015
72. *SMT Solving for Real Arithmetic: What are the Challenges?*, CDZ Workshop “Computation and Reasoning with Constraints”, Beijing, China, 11/2014
73. *Probabilistic Model Checking and Counterexample Generation*, IFIP WG2.2 Meeting on “Formal Description of Programming Concepts”, Munich, Germany, 09/2014
74. *Reachability Analysis of Hybrid Systems*, INRIA, France, 06/2014
75. *Modeling and Analyzing Probabilistic Systems*, NVTI Theory Day, Utrecht, The Netherlands, 05/2014
76. *Reachability Analysis for Hybrid Systems*, Workshop on Computable Analysis and Rigorous Numerics, Maastricht, The Netherlands, 12/2013
77. *Formal Methods for Hybrid Systems*, University of Passau, Passau, Germany, 11/2013
78. *Modeling and Analysis of Hybrid Systems*, Formal Description of Programming Concepts (IFIP Working Group 2.2), Lisbon, Portugal, 09/2013
79. *Reachability Analysis for Hybrid Systems*, CDZ Workshop on “Probabilistic and Hybrid System Verification”, Beijing, China, 09/2013
80. *Computing Counterexamples for Discrete-Time Probabilistic Systems*, ROCKS Autumn School “Rigorous Dependability Analysis for Stochastic Systems”, Vahrn, Italy, 10/2012
81. *Hybrid Systems*, University of Twente, Enschede, The Netherlands, 08/2012
82. *SMT Solving Mechanisms for Non-Linear Real Arithmetic*, Albert-Ludwigs-University, Freiburg, Germany, 05/2012
83. *Heap-abstraction for a Multi-Threaded Object-Oriented Calculus*, Workshop on Automata and Logic for Data Manipulating Programs (LIAFA’10), Paris, France, 12/2010
84. *SMT-Solving for the Reals*, University of Karlsruhe, Germany, 09/2010
85. *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
86. *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
87. *SAT-Modulo-Theories Solving in the Context of Bounded Model Checking*, CWI Amsterdam, Amsterdam, The Netherlands, 06/2009
88. *SMT-solving in the Context of Bounded Model Checking*, University of Oslo, Oslo, Norway, 04/2009
89. *Heap-Abstraction for an Object-Oriented Calculus with Thread Classes*, Computability in Europe (CiE’06), Swansea, Great Britain, 07/2006
90. *A Proof System for Exception Handling in Multithreaded Java*, Christian-Albrechts-University, Kiel, Germany, 05/2004
91. *A Hoare Logic for Monitors in Java*, ICASE - NASA LaRC, 11/2002
92. *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** Dagstuhl Seminar *Integrated Rigorous Analysis in Cyber-Physical Systems Engineering*, Dagstuhl, Germany, 01/2023
- **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

- **QEST** (2022-2025): Int. Conf. on Quantitative Evaluation of SysTems
- **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. Conf. on Runtime Verification (**RV'24**)
2. ACM Int. Conf. on Hybrid Systems: Computation and Control (**HSCC'24**)
3. Int. Colloquium on Theoretical Aspects of Computing (**ICTAC'23**)
4. Int. Workshop on Satisfiability Checking and Symbolic Computation (**SC²'23**)
5. Int. Conf. on Fundamentals of Software Engineering (**FSEN'23**)
6. Software Verification and Testing Track at the ACM Symp. on Applied Computing (**SVT-SAC'22**)
7. Conf. on Quantitative Evaluation of SysTems (**QEST'22**)
8. Software Verification and Testing Track at the ACM Symp. on Applied Computing (**SVT-SAC'21**)
9. Industry Day at Formal Methods (**Industry@FM'21**)
10. Session on Real Algebraic Geometry at the Int. Congress on Mathematical Software (**ICMS'20**)
11. Int. Symp. on Symbolic and Numeric Algorithms for Scientific Computing (**SYNASC'18**)
12. Pre-Summit Workshop for Deans and Department Heads at the European Computer Science Summit (**ECSS'18**)
13. PhD Symp. at iFM'18 on Formal Methods: Algorithms, Tools and Applications (**PhD-iFM'18**)
14. Workshop on Gender Equality in Software Engineering (**GE@ICSE'18**)
15. PhD Symp. at iFM'17 on Formal Methods: Algorithms, Tools and Applications (**PhD-iFM'17**)
16. Int. Workshop on Symbolic and Numerical Methods for Reachability Analysis (**SNR'17**)
17. Int. Conf. on integrated Formal Methods (**iFM'16**)
18. Int. Workshop on Satisfiability Checking and Symbolic Computation (**SC²'16**)
19. Int. Workshop on Symbolic and Numerical Methods for Reachability Analysis (**SNR'16**)
20. IFIP Int. Conf. on Formal Techniques for Distributed Objects, Components and Systems (**FORTE'14**)
21. Int. Conf. on Tools and Algorithms for the Construction and Analysis of Systems (**TACAS'14**)

Program Committee member

1. Int. Conf. on Fundamentals of Software Engineering (**FSEN'25**)
2. Int. Symp. on Symbolic and Algebraic Computation (**ISSAC'25**)
3. Int. Symp. on Automated Technology for Verification and Analysis (**ATVA'24**)
4. IFAC Conf. on Analysis and Design of Hybrid Systems (**ADHS'24**)
5. Int. Conf. on Computer Aided Verification (**CAV'24**)
6. Design, Automation and Test in Europe Conference (**DATE'24**)
7. Int. Conf. on Fundamental Approaches to Software Engineering (**FASE'24**)
8. Int. Conf. on Tools and Algorithms for the Construction and Analysis of Systems (**TACAS'24**)
9. Int. Symp. on Formal Methods (**FM'24**)

10. Formal Methods Teaching Workshop (**FMTea'24**)
11. Int. Colloquium on Theoretical Aspects of Computing (**ICTAC'24**)
12. Int. Workshop on Quantification (**QUANTIFY'24**)
13. Int. Workshop on Reliable AI for Marine Robotics (**REMARO'24**)
14. Int. Workshop on Satisfiability Checking and Symbolic Computation (**SC²'24**)
15. Int. Symp. on Symbolic and Numeric Algorithms for Scientific Computing (**SYNASC'24**)
16. Int. Workshop on Rewriting Logic and its Applications (**WRLA'24**)

17. Design, Automation and Test in Europe Conference (**DATE'23**)
18. Int. Conf. on Fundamental Approaches to Software Engineering (**FASE'23**)
19. Int. Conf. on Hybrid Systems: Computation & Control (**HSCC'23**)
20. Software Verification and Testing Track at the ACM Symp. on Applied Computing (**SAC-SVT'23**)

21. Int. Conf. on Computer Aided Verification (**CAV'22**)
22. Int. Conf. on Coordination Models and Languages (**COORDINATION'22**)
23. Int. Conf. on Fundamental Approaches to Software Engineering (**FASE'22**)
24. Int. Workshop on Formal Engineering of Cyber-Physical Systems (**FE-CPS@TASE'22**)
25. Int. Conf. on Formal Methods in Computer-Aided Design (**FMCAD'22**)
26. Int. Conf. on Formal Methods for Industrial Critical Systems (**FMICS'22**)
27. Int. Conf. on Formal Modeling and Analysis of Timed Systems (**FORMATS'22**)
28. Int. Conf. on Hybrid Systems: Computation & Control (**HSCC'22**)
29. Workshop on Advances in Human-Centric Experiments in Software Engineering (**HUMAN'22**)
30. Int. Conf. on integrated Formal Methods (**iFM'22**)
31. Int. Joint Conf. on Automated Reasoning (**IJCAR'22**)
32. Int. Symp. on NASA Formal Methods (**NFM'22**)
33. Parallel and Distributed Automated Reasoning (**PDAR'22**)
34. IEEE Real-Time Systems Symposium (**RTSS'22**)
35. Int. Workshop on Satisfiability Checking and Symbolic Computation (**SC²'22**)
36. Theoretical Aspects of Software Engineering Conf. (**TASE'22**)
37. Int. Workshop on Algebraic Development Techniques (**WADT'22**)
38. Int. Workshop on Rewriting Logic and its Applications (**WRLA'22**)

39. IFAC Conf. on Analysis and Design of Hybrid Systems (**ADHS'21**)
40. Int. Symp. on Automated Technology for Verification and Analysis (**ATVA'21**)
41. Int. Conf. on Computer Aided Verification (**CAV'21**)
42. Int. Conf. on Formal Methods in Computer-Aided Design (**FMCAD'21**)
43. Int. Conf. on Formal Methods for Industrial Critical Systems (**FMICS'21**)
44. Int. Conf. on Fundamentals of Software Engineering (**FSEN'21**)

45. Int. Conf. on Hybrid Systems: Computation & Control (**HSCC'21**)
46. Int. Colloquium on Theoretical Aspects of Computing (**ICTAC'21**)
47. Int. Symp. on NASA Formal Methods (**NFM'21**)
48. ACM SIGPLAN Conf. on Object-Oriented Programming, Systems, Languages, and Applications (**OOPSLA'21**)
49. Int. Conf. on Software Engineering and Formal Methods (**SEFM'21**)
50. Int. Workshop on Symbolic and Numerical Methods for Reachability Analysis (**SNR'21**)
51. Theoretical Aspects of Software Engineering Conf. (**TASE'21**)
52. Int. Symp. on Automated Technology for Verification and Analysis (**ATVA'20**)
53. Int. Conf. on Formal Methods in Computer-Aided Design (**FMCAD'20**)
54. Int. Colloquium on Theoretical Aspects of Computing (**ICTAC'20**)
55. Int. Conf. on integrated Formal Methods (**iFM'20**)
56. Int. Conf. on Logic for Programming, Artificial Intelligence and Reasoning (**LPAR-23**)
57. Int. GI/ITG Conf. on Measurement, Modelling and Evaluation of Computing Systems (**MMB'20**)
58. Int. Symp. on NASA Formal Methods (**NFM'20**)
59. Int. Workshop on Satisfiability Checking and Symbolic Computation (**SC²'20**)
60. Int. Conf. on Software Engineering and Formal Methods (**SEFM'20**)
61. Int. Workshop on Symbolic and Numerical Methods for Reachability Analysis (**SNR'20**)
62. Int. Symp. on Theoretical Aspects of Software Engineering (**TASE'20**)
63. Int. Workshop on Rewriting Logic and its Applications (**WRLA'20**)
64. Debreceni ADA Konferencia (**ADA'19**)
65. Int. Symp. on Automated Technology for Verification and Analysis (**ATVA'19**)
66. Computability in Europe (**CiE'19**)
67. Int. Workshop on Model-Based Design of Cyber Physical Systems (**CyPhy'19**)
68. Int. Conf. on Formal Methods in Computer-Aided Design (**FMCAD'19**)
69. Student Forum at Int. Conf. on Formal Methods in Computer-Aided Design (**Student@FMCAD'19**)
70. Int. Conf. on Fundamentals of Software Engineering (**FSEN'19**)
71. Int. Conf. on Hybrid Systems: Computation & Control (**HSCC'19**)
72. Int. Conf. on integrated Formal Methods (**iFM'19**)
73. Int. Symp. on NASA Formal Methods (**NFM'19**)
74. Int. Symp. on Practical Aspects of Declarative Languages (**PADL'19**)
75. Int. Workshop on Satisfiability Checking and Symbolic Computation (**SC²'19**)
76. Int. Conf. on Software Engineering and Formal Methods (**SEFM'19**)
77. Int. Workshop on Symbolic and Numerical Methods for Reachability Analysis (**SNR'19**)
78. Int. Symp. on Theoretical Aspects of Software Engineering (**TASE'19**)
79. Debreceni ADA Konferencia (**ADA'18**)

80. IFAC Conf. on Analysis and Design of Hybrid Systems (**ADHS'18**)
81. Int. Workshop on Model-Based Design of Cyber Physical Systems (**CyPhy'18**)
82. IEEE Int. Workshop on Formal Methods Integration (**FMi'18**)
83. Int. Conf. on Hybrid Systems: Computation & Control (**HSCC'18**)
84. Int. Congress on Mathematical Software (**ICMS'18**)
85. Int. Conf. on integrated Formal Methods (**iFM'18**)
86. Methoden und Beschreibungssprachen zur Modellierung und Verifikation von Schaltungen und Systemen (**MBMV'18**)
87. Int. Symp. on NASA Formal Methods (**NFM'18**)
88. Int. Symp. on Practical Aspects of Declarative Languages (**PADL'18**)
89. Int. Conf. on Quantitative Evaluation of SysTems (**QEST'18**)
90. Int. Workshop on Satisfiability Checking and Symbolic Computation (**SC²'18**)
91. Int. Conf. on Software Engineering and Formal Methods (**SEFM'18**)
92. Studierendenkonferenz Informatik (**SKILL'18**)
93. Int. Workshop on Satisfiability Modulo Theories (**SMT'18**)
94. Int. Workshop on Symbolic and Numerical Methods for Reachability Analysis (**SNR'18**)
95. Int. Symp. on Theoretical Aspects of Software Engineering (**TASE'18**)
96. IEEE Int. Workshop on Formal Methods Integration (**FMi'17**)
97. Int. Conf. on Formal Modeling and Analysis of Timed Systems (**FORMATS'17**)
98. Int. Conf. on Fundamentals of Software Engineering (**FSEN'17**)
99. Int. Conf. on Hybrid Systems: Computation & Control (**HSCC'17**)
100. Int. Conf. on integrated Formal Methods (**iFM'17**)
101. Methoden und Beschreibungssprachen zur Modellierung und Verifikation von Schaltungen und Systemen (**MBMV'17**)
102. Int. Symp. on Practical Aspects of Declarative Languages (**PADL'17**)
103. Int. Conf. on Quantitative Evaluation of SysTems (**QEST'17**)
104. Int. Workshop on Satisfiability Checking and Symbolic Computation (**SC²'17**)
105. Symp. on Dependable Software Engineering: Theories, Tools and Applications (**SETTA'17**)
106. Int. Conf. on Simulation and Modeling Methodologies, Technologies and Applications (**SIMULTECH'17**)
107. Int. Conf. on Current Trends in Theory and Practice of Computer Science (**SOFSEM'17**)
108. Int. SPIN Symp. on Model Checking of Software (**SPIN'17**)
109. Int. Symp. on Theoretical Aspects of Software Engineering (**TASE'17**)
110. Int. Conf. on Tools and Methods of Program Analysis (**TMPA'17**)
111. Int. Conf. on Verification, Model Checking, and Abstract Interpretation (**VMCAI'17**)
112. Int. Workshop on Exascale Multi/many Core Computing Systems (**E-MuCoCoS'16**)
113. Int. Symp. on Formal Methods (**FM'16**)
114. IEEE Int. Workshop on Formal Methods Integration (**FMi'16**)

115. Int. Conf. on Formal Techniques for Distributed Objects, Components and Systems (**FORTE'16**)
116. Int. Workshop Methoden und Beschreibungssprachen zur Modellierung und Verifikation von Schaltungen und Systemen (**MBMV'16**)
117. PhD Symp. at iFM'16 on Formal Methods: Algorithms, Tools and Applications (**PhD-iFM'16**)
118. Int. Conf. on Runtime Verification (**RV'16**)
119. Symp. on Dependable Software Engineering: Theories, Tools and Applications (**SETTA'16**)
120. Int. Workshop on Satisfiability Modulo Theories (**SMT'16**)
121. Int. SPIN Symp. on Model Checking Software (**SPIN'16**)
122. Int. Symp. on Theoretical Aspects of Software Engineering (**TASE'16**)

123. IFAC Conf. on Analysis and Design of Hybrid Systems (**ADHS'15**)
124. Int. Symp. on Automated Technology for Verification and Analysis (**ATVA'15**)
125. Int. Workshop on Design and Implementation of Formal Tools and Systems (**DIFTS'15**)
126. Int. Workshop on Exascale Multi/many Core Computing Systems (**E-MuCoCoS'15**)
127. Young Researchers' Conf. Frontiers of Formal Methods (**FFM'15**)
128. Int. Symp. on Formal Methods (**FM'15**)
129. IEEE Int. Workshop on Formal Methods Integration (**FMI'15**)
130. Int. Conf. on Formal Techniques for Distributed Objects, Components and Systems (**FORTE'15**)
131. IARCS Annual Conf. on Foundations of Software Technology and Theoretical Computer Science (**FSTTCS'15**)
132. Int. Conf. on Hybrid Systems: Computation and Control (**HSCC'15**)
(Additionally, **chair** of the HSCC'15 commission for the **Best Student Paper Award**)
133. Int. Symp. on NASA Formal Methods (**NFM'15**)
134. Int. Conf. Quantitative Evaluation of SysTems (**QEST'15**)
135. Summer Computer Simulation Conf. (**SCSC'15**)
136. Int. Conf. on Advances in System Simulation (**SIMUL'15**)
137. Int. Conf. on Tools and Algorithms for the Construction and Analysis of Systems (**TACAS'15**)
138. Int. Conf. on Verification, Model checking, and Abstract Interpretation (**VMCAI'15**)

139. Int. Workshop on Design and Implementation of Formal Tools and Systems (**DIFTS'14**)
140. IEEE Int. Workshop on Formal Methods Integration (**FMI'14**)
141. Int. Conf. on Formal Modeling and Analysis of Timed Systems (**FORMATS'14**)
142. Int. Workshop on Formal Techniques for Safety-Critical Systems (**FTSCS'14**)
143. Workshop on Hybrid Autonomous Systems (**HAS'14**)
144. Int. Conf. on Hybrid Systems: Computation and Control (**HSCC'14**)
145. Int. Conf. on integrated Formal Methods (**iFM'14**)
146. Summer Computer Simulation Conf. (**SCSC'14**)
147. Int. Conf. on Advances in System Simulation (**SIMUL'14**)
148. Int. Conf. on Simulation and Modeling Methodologies, Technologies and Applications (**SIMULTECH'14**)

- 149. Int. Workshop on Harnessing Theories for Tool Support in Software (**TTSS'14**)
- 150. IEEE Int. Workshop on Formal Methods Integration (**FMI'13**)
- 151. Int. Conf. on Formal Modeling and Analysis of Timed Systems (**FORMATS'13**)
- 152. Int. Workshop on Formal Techniques for Safety-Critical Systems (**FTSCS'13**)
- 153. Int. Conf. on Hybrid Systems: Computation and Control (**HSCC'13**)
- 154. Int. Conf. on integrated Formal Methods (**iFM'13**)
- 155. Int. Conf. on Advances in System Simulation (**SIMUL'13**)
- 156. Int. Conf. on Simulation and Modeling Methodologies, Technologies and Applications (**SIMULTECH'13**)
- 157. Int. Conf. on Tools and Algorithms for the Construction and Analysis of Systems (**TACAS'13**)
- 158. Int. Symp. on Formal Aspects of Component Software (**FACS'12**)
- 159. Int. Workshop on Formal Techniques for Safety-Critical Systems (**FTSCS'12**)
- 160. Int. Conf. on Hybrid Systems: Computation and Control (**HSCC'12**)
- 161. Int. Workshop on Numerical Software Verification (**NSV'12**)
- 162. Int. Conf. on Quantitative Evaluation of Systems (**QEST'12**)
- 163. Int. Conf. on Simulation and Modeling Methodologies, Technologies and Applications (**SIMULTECH'12**)
- 164. Int. Symp. on Formal Aspects of Component Software (**FACS'11**)
- 165. Int. Symp. on Fundamentals of Computation Theory (**FCT'11**)
- 166. Int. Conf. on Simulation and Modeling Methodologies, Technologies and Applications (**SIMULTECH'11**)
- 167. Int. Workshop on Rewriting Techniques for Real-Time Systems (**RTRTS'10**)
- 168. Int. Symp. on Theoretical Aspects of Software Engineering (**TASE'10**)

Further reviewing activities

- Guest editor for several journal special issues
- 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 Foundation (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 2024	Board member of the German Association of University Professors and Lecturers (Deutscher Hochschulverband, DHV), Region Aachen
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 Inter-acting Hybrid Systems

Evaluation commissions

- Ph.D. reviewer:
- Birgit van Huijgevoort, Eindhoven University of Technology, 2023
- 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 Aljarbough, 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 and habilitation committees:	Aalborg University, Denmark (2024); University of Bath, UK (2024); University of Hildesheim, Germany (2024); École Polytechnique, France (2024); University of Grenoble, France (2023); Karlsruhe Institute of Tech- nology, Germany (2022); University of Braunschweig, Germany (2022); University of Bremen, Germany (2022), KIT, Germany (2021); Univer- sity 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, Swe- den (2018); Radboud University Nijmegen, the Netherlands (2016); Uni- versity of Twente, the Netherlands (2015-2016); Aarhus University, Den- mark (2013-2014); RWTH Aachen University, Germany (numerous since 2008)

Teaching since 2008

Bachelor/Master at RWTH Aachen University:

Annually since 2009 (each winter term):	Lecture on <i>Satisfiability Checking</i> (200-350 students) Average evaluation: 1.5 (scale 1-5 with 1 being the best)
Annually since 2010 (each sommer term):	Lecture on <i>Modeling and Analysis of Hybrid Systems</i> (150-250 students) Average evaluation: 1.6 (scale 1-5 with 1 being the best)
Each semester:	<i>Seminars and practical courses</i>
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)
Doctoral studies:	
08/2025:	One-day tutorial <i>SMT Solving</i> at the Marktoberdorf Summer School, Marktoberdorf, Germany
09/2022:	One-day tutorial <i>SMT Solving</i> at the Summer School of the European Re- search 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 Sys- tems</i> at TU Wien, Austria
06/2018:	Half-day tutorial <i>Reachability Analysis Techniques for Hybrid Systems</i> at the 2018 Summer School on Cyber-physical Systems, Halmstad, Sweden
09-10/2017:	Doctoral course <i>Modeling and Analysis of Hybrid Systems</i> at the Univer- sity of Szeged, Hungary
10/2015:	Doctoral course <i>Formal Methods for Hybrid Systems</i> 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

April 5, 2024

Publications of Erika Ábrahám

Theses

- [1] Erika Ábrahám. *An Assertional Proof System for Multithreaded Java — Theory and Tool Support*. PhD thesis, University of Leiden, 2005.
 - [2] Erika Ábrahám-Mumm. *Bestimmung der Gesichtspose mit künstlichen neuronalen Netzen*. Master's thesis, Institut für Informatik und Praktische Mathematik, Christian-Albrechts-Universität zu Kiel, 1998.
-

Books and edited proceedings

- [3] Erika Ábrahám, Stefan Hallerstede, John Hatcliff, Danielle Stewart, and Noah Abou El Wafa. *Integrated Rigorous Analysis in Cyber-Physical Systems Engineering (Dagstuhl Seminar 23041)*. *Dagstuhl Reports*, 13(1):155–183, 2023.
- [4] Isabela Drămnesc, Tudor Jebelean, Erika Ábrahám, Sorin Stratulat, Gábor Kusper, Mircea Marin, Adrian Crăciun, Csaba Biró, Gergely Kovásznai, Nikolaj Popov, and Rebecca Haehn. *Computational Logic: A Practical Approach*. Editura Universitatii de Vest, Timisoara, 2023.
- [5] Hossein Hojjat and Erika Ábrahám, editors. *Proc. of the 10th Int. Conf. on Fundamentals of Software Engineering (FSEN'23)*, volume 14155 of *LNCS*. Springer-Verlag, 2023.
- [6] Erika Ábrahám, Clemens Dubslaff, and Silvia Lizeth Tapia Tarifa, editors. *Proc. of the 20th Int. Symp. on Theoretical Aspects of Computing (ICTAC'23)*, volume 14446 of *LNCS*. Springer-Verlag, 2023.
- [7] Erika Ábrahám and Thomas Sturm, editors. *Proc. of the 8th SC-Square Workshop (SC-Square@ISSAC'23)*, volume 3455 of *CEUR Workshop Proceedings*. CEUR-WS.org, 2023.
- [8] Erika Ábrahám, James H. Davenport, Matthew England, and Alberto Griggio. *New Perspectives in Symbolic Computation and Satisfiability Checking (Dagstuhl Seminar 22072)*. *Dagstuhl Reports*, 12(2):67–86, 2022.
- [9] Erika Ábrahám and Marco Paolieri, editors. *Proc. of the 19th Int. Conf. on Quantitative Evaluation of Systems (QEST'22)*, volume 13479 of *LNCS*. Springer-Verlag, 2022.
- [10] Erika Ábrahám and Silvia Lizeth Taipa Tarifa, editors. *Proc. of the PhD Symp. at iFM'18 on Formal Methods: Algorithms, Tools and Applications (PhD-iFM'18)*. Research report 483, August 2018, University of Oslo, 2018.
- [11] Erika Ábrahám and Sergiy Bogomolov, editors. *Proc. of the 3rd Int. Workshop on Symbolic and Numerical Methods for Reachability Analysis (SNR'17)*, volume 247 of *Electronic Proceedings in Theoretical Computer Science*, 2017.
- [12] Erika Ábrahám, Hadas Kress-Gazit, Lorenzo Natale, and Armando Tacchella. *Computer-Assisted Engineering for Robotics and Autonomous Systems (Dagstuhl Seminar 17071)*. *Dagstuhl Reports*, 7(2):48–63, 2017.
- [13] Erika Ábrahám and Marieke Huisman, editors. *Proc. of the 12th Int. Conf. on Integrated Formal Methods (iFM'16)*, volume 9681 of *LNCS*. Springer-Verlag, 2016.

- [14] Erika Ábrahám, James H. Davenport, and Pascal Fontaine, editors. *Proc. of the 1st Workshop on Satisfiability Checking and Symbolic Computation (SC² 2016)*, volume 1804 of *CEUR Workshop Proceedings*. CEUR-WS.org, 2017.
- [15] Erika Ábrahám and Sergiy Bogomolov, editors. *Proc. of the 2016 Int. Workshop on Symbolic and Numerical Methods for Reachability Analysis (SNR'16)*. IEEE Computer Society, 2016.
- [16] Erika Ábrahám, Marcello M. Bonsangue, and Einar Broch Johnsen, editors. *Theory and Practice of Formal Methods - Essays Dedicated to Frank de Boer on the Occasion of His 60th Birthday*, volume 9660 of *LNCS*. Springer-Verlag, 2016.
- [17] Erika Ábrahám, Pascal Fontaine, Thomas Sturm, and Dongming Wang. Symbolic Computation and Satisfiability Checking (Dagstuhl Seminar 15471). *Dagstuhl Reports*, 5(11):71–89, 2015.
- [18] Erika Ábrahám and Klaus Havelund, editors. *Proc. of the 20th Int. Conf. on Tools and Algorithms for the Construction and Analysis of Systems (TACAS'14)*, volume 8413 of *LNCS*. Springer-Verlag, 2014.
- [19] Erika Ábrahám and Catuscia Palamidessi, editors. *Proc. of the 34th IFIP WG 6.1 Int. Conf. on Formal Techniques for Distributed Objects, Components, and Systems (FORTE'14)*, volume 8461 of *LNCS*. Springer-Verlag, 2014.
- [20] Erika Ábrahám, Alberto Avritzer, Anne Remke, and William H. Sanders. Randomized Timed and Hybrid Models for Critical Infrastructures (Dagstuhl Seminar 14031). *Dagstuhl Reports*, 4(1):36–82, 2014.

Invited publications

- [21] Erika Ábrahám, József Kovács, and Anne Remke. SMT: Something you Must Try. In *Proc. of the 18th Int. Conf. on integrated Formal methods (iFM'23)*, volume 14300 of *LNCS*, pages 3–18. Springer-Verlag, 2023.
- [22] Erika Ábrahám, Jasper Nalbach, and Valentin Promies. Automated exercise generation for satisfiability checking. In *Proc. of the 5th Int. Workshop on Formal Methods Teaching (FMTea'23)*, volume 13962 of *LNCS*, pages 1–16. Springer-Verlag, 2023.
- [23] Erika Ábrahám. Symbolic computation techniques in SMT solving: Mathematical beauty meets efficient heuristics (abstract). In *Proc. of the 9th Int. Joint Conf. on Automated Reasoning (IJCAR'18)*, volume 10900 of *LNCS*, page XII. Springer-Verlag, 2018.
- [24] Stefan Schupp, Johanna Nellen, and Erika Ábrahám. Divide and conquer: Variable set separation in hybrid systems reachability analysis. In *Proc. of the 15th Workshop on Quantitative Aspects of Programming Languages and Systems (QAPL'17)*, volume 250 of *Electronic Proceedings in Theoretical Computer Science*, pages 1–14. Open Publishing Association, 2017.
- [25] Francesco Leofante, Erika Ábrahám, Tim Niemueller, Gerhard Lakemeyer, and Armando Tacchella. On the synthesis of guaranteed-quality plans for robot fleets in logistics scenarios via optimization modulo theories. In *Proc. of the 2017 IEEE Int. Conf. on Information Reuse and Integration (IRI'17)*, pages 403–410. IEEE Computer Society, 2017.
- [26] Erika Ábrahám and Gereon Kremer. SMT solving for arithmetic theories: Theory and tool support. In *Proc. of the 19th Int. Symp. on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC'17)*, pages 1–8. IEEE Computer Society, 2017.
- [27] Erika Ábrahám and Gereon Kremer. Satisfiability checking: Theory and applications. In *Proc. of the 14th Int. Conf. on Software Engineering and Formal Methods (SEFM'16)*, volume 9763 of *LNCS*, pages 9–23. Springer-Verlag, 2016.
- [28] Erika Ábrahám. Symbolic computation techniques in satisfiability checking. In *Proc. of the 18th Int. Symp. on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC'16)*, pages 3–10. IEEE Computer Society, 2016.

- [29] Erika Ábrahám and Klaus Havelund. Some recent advances in automated analysis. *Software Tools for Technology Transfer*, 18(2):121–128, 2016.
- [30] Stefan Schupp, Erika Ábrahám, Xin Chen, Ibtissem Ben Makhoul, Goran Frehse, Sriram Sankaranarayanan, and Stefan Kowalewski. Current challenges in the verification of hybrid systems. In *Proc. of the 5th Workshop on Design, Modeling, and Evaluation of Cyber Physical Systems (CyPhy'15)*, volume 9361 of *Information Systems and Applications, incl. Internet/Web, and HCI*, pages 8–24. Springer-Verlag, 2015.
- [31] Erika Ábrahám. Building bridges between symbolic computation and satisfiability checking. In *Proc. of the 2015 ACM on Int. Symp. on Symbolic and Algebraic Computation (ISSAC'15)*, pages 1–6. ACM, 2015.
- [32] Erika Ábrahám, Bernd Becker, Christian Dehnert, Nils Jansen, Joost-Pieter Katoen, and Ralf Wimmer. Counterexample generation for discrete-time Markov models: An introductory survey (invited contribution). In *Proc. of the 14th Int. School on Formal Methods for the Design of Computer, Communication, and Software Systems (SFM'14)*, volume 8483 of *LNCS*, pages 65–121. Springer-Verlag, 2014.
- [33] Ralf Wimmer and Erika Ábrahám. Maybe or maybe not: Contributions to stochastic verification. In *Aspekte der Technischen Informatik: Festschrift zum 60. Geburtstag von Bernd Becker*, pages 119–127. MV-Verlag, 2014.
- [34] Johanna Nellen and Erika Ábrahám. A CEGAR approach for the reachability analysis of PLC-controlled chemical plants. In *Proc. of the 15th IEEE Int. Conf. on Information Reuse and Integration (IRI'14)*, pages 500–507. IEEE Computer Society, 2014.
- [35] Sriram Sankaranarayanan, Xin Chen, and Erika Ábrahám. Lyapunov function synthesis using Handelman representations. In *Proc. of the 9th IFAC Symp. on Nonlinear Control Systems (NOLCOS'13)*, pages 576–581. IFAC-PapersOnLine, 2013.
- [36] Erika Ábrahám, Andreas Grüner, and Martin Steffen. Heap-abstraction for an object-oriented calculus with thread classes. In *Proc. of the 2nd Conf. on Computability in Europe: Logical Approaches to Computational Barriers (CiE'06)*, volume 3988 of *LNCS*, pages 1–10. Springer-Verlag, 2006.
- [37] Erika Ábrahám, Frank S. de Boer, Willem-Paul de Roever, and Martin Steffen. A compositional operational semantics for Java_{MT}. In *Verification: Theory and Practice, Celebrating Zohar Manna's 64th Birthday*, volume 2772 of *LNCS*, pages 290–303. Springer-Verlag, 2004.
- [38] Erika Ábrahám-Mumm, Frank S. de Boer, Willem-Paul de Roever, and Martin Steffen. A tool-supported proof system for multithreaded Java. In *Proc. of the 1st Int. Symp. on Formal Methods for Components and Objects (FMCO'02)*, volume 2852 of *LNCS*, pages 1–32. Springer-Verlag, 2003.

Peer-reviewed journal publications and book chapters

- [39] Jasper Nalbach, Erika Ábrahám, Philippe Specht, Christopher W. Brown, James H. Davenport, and Matthew England. Levelwise construction of a single cylindrical algebraic cell. *Journal of Symbolic Computation*, 123:102288, 2024.
- [40] Stefan Schupp, Erika Ábrahám, Md Tawhid Bin Waez, Thomas Rambow, and Zeng Qiu. On the applicability of hybrid systems safety verification tools from the automotive perspective. *International Journal on Software Tools for Technology Transfer*, 26(1):49–78, 2024.
- [41] Stefan Schupp, Erika Ábrahám, and Tristan Ebert. Recent developments in theory and tool support for hybrid systems verification with HyPro. *Information and Computation*, 289(Part):104945, 2022.
- [42] Oyendrilla Dobe, Erika Ábrahám, Ezio Bartocci, and Borzoo Bonakdarpour. Model checking hyperproperties for Markov decision processes. *Information and Computation*, 289(Part):104978, 2022.

- [43] Isabela Drămnesc, Erika Ábrahám, Tudor Jebelean, Gábor Kusper, and Sorin Stratulat. Automated reasoning in the class. *Computeralgebra Rundbrief*, 71:21–27, 2022.
- [44] Erika Ábrahám, James H. Davenport, Matthew England, and Gereon Kremer. 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, 2021.
- [45] Gereon Kremer and Erika Ábrahám. Fully incremental cylindrical algebraic decomposition. *Journal of Symbolic Computation*, 100:11–37, 2020.
- [46] Stefan Schupp, Justin Winkens, and Erika Ábrahám. Context-dependent reachability analysis for hybrid systems. In *Reuse in Intelligent Systems*, pages 161–180. CRC Press, 2020.
- [47] Francesco Leofante, Erika Ábrahám, Tim Niemueller, Gerhard Lakemeyer, and Armando Tacchella. Integrated synthesis and execution of optimal plans for multi-robot systems in logistics. *Information Systems Frontiers*, 21(1):87–107, 2019.
- [48] Gereon Kremer and Erika Ábrahám. Modular strategic SMT solving with SMT-RAT. *Acta Universitatis Sapientiae, Informatica*, 10(1):5–25, 2018.
- [49] Erika Ábrahám, John Abbott, Bernd Becker, Anna M. Bigatti, Martin Brain, Bruno Buchberger, Alessandro Cimatti, James H. Davenport, Matthew England, Pascal Fontaine, Stephen Forrest, Alberto Griggio, Daniel Kroening, Werner M. Seiler, and Thomas Sturm. Satisfiability checking and symbolic computation. *ACM Communications in Computer Algebra*, 50(4):145–147, 2016.
- [50] Erika Ábrahám, Thi Mai Thuong Tran, and Martin Steffen. Observable interface behavior and inheritance. *Mathematical Structures in Computer Science*, 26(3):561–605, 2016.
- [51] Johanna Nellen, Kai Driessen, Martin R. Neuhäuser, Erika Ábrahám, and Benedikt Wolters. Two CEGAR-based approaches for the safety verification of PLC-controlled plants. *Information Systems Frontiers*, 18(5):927–952, 2016.
- [52] Mohamed Amin Ben Sassi, Sriram Sankaranarayanan, Xin Chen, and Erika Ábrahám. Linear relaxations of polynomial positivity for polynomial Lyapunov function synthesis. *IMA Journal of Mathematical Control and Information*, 33(3):723–756, 2016.
- [53] Ralf Wimmer, Nils Jansen, Erika Ábrahám, and Joost-Pieter Katoen. High-level counterexamples for probabilistic automata. *Logical Methods in Computer Science*, 11(1:15):1–23, 2015.
- [54] Daniela Lepri, Erika Ábrahám, and Peter Csaba Ölveczky. Sound and complete timed CTL model checking of timed Kripke structures and real-time rewrite theories. *Science of Computer Programming*, 99:128–192, 2015.
- [55] Muhammad Fadlisyah, Peter Csaba Ölveczky, and Erika Ábrahám. Formal modeling and analysis of interacting hybrid systems in HI-Maude: What happened at the 2010 Sauna World Championships? *Science of Computer Programming*, 99:95–127, 2015.
- [56] Nils Jansen, Ralf Wimmer, Erika Ábrahám, Barna Zazzon, Joost-Pieter Katoen, Bernd Becker, and Johann Schuster. Symbolic counterexample generation for large discrete-time Markov chains. *Science of Computer Programming*, 91(A):90–114, 2014.
- [57] Ralf Wimmer, Nils Jansen, Erika Ábrahám, Joost-Pieter Katoen, and Bernd Becker. Minimal counterexamples for linear-time probabilistic verification. *Theoretical Computer Science*, 549:61–100, 2014.
- [58] Erika Ábrahám, Tobias Schubert, Bernd Becker, Martin Fränzle, and Christian Herde. Parallel SAT solving in bounded model checking. *Journal of Logic and Computation*, 21(1):5–21, 2011.
- [59] 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.

- [60] Erika Ábrahám, Immo Grabe, Andreas Grüner, and Martin Steffen. Behavioural interface description of an object-oriented language with futures and promises. *Journal of Logic and Algebraic Programming*, 78(7):491–518, 2009.
- [61] Erika Ábrahám, Frank S. de Boer, Willem-Paul de Roever, and Martin Steffen. A deductive proof system for multithreaded Java with exceptions. *Fundamenta Informaticae*, 82(4):391–463, 2008.
- [62] Erika Ábrahám, Andreas Grüner, and Martin Steffen. Heap-abstraction for an object-oriented calculus with thread classes. *Software and Systems Modeling*, 7(2):177–208, 2008.
- [63] Erika Ábrahám, Andreas Grüner, and Martin Steffen. Abstract interace behavior of object-oriented languages with monitors. *Theory of Computing Systems*, 43(3):322–361, 2008.
- [64] 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.

Peer-reviewed conference publications

- [65] Jasper Nalbach and Erika Ábrahám. Subtropical satisfiability for SMT solving. In *Proc. of the 15th NASA Formal Methods Symp. (NFM'23)*, volume 13903 of *LNCS*, pages 430–446. Springer-Verlag, 2023.
- [66] Lina Gerlach, Oyendrila Dobe, Erika Ábrahám, Ezio Bartocci, and Borzoo Bonakdarpour. Introducing asynchronicity to probabilistic hyperproperties. In *Proc. of the 20th Int. Conf. on Quantitative Evaluation of Systems (QEST'23)*, volume 14287 of *LNCS*, pages 47–64. Springer-Verlag, 2023.
- [67] Lisa Willemsen, Anne Remke, and Erika Ábrahám. Comparing two approaches to include stochasticity in hybrid automata. In *Proc. of the 20th Int. Conf. on Quantitative Evaluation of Systems (QEST'23)*, volume 14287 of *LNCS*, pages 238–254. Springer-Verlag, 2023.
- [68] Joanna Delicarís, Stefan Schupp, Erika Ábrahám, and Anne Remke. Maximizing reachability probabilities in rectangular automata with random clocks. In *Proc. of the 17th Int. Symp. on Theoretical Aspects of Software Engineering (TASE'23)*, volume 13931 of *LNCS*, pages 164–182. Springer-Verlag, 2023.
- [69] Jasper Nalbach, Valentin Promies, Erika Ábrahám, and Paul Kobialka. FMplex: A novel method for solving linear real arithmetic problems. In *Proc. of the 14th Int. Symp. on Games, Automata, Logics, and Formal Verification (GandALF'23)*, volume 390 of *Electronic Proceedings in Theoretical Computer Science*, pages 16–32, 2023.
- [70] Eshita Zaman, Gianfranco Ciardo, Erika Ábrahám, and Borzoo Bonakdarpour. HyperPCTL model checking by probabilistic decomposition. In *Proc. of the 17th Int. Conf. on Integrated Formal Methods (iFM'22)*, volume 13274 of *LNCS*, pages 209–226. Springer-Verlag, 2022.
- [71] Isabela Dramnesc, Erika Ábrahám, Tudor Jebelean, Gábor Kúspér, and Sorin Stratulat. Experiments with automated reasoning in the class. In *Proc. of the 15th Int. Conf. on Intelligent Computer Mathematics (CICM'22)*, volume 13467 of *LNCS*, pages 287–304. Springer-Verlag, 2022.
- [72] Oyendrila Dobe, Lukas Wilke, Erika Ábrahám, Ezio Bartocci, and Borzoo Bonakdarpour. Probabilistic hyperproperties with rewards. In *Proc. of the 14th NASA Formal Methods Symp. (NFM'22)*, volume 13260 of *LNCS*, pages 656–673. Springer-Verlag, 2022.
- [73] Rebecca Haehn, Erika Ábrahám, and Niklas Kotowski. Acceleration techniques for symbolic simulation of railway timetables. In Simon Collart Dutilleul, Anne E. Haxthausen, and Thierry Lecomte, editors, *Proc. of the 4th Int. Conf. on Reliability, Safety, and Security of Railway Systems (RSSRail'22)*, volume 13294 of *LNCS*, pages 46–62. Springer-Verlag, 2022.
- [74] Oyendrila Dobe, Erika Ábrahám, Ezio Bartocci, and Borzoo Bonakdarpour. HyperProb: A model checker for probabilistic hyperproperties. In *Proc. of the 24th Int. Symp. (FM'21)*, volume 13047 of *LNCS*, pages 657–666. Springer-Verlag, 2021.

- [75] Jasper Nalbach, Erika Ábrahám, and Gereon Kremer. Extending the fundamental theorem of linear programming for strict inequalities. In Frédéric Chyzak and George Labahn, editors, *Proc. of the 2021 Int. Symp. on Symbolic and Algebraic Computation (ISSAC'21)*, pages 313–320. ACM, 2021.
- [76] Felix Freiberger, Stefan Schupp, Holger Hermanns, and Erika Ábrahám. Controller verification meets controller code: A case study. In *Proc. of the 19th ACM-IEEE Int. Conf. on Formal Methods and Models for System Design (MEMOCODE'21)*, pages 98–103. ACM, 2021.
- [77] Rebecca Haehn, Erika Ábrahám, and Nils Nießen. Symbolic simulation of railway timetables under consideration of stochastic dependencies. In *Proc. of the 18th Int. Conf. on Quantitative Evaluation of Systems (QEST'21)*, volume 12846 of *LNCS*, pages 257–275. Springer-Verlag, 2021.
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