Curriculum Vitae
Prof. Dr. rer. nat. habil. Markus Lohrey

lohrey@eti.uni-siegen.de
personal webpage
google scholar
ORCID

1. Education

1989 – 1990	Prediploma in Computer Science at Georg-Simon-Ohm University for applied sciences, Nürnberg, Germany
1991 – 1996	Diploma in Computer Science at Friedrich-Alexander University of Erlangen-Nürnberg, Germany
July 1999	Ph.D. (Dr. rer. nat.) in Computer Science from the University of Stuttgart, Germany Thesis title: On the confluence problem for trace rewriting systems Thesis advisor: Prof. Dr. Volker Diekert
June 2003	Habilitation in Computer Science from the University of Stuttgart, Germany Thesis title: Computational aspects of infinite monoids

2. Academic Employments

01/1997 – 11/1997	Ph.D. scholarship in the postgraduate program *Specification of Discrete Processes and Systems of Processes by Operational Models and Logics* at Dresden University of Technology, Germany
12/1997 – 04/2000	Research associate (German BAT IIa) at the Computer Science Department (Theoretical Computer Science) at University of Stuttgart, Germany
05/2000 – 03/2004	Assistant lecturer (German C 1) at the Computer Science Department (Theoretical Computer Science) at University of Stuttgart, Germany
04/2004 – 09/2004	Temporary professorship at the chair for *Algorithms and Complexity* at RWTH Aachen, Germany

10/2004 – 09/2005 10/2006 – 03/2007	University lecturer (German C 2) at the Computer Science Department (Theoretical Computer Science) at University of Stuttgart, Germany
10/2005 – 09/2006	Temporary professorship at the chair for *Data Structures and Efficient Algorithms* at Martin-Luther-University of Halle-Wittenberg, Germany
04/2007 – 08/2013	Full professor (W2) at the Computer Science Department (Algebraic and Logical Foundations of Computer Science) at University of Leipzig, Germany
since 09/2013	Full professor (W3) for *Theoretical Computer Science* at the Department for Electrical Engineering and Computer Science at University of Siegen, Germany

3. Long term visits

07/2001 – 04/2002	Post-doc researcher at Laboratoire d'Informatique Algorithmique: Fondements et Applications (LIAFA, University Paris 7, France) and Institut de Recherche en Informatique et Systèmes Aléatoires (IRISA, University Rennes 1, France)
03/2005	Invited professor at Laboratoire d'Informatique Algorithmique: Fondements et Applications (LIAFA, University Paris 7, France)
03/2008	Invited professor at Laboratoire Bordelais de Recherche en Informatique (LABRI, University Bordeaux 1, France)

4. Research Interests

Decidability and complexity of problems in automata theory and algebra

Combinatorial group theory (decidability and complexity of algorithmic problems for infinite groups, word problems, solving equations in groups)

Data compression (grammar-based compression, algorithms for compressed data, compression of large tree structures)

Logic in computer science (decidability and complexity of logical theories, model-checking of finite and infinite structures, automatic structures, temporal logics, verification of stochastic systems)

Streaming algorithms

5. Publications

Books and book chapters

1. The Compressed Word Problem for Groups, *SpringerBriefs in Mathematics*, 2014.
2. Complexity and Randomness in Group Theory (with Frédérique Bassino, Ilya Kapovich, Alexei Miasnikov, Cyril Nicaud, Andrey Nikolaev, Igor Rivin, Vladimir Shpilrain, Alexander Ushakov and Pascal Weil, *De Gruyter*, 2020
3. Parallel complexity in group theory (in Languages and Automata, GAGTA Book 3, edited by Benjamin Steinberg) *De Gruyter*, 2024

Fully refereed papers in international journals

1. MSO-enumeration over SLP-compressed unranked forests (with Markus Schmid) *TheoretiCS*, Volume 5, 2026
2. Parameterized complexity of factorization problems (with Andreas Rosowski) *Discrete Mathematics and Theoretical Computer Science*, Volume 27:3, 2025
3. Membership problems in finite groups (with Andreas Rosowski and Georg Zetzsche) *Journal of Algebra* 675, pp. 23–58, 2025
4. Regular languages in the sliding window model (with Moses Ganardi, Danny Hucke, Konstantinos Mamouras and Tatiana Starikovskaya) *TheoretiCS*, Volume 4, 2025
5. Compressed decision problems in hyperbolic groups (with Derek Holt and Saul Schleimer) to appear in *Groups, Geometry, and Dynamics*
6. The power word problem in graph products (with Florian Stober and Armin Weiß) *Theory of Computing Systems*, 2024 (special issue for DLT 2022)
7. Knapsack and the power word problem in solvable Baumslag-Solitar groups (with Moses Ganardi and Georg Zetzsche) *International Journal of Algebra and Computation* 33(3), pp. 617–639, 2023
8. Subgroup membership in $\mathrm{GL}(2,\mathbb{Z})$, *Theory of Computing Systems* 68, pp. 1082–1107, 2023 (special issue for STACS 2021)
9. Complexity of word problems for HNN-extensions, *Journal of Computer and System Sciences* 135, pp. 145–157, 2023 (special issue for FCT 2021)
10. Exponent equations in HNN-extensions (with Michael Figelius), *Journal of Groups, Complexity, Cryptology*, 14(2), 2022
11. Groups with ALOGTIME-hard word problems and PSPACE-complete compressed word problems (with Laurent Bartholdi, Michael Figelius and Armin Weiß), *ACM Transactions on Computation Theory* 14(3-4), 2023
12. Entropy bounds for grammar-based tree compressors (with Danny Hucke and Louisa Seelbach) *IEEE Transactions on Information Theory* 67(11), pp. 7596–7615, 2021
13. Closure properties of knapsack semilinear groups (with Michael Figelius and Georg Zetzsche), *Journal of Algebra* 589(1), pp. 437–482, 2022

14. Balancing straight-line programs (with Moses Ganardi and Artur Jeż), *Journal of the ACM* 68(4), Article No. 27, 2021
15. The smallest grammar problem revisited (with Hideo Bannai, Momoko Hirayama, Danny Hucke, Shunsuke Inenaga, Artur Jeż and Carl Philipp Reh), *IEEE Transactions on Information Theory* 67(1), pp. 317–328, 2020
16. Largest common prefix of a regular tree language (with Sebastian Maneth), *Journal of Computer and System Sciences* 115, pp. 235–245, 2020 (special issue for FCT 2019)
17. Derandomization for sliding window algorithms with strict correctness (with Moses Ganardi and Danny Hucke), *Theory of Computing Systems* 115, pp. 235–245, 2020 (special issue for CSR 2019)
18. Combined compression of multiple correlated data streams for online-diagnosis systems (with Simon Meckel, Seungbum Jo, Roman Obermaisser and Simon Plasger), *Microprocessors and Microsystems* 77, 2020 (special issue for Euromicro DSD 2019)
19. Grammar-based compression of unranked trees (with Adria Gascon, Sebastian Maneth, Carl Philipp Reh and Kurt Sieber), *Theory of Computing Systems* 61(1), pp. 141–176, 2020 (special issue for CSR 2018)
20. Universal tree source coding using grammar-based compression (with Moses Ganardi, Danny Hucke and Louisa Seelbach), *IEEE Transactions on Information Theory* 65(10), pp. 6399–6413, 2019
21. Knapsack in hyperbolic groups, *Journal of Algebra* 545, pp. 390–415, 2020
22. Size-optimal top dag compression (with Carl Philipp Reh and Kurt Sieber), *Information Processing Letters* 147, pp. 27–31, 2019
23. The complexity of bisimulation and simulation on finite systems (with Moses Ganardi and Stefan Göller), *Logical Methods in Computer Science* 14(4), 2018
24. A universal tree balancing theorem (with Moses Ganardi), *ACM Transactions on Computation Theory* 11(1), Article No. 1, 2018
25. Parallel identity testing for skew circuits with big powers and applications (with Daniel König), *International Journal of Algebra and Computation* 28(6), pp. 979–1004, 2018
26. An architecture for online-diagnosis systems supporting compressed communication (with Seungbum Jo, Damian Ludwig, Simon Meckel, Roman Obermaisser and Simon Plasger), *Microprocessors and Microsystems* 61, pp. 242–256, 2018 (special issue for Euromicro DSD 2017)
27. Circuits and expressions over finite semirings (with Moses Ganardi, Danny Hucke and Daniel König), *ACM Transactions on Computation Theory* 10(4), Article No. 15, 2018
28. Knapsack in graph groups (with Georg Zetzsche), *Theory of Computing Systems* 62(1), pp. 192–246, 2018 (special issue for STACS 2016)
29. Path checking for MTL and TPTL over data words (with Shiguang Feng and Karin Quaas), *Logical Methods in Computer Science* 13(3), 2017
30. Evaluation of circuits over nilpotent and polycyclic groups (with Daniel König), *Algorithmica* 80(5), pp. 1459–1492, 2018 (special issue for COCOON 2015)

31. Constant-time tree traversal and subtree equality check for grammar-compressed trees (with Sebastian Maneth and Carl Philipp Reh), *Algorithmica* 80(7), pp. 2082–2105, 2018 (special issue for DCC 2016),
32. Tree compression using string grammars (with Moses Ganardi, Danny Hucke and Eric Nöth), *Algorithmica* 80(3), pp. 885–917, 2018 (special issue for LATIN 2016)
33. Constructing small tree grammars and small circuits for formulas (with Danny Hucke, Artur Jeż, Moses Ganardi and Eric Nöth), *Journal of Computer and System Sciences* 86, pp. 136–158, 2017
34. Satisfiability of ECTL* with local tree constraints (with Claudia Carapelle, Shiguang Feng and Alexander Kartzow), *Theory of Computing Systems* 61(2), pp. 689–720, 2017 (special issue for CSR 2015)
35. On Boolean closed full trios and rational Kripke frames (with Dietrich Kuske and Georg Zetzsche), *Theory of Computing Systems* 60(3), pp. 438–472, 2017 (special issue for STACS 2013)
36. Processing succinct matrices and vectors (with Manfred Schmidt-Schauß), *Theory of Computing Systems* 61(2), pp. 322–351, 2017 (special issue for CSR 2014)
37. Approximation of smallest linear tree grammars (with Artur Jeż) *Information and Computation* 251, pp. 215–251, 2016
38. Satisfiability of ECTL* with constraints (with Claudia Carapelle and Alexander Kartzow), *Journal of Computer and System Sciences* 82(5), pp. 826–855, 2016
39. Knapsack and subset sum problems in nilpotent, polycyclic, and co-context-free groups (with Daniel König and Georg Zetzsche), *Contemporary Mathematics* 677 (Algebra and Computer Science), pp. 129–144, 2016
40. XML compression via directed acyclic graphs (with Mireille Bousquet-Mélou, Sebastian Maneth and Eric Nöth), *Theory of Computing Systems* 57(4), pp. 1322-1371, 2015 (special issue for ICDT 2013)
41. Rational subsets of unitriangular groups, *International Journal of Algebra and Computation* 25(1-2), pp. 113–121, 2015
42. Rational subsets and submonoids of wreath products (with Benjamin Steinberg and Georg Zetzsche), *Information and Computation* 243, pp. 191–204, 2015 (special issue for ICALP 2013)
43. The complexity of decomposing modal and first-order theories (with Stefan Göller and Jean Christoph Jung), *ACM Transactions on Computational Logic* 16(1), Artikel Nr. 9, 2015
44. The first-order theory of ground tree rewrite graphs (with Stefan Göller), *Logical Methods of Computer Science* 10(1), Artikel Nr. 7, 2014
45. XML tree structure compression using RePair (with Sebastian Maneth and Roy Mennicke), *Information Systems* 38(8), pp. 1150–1167, 2013
46. The isomorphism problem on classes of automatic structures with transitive relations (with Dietrich Kuske and Jiamou Liu), *Transactions of the American Mathematical Society* 365, pp. 5103–5151, 2013

47. Tree-automatic well-founded trees (with Martin Huschenbett, Alexander Kartzow and Jiamou Liu), *Logical Methods in Computer Science* 9(2), Artikel Nr. 10, 2013

48. Branching-time model checking of one-counter processes and timed automata (with Stefan Göller), *SIAM Journal on Computing* 42(3), pp. 884–923, 2013

49. Isomorphism of regular trees and words (with Christian Mathissen), *Information and Computation* 224, pp. 71–105, 2013

50. The isomorphism problem for omega-automatic trees (with Dietrich Kuske and Jiamou Liu), *Annals of Pure and Applied Logic* 164(1), pp. 30–48, 2013

51. Algorithmics on SLP-compressed strings: a survey, *Groups Complexity Cryptology* 4(2), pp. 241–299, 2012

52. Logspace computations in Coxeter groups and graph groups (with Volker Diekert and Jonathan Kausch), *Contemporary Mathematics 582 (Proceedings of the AMS Special Session on Computational Algebra, Groups, and Applications)*, pp. 77–94, 2012

53. Compressed decision problems for graph products of groups and applications to (outer) automorphism groups (with Niko Haubold and Christian Mathissen), *International Journal of Algebra and Computation* 22(8), 2013

54. Parameter reduction and automata evaluation for grammar-compressed trees (with Sebastian Maneth and Manfred Schmidt-Schauß), *Journal of Computer and System Sciences* 78(5), pp. 1651–1669, 2012

55. Model-checking hierarchical structures, *Journal of Computer and System Sciences* 78(2), pp. 461–490, 2012

56. Automatic structures of bounded degree revisited (with Dietrich Kuske), *Journal of Symbolic Logic* 76(4), pp. 1352–1380, 2011

57. Compressed word problems in HNN-extensions and amalgamated products (with Niko Haubold), *Theory of Computing Systems* 49(2), pp. 283–305, 2011

58. Leaf languages and string compression, *Information and Computation* 209(6), pp. 951–965, 2011

59. Tilings and submonoids of metabelian groups (with Benjamin Steinberg), *Theory of Computing Systems* 48(2), pp. 411–427, 2011

60. Fixpoint logics on hierarchical structures (with Stefan Göller), *Theory of Computing Systems* 48(1), pp. 93–131, 2011

61. Compressed membership problems for regular expressions and hierarchical automata, *International Journal of Foundations of Computer Science* 21(5), pp. 817–841, 2010

62. Submonoids and rational subsets of groups with infinitely many ends (with Benjamin Steinberg), *Journal of Algebra* 324(5), pp. 970–983, 2010

63. Some natural decision problems in automatic graphs (with Dietrich Kuske), *Journal of Symbolic Logic* 75(2), pp. 678–710, 2010

64. An automata theoretic approach to the generalized word problem in graphs of groups (with Benjamin Steinberg), *Proceedings of the AMS* 138, S. 445–453, 2010

65. PDL with intersection and converse: satisfiability and infinite-state model checking (with Stefan Göller and Carsten Lutz), *Journal of Symbolic Logic* 74(1), pp. 279–314, 2009
66. Partially commutative inverse monoids (with Volker Diekert and Alexander Miller), *Semigroup Forum* 77(2), pp. 196–226, 2008
67. The submonoid and rational subset membership problems for graph groups (with Benjamin Steinberg), *Journal of Algebra* 320(2), pp. 728–755, 2008
68. Word equations over graph products (with Volker Diekert), *International Journal of Algebra and Computation* 18(3), pp. 493–533, 2008
69. Algorithmic problems on inverse monoids over virtually-free groups (with Volker Diekert and Nicole Ondrusch), *International Journal of Algebra and Computation* 18(1), pp. 181–208, 2008
70. Rational subsets in HNN-extensions and amalgamated free products (with Géraud Sénizergues), *International Journal of Algebra and Computation* 18(1), pp. 111–163, 2008
71. First-order and counting theories of ω-automatic structures (with Dietrich Kuske), *Journal of Symbolic Logic* 73, pp. 129–150, 2008
72. Efficient memory representation of XML document trees (with Giorgio Busatto und Sebastian Maneth), *Information Systems* 33(4–5), pp. 456–474, 2008
73. Inverse monoids: decidability and complexity of algebraic questions (with Nicole Ondrusch), *Information and Computation* 205(8), pp. 1212–1234, 2007
74. When is a graph product of groups virtually-free? (with Géraud Sénizergues), *Communications in Algebra* 35(2), pp. 617–621, 2007
75. The complexity of tree automata and XPath on grammar-compressed trees (with Sebastian Maneth), *Theoretical Computer Science* 363(2), pp. 196–210, 2006
76. Logical aspects of Cayley-graphs: the monoid case (with Dietrich Kuske), *International Journal of Algebra and Computation* 16(2), pp. 307–340, 2006
77. Word problems and membership problems on compressed words, *SIAM Journal on Computing* 35(5), pp. 1210–1240, 2006
78. Axiomatising divergence (with Pedro D'Argenio and Holger Hermanns), *Information and Computation* 203(2), pp. 115-144, 2005
79. Decidability and complexity in automatic monoids, *International Journal of Foundations of Computer Science* 16(4), pp. 707–722, 2005
80. Complexity results for prefix grammars (with Holger Petersen), *R.A.I.R.O. — Informatique Théorique et Applications* 39, pp. 391–401, 2005
81. Decidable first-order theories of one-step rewriting in trace monoids (with Dietrich Kuske), *Theory of Computing Systems* 38(1), pp. 39–81, 2005
82. Logical aspects of Cayley-graphs: the group case (with Dietrich Kuske), *Annals of Pure and Applied Logic* 131(1–3), pp. 263–286, 2005
83. Bounded MSC communication (with Anca Muscholl), *Information and Computation* 189(2), pp. 160–181, 2004

84. Existential and positive theories of equations in graph products (with Volker Diekert), *Theory of Computing Systems* 37(1), pp. 133–156, 2003
85. Realizability of high-level message sequence charts: closing the gaps, *Theoretical Computer Science* 309(1–3), pp. 529–554, 2003
86. A note on the existential theory of equations in plain groups (with Volker Diekert), *International Journal of Algebra and Computation* 12, pp. 1–7, 2002
87. Confluence problems for trace rewriting, *Information and Computation* 170, pp. 1–25, 2001
88. NP-completeness results concerning the transformation of logic programs into attribute grammars, *Acta Cybernetica* 13, pp. 209–224, 1998

Fully refereed conference papers

1. Transducers on compressed strings (with Mikołaj Bojańczyk) to appear in *Proceedings of ICALP 2026*, LIPIcs
2. On the complexity of computing Strahler numbers (with Moses Ganardi) *Proceedings of STACS 2026*, LIPIcs Volume 364
3. Streaming algorithms for products of probabilities (with Leon Rische, Louisa Seelbach, and Julio Xochitemol) *Proceedings of WALCOM 2026*, LNCS 16444, pp. 140–153
4. FO-query enumeration over SLP-compressed structures of bounded degree (with Sebastian Maneth and Markus Schmid) *Proceedings of MFCS 2025*, LIPIcs Volume 345
5. Finding cycle types in permutation groups with few generators (with Andreas Rosowski) *Proceedings of COCOON 2025*, LNCS 15984, pp. 367–380
6. Streaming in graph products (with Julio Xochitemol) *Proceedings of MFCS 2024*, LIPIcs Volume 306
7. Enumeration for MSO-queries on compressed trees (with Markus Schmid), *Proceedings of the ACM on Management of Data*, Volume 2, Issue 2 (Proceedings of PODS 2024)
8. On the complexity of diameter and related problems in permutation groups (with Andreas Rosowski), Proceedings of ICALP 2023, LIPIcs Volume 261
9. Low-latency sliding window algorithms for formal languages (with Moses Ganardi, Louis Jachiet and Thomas Schwentick), *Proceedings of FSTTCS 2022*, LIPIcs Volume 250
10. Membership problems in finite groups (with Andreas Rosowski and Georg Zetzsche), *Proceedings of MFCS 2022*, LIPIcs Volume 241
11. Streaming word problems (with Lukas Lück) *Proceedings of MFCS 2022*, LIPIcs Volume 241
12. Exponent equations in HNN-extensions (with Michael Figelius) *Proceedings of ISSAC* 2022, pp. 293–301
13. Complexity of word problems for HNN-extensions, *Proceedings of FCT 2021*, LNCS 12867, pp. 371–384
14. Subgroup membership in $\mathrm{GL}(2,\mathbb{Z})$, *Proceedings of STACS 2021*, LIPIcs Volume 187

15. A comparison of empirical tree entropies (with Danny Hucke and Louisa Seelbach), *Proceedings of SPIRE 2020*, LNCS 12303, pp. 232–246
16. Knapsack and the power word problem in solvable Baumslag-Solitar groups (with Georg Zetzsche), *Proceedings of MFCS 2020*, LIPIcs Volume 170
17. Groups with ALOGTIME-hard word problems and PSPACE-complete compressed word problems (with Laurent Bartholdi, Michael Figelius and Armin Weiß), *Proceedings of CCC 2020*, LIPIcs Volume 169
18. The complexity of knapsack problems in wreath products (with Michael Figelius, Moses Ganardi and Georg Zetzsche), *Proceedings of ICALP 2020*, LIPIcs Volume 168
19. Sliding window property testing for regular languages (with Moses Ganardi, Danny Hucke and Tatiana Starikovskaya), *Proceedings of ISAAC 2019*, LIPIcs Volume 149
20. Balancing straight-line programs (with Moses Ganardi and Artur Jeż), *Proceedings of FOCS 2019*, pp. 1169–1183
21. The power word problem (with Armin Weiß), *Proceedings of MFCS 2019*, LIPIcs Volume 138
22. Combined compression of multiple correlated data streams for online-diagnosis systems (with Seungbum Jo, Simon Meckel, Roman Obermaisser and Simon Plasger), *Proceedings of Euromicro DSD 2019*, pp. 166–173
23. Largest common prefix of a regular tree languages (with Sebastian Maneth), *Proceedings of FCT 2019*, LNCS 11651, pp. 95–108
24. Entropy bounds for grammar-based tree compressors (with Danny Hucke and Louisa Seelbach), *Proceedings of ISIT 2019*, pp. 1687–1691
25. Derandomization for sliding window algorithms with strict correctness (with Moses Ganardi and Danny Hucke), *Proceedings of CSR 2019*, LNCS 11532, pp. 237–249
26. Compressed decision problems in hyperbolic groups (with Derek Holt and Saul Schleimer), *Proceedings of STACS 2019*, LIPIcs Volume 126
27. Knapsack in hyperbolic groups, *Proceedings of Reachability Problems 2018*, LNCS 11123, pp. 87–102, 2018
28. Average case analysis of leaf-centric binary tree sources (with Louisa Seelbach), *Proceedings of MFCS 2018*, LIPIcs Volume 117
29. Sliding windows over context-free languages (with Moses Ganardi and Artur Jeż), *Proceedings of MFCS 2018*, LIPIcs Volume 117
30. Randomized sliding window algorithms for regular languages (with Moses Ganardi and Danny Hucke), *Proceedings of ICALP 2018*, LIPIcs Volume 107
31. Grammar-based compression of unranked trees (with Adria Gascon, Sebastian Maneth, Carl Philipp Reh and Kurt Sieber), *Proceedings of CSR 2018*, LNCS 10846, pp. 118–131, 2018
32. Knapsack problems for wreath products (with Moses Ganardi, Daniel König and Georg Zetzsche), *Proceedings of STACS 2018*, LIPIcs Volume 96

33. Automata theory on sliding windows (with Moses Ganardi, Danny Hucke, Daniel König and Konstantinos Mamouras), *Proceedings of STACS 2018*, , LIPIcs Volume 96

34. Counting problems for Parikh images (with Christoph Haase and Stefan Kiefer), *Proceedings of MFCS 2017*, LIPIcs Volume 88

35. An architecture for online-diagnosis systems supporting compressed communication (with Seungbum Jo, Damian Ludwig, Simon Meckel, Roman Obermaisser and Simon Plasger), *Proceedings of Euromicro DSD 2017*, pp. 62–69

36. Universal tree source coding using grammar-based compression (with Danny Hucke), *Proceedings of IEEE ISIT 2017*, pp. 1753–1757

37. Computing quantiles in Markov chains with multi-dimensional costs (with Christoph Haase and Stefan Kiefer), *Proceedings of LICS 2017*

38. Circuit evaluation for finite semirings (with Moses Ganardi, Danny Hucke and Daniel König), *Proceedings of STACS 2017*, LIPIcs Volume 66

39. The complexity of knapsack in graph groups (with Georg Zetzsche), *Proceedings of STACS 2017*, LIPIcs Volume 66

40. Compression of unordered XML trees (with Sebastian Maneth and Carl Philipp Reh), *Proceedings of ICDT 2017*, LIPIcs Volume 68

41. Querying regular languages over sliding-windows (with Moses Ganardi and Danny Hucke), *Proceedings of FSTTCS 2016*, LIPIcs Volume 65

42. The smallest grammar problem revisited (with Danny Hucke and Carl Philipp Reh), *Proceedings of SPIRE 2016*, LNCS 9954, pp. 35–49 (Best paper award)

43. On the parallel complexity of bisimulation over finite systems (with Moses Ganardi and Stefan Göller), *Proceedings of CSL 2016*, LIPIcs Volume 62

44. Traversing grammar-compressed trees with constant delay (with Sebastian Maneth and Carl Philipp Reh), *Proceedings of DCC 2016*, pp. 546–555

45. Knapsack in graph groups, HNN-extensions and amalgamated products (with Georg Zetzsche), *Proceedings of STACS 2016*, LIPIcs Volume 47, pp. 50:1–50:14, 2016

46. Tree compression using string grammars (with Moses Ganardi, Danny Hucke and Eric Nöth), *Proceedings of LATIN 2016*, LNCS 9644, pp. 590–604, 2016

47. Parallel identity testing for skew circuits with big powers and applications (with Daniel König), *Proceedings of MFCS 2015*, LNCS 9235, pp. 445–458, 2015

48. Path checking for MTL and TPTL over data words (with Shiguang Feng and Karin Quaas), *Proceedings of DLT 2015*, LNCS 9168, pp. 326–339, 2015

49. Evaluating matrix circuits (with Daniel König) *Proceedings of COCOON 2015*, LNCS 9198, pp. 235–248, 2015

50. Compressed tree canonization (with Sebastian Maneth and Fabian Peternek), *Proceedings of ICALP 2015*, LNCS 9135, pp. 337–349, 2015

51. Satisfiability of ECTL* with tree constraints (with Claudia Carapelle, Alexander Kartzow and Shiguange Feng), *Proceedings of CSR 2015*, LNCS 9139, pp. 94–108, 2015

52. Constructing small tree grammars and small circuits for formulas (with Danny Hucke and Eric Nöth), *Proceedings of FSTTCS 2014*, LIPIcs Volume 29, pp. 457-468, 2014

53. Processing succinct matrices and vectors (with Manfred Schmidt-Schauß), *Proceedings of CSR 2014*, LNCS 8476, pp. 245–258, 2014

54. On Boolean closed full trios and rational Kripke frames (with Georg Zetzsche), *Proceedings of STACS 2014*, LIPIcs Volume 25, pp. 530–541, 2014

55. Approximation of smallest linear tree grammars (with Artur Jeż), *Proceedings of STACS 2014*, LIPIcs Volume 25, pp. 445–457, 2014

56. Satisfiability of CTL* with constraints (with Claudia Carapelle and Alexander Kartzow), *Proceedings of CONCUR 2013*, LNCS 8052, pp. 455–469, 2013

57. Rational subsets and submonoids of wreath products (with Benjamin Steinberg and Georg Zetzsche), *Proceedings of ICALP 2013*, LNCS 7966, pp. 361–372, 2013

58. Compression of rewriting systems for termination analysis (with Alexander Bau, Eric Nöth and Johannes Waldmann), *Proceedings of RTA 2013*, LIPIcs Volume 21, pp. 97-112, 2013

59. XML compression via DAGs (with Sebastian Maneth and Eric Nöth), *Proceedings of ICDT 2013*, pp. 69-80, 2013

60. The complexity of decomposing modal and first-order theories (with Stefan Göller and Jean Christoph Jung), *Proceedings of LICS 2012*, pp. 325–334, 2013

61. Tree-automatic well-founded trees (with Alexander Kartzow and Jiamou Liu), *Proceedings of CiE 2012*, LNCS 7318, pp. 363–373

62. Logspace computations in graph groups and Coxeter groups (with Volker Diekert and Jonathan Kausch), *Proceedings of LATIN 2012*, LNCS 7256, pp. 243–254, 2012

63. The first-order theory of ground tree rewrite graphs (with Stefan Göller), *Proceedings of FSTTCS 2011*, LIPIcs Volume 13, pp. 276–287

64. Compressed word problems for inverse monoids, *Proceedings of MFCS 2011*, LNCS 6907, pp. 448-459 , 2011

65. Isomorphism of regular trees and words (with Christian Mathissen), *Proceedings of ICALP 2011*, LNCS 6756, pp. 210-221, 2011

66. Compressed membership in automata with compressed labels (with Christian Mathissen), *Proceedings of CSR 2011*, LNCS 6651, pp. 275-288, 2011

67. Tree structure compression with RePair (with Sebastian Maneth and Roy Mennicke), *Proceedings of DCC 2011*, pp. 353–362, 2011

68. The isomorphism problem for omega-automatic trees (with Dietrich Kuske and Jiamou Liu), *Proceedings of CSL 2010*, LNCS 6247, pp. 396–410, 2010

69. Compressed conjugacy and the word problem for outer automorphism groups of graph groups (with Niko Haubold and Christian Mathissen), *Proceedings of DLT 2010*, LNCS 6224, pp. 218–230, 2010

70. The isomorphism problem on classes of automatic structures (with Dietrich Kuske and Jiamou Liu), *Proceedings of LICS 2010*, pp. 160–169, 2010

71. Branching-time model checking of one-counter processes (with Stefan Göller), *Proceedings of STACS 2010*, LIPIcs Volume 5, pp. 405–416
72. Automatic structures of bounded degree revisited (with Dietrich Kuske), *Proceedings of CSL 2009*, LNCS 5771, pp. 364–378, 2009
73. Compressed word problems in HNN-extensions and amalgamated products (with Niko Haubold), *Proceedings of CSR 2009*, LNCS 5675, pp. 237–249, 2009
74. Parameter reduction in grammar-compressed trees (with Sebastian Maneth and Manfred Schmidt-Schauß), *Proceedings of FOSSACS 2009*, LNCS 5504, pp. 212–226, 2009
75. Leaf languages and string compression, *Proceedings of FSTTCS 2008*, LIPIcs Volume 2, pp. 292–303, 2008
76. Hamiltonicity of automatic graphs (with Dietrich Kuske), *Proceedings of IFIP-TCS 2008*, pp. 445–459, 2008
77. Euler paths and ends in automatic and recursive graphs (with Dietrich Kuske), *Proceedings of AFL 2008*, S.245–256, 2008
78. Efficient computation in groups via compression (with Saul Schleimer), *Proceedings of CSR 2007*, LNCS 4649, pp. 249–258, 2007
79. The submonoid and rational subset membership problems for graph groups (with Benjamin Steinberg), *Proceedings of LATA 2007*, pp. 367–378, 2007
80. PDL with intersection and converse is 2EXP-complete (with Stefan Göller and Carsten Lutz), *Proceedings of FOSSACS 2007*, LNCS 4423, pp. 198–212, 2007
81. Infinite state model-checking of propositional dynamic logics (with Stefan Göller), *Proceedings of CSL 2006*, LNCS 4207, pp. 349–364, 2006
82. Partially commutative inverse monoids (with Volker Diekert and Alexander Miller), *Proceedings of MFCS 2006*, LNCS 4162, pp. 292–304, 2006
83. Querying and embedding compressed texts (with Yury Lifshits), *Proceedings of MFCS 2006*, LNCS 4162, pp. 681–692, 2006
84. Monadic chain logic over iterations and applications to pushdown systems (with Dietrich Kuske), *Proceedings of LICS 2006*, pp. 91–100, 2006
85. Theories of HNN-extensions and amalgamated products (with Géraud Sénizergues), *Proceedings of ICALP 2006*, LNCS 4052, pp. 504–515, 2006
86. First-order and counting theories of ω-automatic structures (with Dietrich Kuske), *Proceedings of FOSSACS 2006*, LNCS 3921, pp. 322–336, 2006
87. Tree automata and XPath on compressed trees (with Sebastian Maneth), *Proceedings of CIAA 2005*, LNCS 3845, pp. 225–237, 2006 (Best paper award)
88. Fixpoint logics on hierarchical structures (with Stefan Göller), *Proceedings of FSTTCS 2005*, LNCS 3821, pp. 483-494, 2005
89. Efficient memory representation of XML documents (with Giorgio Busatto and Sebastian Maneth), *Proceedings of DBPL 2005*, LNCS 3774, pp. 199–216, 2005

90. Inverse monoids: decidability and complexity of algebraic questions (with Nicole Ondrusch), *Proceedings of MFCS 2005*, LNCS 3618, pp. 664–675, 2005
91. Model-checking hierarchical structures, *Proceedings of LICS 2005*, pp. 168–177, 2005
92. Decidability and complexity in automatic monoids, *Proceedings of DLT 2004*, LNCS 3340, pp. 308–320, 2004
93. Word problems on compressed words, *Proceedings of ICALP 2004*, LNCS 3142, pp. 906–918, 2004
94. Word equations over graph products (with Volker Diekert), *Proceedings of FSTTCS 2003*, LNCS 2914, pp. 156–167, 2003
95. Automatic structures of bounded degree, *Proceedings of LPAR 2003*, Lecture Notes in Artificial Intelligence 2850, pp. 344–358, 2003
96. Decidable theories of Cayley-graphs (with Dietrich Kuske), *Proceedings of STACS 2003*, LNCS 2607, pp. 463–474, 2003
97. Safe realizability of high-level message sequence charts, *Proceedings of CONCUR 2002*, LNCS 2421, pp. 177–192, 2002
98. On the theory of one-step rewriting in trace monoids (with Dietrich Kuske), *Proceedings of ICALP 2002*, LNCS 2380, pp. 752–763, 2002
99. Axiomatising divergence (with Pedro D'Argenio and Holger Hermanns), *Proceedings of ICALP 2002*, LNCS 2380, pp. 585–596, 2002
100. Bounded MSC communication (with Anca Muscholl), *Proceedings of FOSSACS 2002*, LNCS 2303, S. 295–309, 2002
101. Existential and positive theories of equations in graph products (with Volker Diekert), *Proceedings of STACS 2002*, LNCS 2285, pp. 501–512, 2002
102. Word problems for 2-homogeneous monoids and symmetric logspace, *Proceedings of MFCS 2001*, LNCS 2136, pp. 500–511, 2001
103. On the parallel complexity of tree automata, *Proceedings of RTA 2001*, LNCS 2051, pp. 201–216, 2001
104. Implementing Luby's algorithm on the Cray T3E (with Jürgen Gross) *High Performance Computing in Science and Engineering*, pp. 467–477, Springer 2000
105. Word problems and confluence problems for restricted semi-Thue systems, *Proceedings of RTA 2000*, LNCS 1833, pp. 172–186, 2000
106. Complexity results for confluence problems, *Proceedings of MFCS 99*, LNCS 1672, pp. 114–124, 1999
107. On the confluence of trace rewriting systems, *Proceedings of FSTTCS 98*, LNCS 1530, pp. 319–330, 1998
108. Priority and maximal progress are completely axiomatisable (extended abstract) (with Holger Hermanns), *Proceedings of CONCUR 98*, LNCS 1466, pp. 237–252, 1998

Invited papers

1. Membership problems in infinite groups, *Proceedings of CiE 2024*, LNCS 14773, pp.44–59
2. Compression techniques in group theory, *Proceedings of CiE 2021*, LNCS 12813, pp. 330–341
3. Balancing straight-line programs for strings and trees, *Proceedings of CiE 2020*, LNCS 12098, pp. 296–300
4. Sliding window algorithms for regular languages (with Moses Ganardi and Danny Hucke) *Proceedings of LATA 2018*, LNCS 10792, pp. 26–35
5. Grammar-based tree compression, *Proceedings of DLT 2015*, LNCS 9168, pp. 46–57
6. Equality testing of compressed strings, *Proceedings of WORDS 2015*, LNCS 9304, pp. 14–26
7. Temporal logics with local constraints (with Claudia Carapelle), *Proceedings of CSL 2015*, pp. 2–13
8. The rational subset membership problem for groups: A survey, *Proceedings of Groups St Andrews 2013*, London Mathematical Society Lecture Note Series 422, pp. 368–389

Other publications

1. Computational aspects of infinite monoids, Habilitation thesis, University of Stuttgart, 2003
2. Das Konfluenzproblem für Spurersetzungssysteme, PhD thesis, University of Stuttgart, 1999

6. Invited talks at international workshops and conferences

Theories of automatic structures and their computational complexity
International Workshop on Automata, Structures and Logic, Auckland New Zealand, 2004 (Satellite workshop of Developments in Language Theory 2004)

Algorithmics on compressed strings
12th International Conference on Automata and Formal Languages (AFL 2008)
Balatonfüred, Hungary, 2008

Rational subsets in groups
Automata, Formal Languages and Algebraic Systems, Kyoto, Japan, 2008
(Satellite workshop of Developments in Language Theory 2008)

Algorithmic problems in inverse monoids
ESF-Workshop on Automata Theoretic Methods in Algorithmic Algebra
Bratislava, Slovakia, 2008

The compression technique for solving the word problem
International Conference on Semigroups 2009, Porto, Portugal, 2009

Tutorial on automatic structures
GAMES-EPIT Spring School 2011, Carcans-Maubisson, France, 2011

Rational subsets in groups
Fribourg Weekend in Group Theory, Fribourg, Switzerland, 2012

Relating the compressed word problem and the word search problem
Joint AMS and MAA Mathematics Meeting, San Diego, USA, 2013

The compressed word problem for wreath products
Workshop on Questions, Algorithms, and Computations in Abstract Group Theory, Braunschweig, Germany 2013

Rational subsets in groups
International Conference on Geometric, Combinatorial and Dynamics aspects of Semigroup and Group Theory, Tel Aviv, Israel, 2013

Rational subsets in groups
Groups St Andrews 2013, St Andrews, UK, 2013

Isomorphie von endlich präsentierten Strukturen
Workshop *Automaten und Logik* im Rahmen des Theorietag *Automaten und Formale Sprachen 2013*, Ilmenau, Germany, 2013

Parallel Complexity of the Compresed Word Problem
ESI Workshop Geometry of computation in groups, Vienna, Austria, 2014

Knapsack problems in nilpotent groups
Joint AMS and MAA Mathematics Meeting, San Antonio, USA, 2015

Deciding membership in rational sets
AutoMathA 2015, Leipzig, Germany, 2015

Temporal logics with constraints
Computer Science Logic (CSL) 2015, Berlin, Germany, 2015

Grammar-based tree compression
Developments in Language Theory (DLT) 2015, Liverpool, UK, 2015

Equivalence of compressed words and polynomial identity testing
WORDS 2015, Kiel, Germany 2015

Knapsack problems in groups
Workshop *Equations and formal languages in algebra*, Les Diablerets, Switzerland, 2016

Knapsack problems for right-angled Artin groups
Geometric and Asymptotic Group Theory with Applications, Hoboken, USA, 2016

Circuit evaluation for finite semirings
Conference on Semigroups and Automata, Lisbon, Portugal, 2016

Mini course on compression techniques in computational group theory
Young GAGTA 2017, Bilbao, Spain, 2017

Knapsack and subset sum for groups beyond the integers
MealyM Final Event 2017, Paris, France 2017

Knapsack problems in non-commutative groups
Arbeitstagung Allgemeine Algebra (AAA) 2018, Bratislava, Slowakia, 2018

Streaming algorithms in formal language theory
Language and Automata Theory and Applications (LATA) 2018, Tel Aviv, Israel, 2018

Balancing straight-line programs for strings and trees
CiE 2020 (special session on Combinatorial String Matching), Salerno, Italy, 2020

Compression techniques in group theory
CiE 2021, Ghent, Belgium, 2021

Groups with hard compressed word problems
Geometric and Asymptotic Group Theory with Applications, Edinburg, UK, 2021

Straight-Line Programs: From Compression to Algorithmics
Highlights of Logic, Games and Automata, Paris, France, 2022

Grammar-based tree compression: combinatorics and algorithms
Probabilistic, Combinatorial and Asymptotic Methods for the Analysis of Algorithms (AofA2024), Bath, UK, 2024

Membership problems in infinite groups
CiE 2024 (special session on Computable Aspects of Symbolic Dynamics and Tilings), Amsterdam, Netherlands, 2024

Enumeration for MSO-queries on compressed trees
DLT 2024 (Highlights of Language Theory), Göttingen, Germany 2024

Membership problems in groups
SAMSA 2026, Warsaw, Poland, 2026

9. PhD students

Michael Figelius, On the knapsack problem and semilinear sets
University of Siegen, 09/2024

Louisa Seelbach Benkner, Combinatorial and information-theoretic aspects of tree compression
University of Siegen, 10/2023

Danny Hucke, Grammar based compression for strings and trees
University of Siegen, 11/2019

Moses Ganardi, Language recognition in the sliding window model
University of Siegen, 10/2019

Carl Philipp Reh, Algorithmic aspects of grammar-compressed trees
University of Siegen, 09/2019

Daniel König, Parallel evaluation of algebraic circuits
University of Siegen, 07/2017

Eric Nöth, Analysis of grammar-based tree compression
University of Siegen, 06/2016

Shiguang Feng, The expressive power, satisfiability and path checking problems of MTL and TPTL over non-monotonic data words
University of Leipzig, 04/2016

Claudia Carapelle, On the satisfiability of temporal logics with concrete domains
University of Leipzig, 11/2015

Niko Haubold, Compressed words problems in groups
University of Leipzig, 02/2012

Stefan Göller, Computational complexity of propositional dynamic logic
University of Leipzig, 12/2008

10. Third-party funds

Factorization in Finite Groups
granted by the German Research Foundation (DFG), 2024–2027
Project volume: 351.312 Euro

Streaming Automata Theory
granted by the German Research Foundation (DFG), 2018–2025
Project volume: 481.512 Euro

Algorithmic problems in group theory
granted by the German Research Foundation (DFG), 2016–2023
Project volume: 532.500 Euro

DAKODIS (Data compression for active diagnosis)
granted by the German Research Foundation (DFG), 2016–2019
Project volume: 247.250 Euro

QUANT-KOMP (Quantitative aspects of grammar-based compression)
granted by the German Research Foundation (DFG), 2015–2020
Project volume: 431.200 Euro

GELO (Graphs with decidable logics)
granted by the German Research Foundation (DFG), 2004–2014
Project volume: approx. 529.000 Euro

ALKODA (Algorithmics on compressed data)
granted by the German Research Foundation (DFG), 2008–2013
Project volume: 300.600 Euro

DFG-Mercator professor position for Prof. Dr. Benjamin Steinberg, 12/2008 – 07/2009
Project volume: 75.600 Euro

DFG-Mercator professor position for Prof. Dr. Sebastian Maneth, 08/2011 – 08/2012
Project volume: 121.320 Euro

Co-investigator of the DFG research training group *Quantitative Logiken und Automaten*
Oktober 2012 – Oktober 2015

DAAD project in the PPP USA program with Prof. Dr. Benjamin Steinberg and Prof. Dr. Alexei Miasnikov, 2010 & 2011
Project volume: 13.100 Euro

11. Organisational activities

Member of program committees

Symposium on Theoretical Aspects of Computer Science (STACS 2006)
Marseille, France, 2006

Automata: from Mathematics to Applications (AutoMathA 2007)
Palermo, Italy, 2007

Current Trends in Theory and Practice of Computer Science (SOFSEM 2008)
Nový Smokovec, Slovakia, 2008

Developments in Language Theory (DLT 2008)
Kyoto, Japan, 2008

Conference on Implementation and Application of Automata (CIAA 2009)
Sydney, Australia, 2009

Co-Chair of *Logic and Computational Complexity* (LCC 2009)
Los Angeles, USA, 2009

Foundations of Software Science and Computation Structures (FOSSACS 2011)
Saarbrücken, Germany, 2011

Language and Automata Theory and Applications (LATA 2011)
Tarragona, Spain, 2011

Unification Workshop (UNIF 2011)
Wroclaw, Polen, 2011

Computer Science in Russia (CSR 2012)
Nizhny Novgorod, Russia, 2012

Computer Science Logic (CSL 2012)
Fontainebleau, France, 2012

Symposium on Theoretical Aspects of Computer Science (STACS 2013)
Kiel, Germany, 2013

Highlights of Logic, Games and Automata
Paris, France, 2013

Current Trends in Theory and Practice of Computer Science (SOFSEM 2014)
Nový Smokovec, Slovakia, 2014

International Conference Automata and Formal Languages (AFL 2014)
Szeged, Hungary, 2014

Developments in Language Theory (DLT 2014)
Ekatarinburg, Russland, 2014

Mathematical Foundations of Computer Science (MFCS 2016)
Krakow, Poland, 2016

Conference on Implementation and Application of Automata (CIAA 2017)
Marne-la-Vallée, France, 2017

International Symposium on Fundamentals of Computation Theory (FCT 2017)
Bordeaux, France, 2017

Highlights of Logic, Games and Automata
Berlin, Germany, 2018

Language and Automata Theory and Applications (LATA 2019)
Sankt Petersburg, Russia, 2019

International Colloquium on Automata, Languages and Programming (ICALP 2019)
Patras, Greece, 2019

Language and Automata Theory and Applications (LATA 2020)
Milano, Italy, 2020

Developments in Language Theory (DLT 2020)
Tampa, FL, USA, 2020

Highlights of Logic, Games and Automata
Virtual, 2021

Conference on Implementation and Application of Automata (CIAA 2021)
Bremen, Germany, 2021

Conference on Implementation and Application of Automata (CIAA 2022)
Rouen, France, 2022

International Colloquium on Automata, Languages and Programming (ICALP 2022)
Paris, France, 2022

Conference on Implementation and Application of Automata (CIAA 2023)
Famagusta, North Cyprus, 2023

Symposium on Theoretical Aspects of Computer Science (STACS 2024)

Clermont-Ferrand, France, 2024

Conference on Implementation and Application of Automata (CIAA 2024)
Akita, Japan, 2024

International Computing and Combinatorics Conference (COCOON 2025)
Chengdu, China, 2025

International Computing and Combinatorics Conference (COCOON 2026)
Singapore, 2026

Automata and Formal Languages (AFL 2026)
Košice, Slovakia 2026

Organisation of workshops

Computational Complexity and Decidability in Algebra, Ekatarinburg, Russia, 2007

17. Theorietag Automaten und Formale Sprachen (with M. Droste), Leipzig, Germany, 2007

Dagstuhl-Seminar *Algorithmic-logical theory of infinite structures*
(with R. Downey, B. Khoussainov, D. Kuske and M. Vardi), 2007

Dagstuhl-Seminar *Structure-based compression of complex massive data*
(with S. Böttcher, S. Maneth and W. Rytter), 2008

ESF-Workshops *Automata and Algorithmic Logic*
(with T. Colcombet und D. Kuske), Stuttgart, Germany, 2009

17. Annual Meeting of the Special Interest Group *Logic in Computer Science* of the German Informatics Society, Leipzig, Germany, 2010

Algorithmic Model Theory (AlMoTh 2011), Leipzig, Germany, 2011

Algorithmics of Infinite State Systems (with S.Göller), Dubrovnik, Crotia, 2012

Algorithmics of Infinite State Systems (with S. Göller), Vienna, Austria, 2014

Algorithmic Model Theory (AlMoTh 2016), Siegen, Germany, 2016

Dagstuhl-Seminar *Computation over Compressed Structured Data*
(with P. Bille, S. Maneth and G. Navarro), 2016

Dagstuhl-Seminar *Algorithmic Problems in Group Theory*
(with V. Diekert, O. Kharlampovich and A. Miasnikov), 2019

Straight-Line Programs, Word Equations and their Interplay (satellite workshop for ICALP 2022) (with A. Jeż), Paris, France, 2022

Editorial work for journals

Groups Complexity Cryptology, member of the editorial board since 2019

Theory of Computing Systems, member of the editorial board since 2018

Semigroup Forum, member of the editorial board since 2013

LMS Journal of Computation and Mathematics, editorial adviser, 2013–2016

Journal of Computational Algebra, member of the editorial board since 2021

Work in scientific boards

2013–2016: chair of the special interest group *Logic in Computer Science* of the GI (Gesellschaft für Informatik)

2013–2017: treasurer of the *European Association for Computer Science Logic (EACSL)* and member of the executive committee

since 10/2022: member of the executive committee of the GAGTA (Geometric and asymptotic group theory with applications) conference series

12. Teaching experience

I gave lectures on the following topics at University of Stuttgart, University of Leipzig, University of Siegen, RWTH Aachen, and University of Halle-Wittenberg.

Lectures on Bachelor level

Foundations of Theoretical Computer Science

Formal Languages and Automata

Computability

Logic

Discrete Structures

Discrete Mathematics for Computer Science

Compiler Construction

Semantics of Programming Languages

Lectures on Master level

Advanced Logic

Algorithmic Problems for Compressed Data

Algorithms

Circuit Complexity

Computational Complexity

Cryptographic Methods

DNA Computing

Formal Semantics

Game Theoretic Methods in Logic

Graph Theory

Model-Checking

Parallel Algorithms

Parameterized Algorithms

Quantum Complexity Theory

Randomized Algorithms

Selected Topics from the Theory of Algorithms

Verification of Infinite State Systems

13. Experience in university self-administration

Member of the faculty board (Fakultätsrat) of the School of Science and Technology, University of Siegen, since 03/2024

Head of the Department of Electrical Engineering and Computer Science at University of Siegen, 04/2021–03/2022

Deputy head of the Department of Electrical Engineering and Computer Science at University of Siegen, 04/2020–03/2021

Head of three professor search committees (Berufungskommissionen) at University of Siegen, 2016, 2018, and 2022

Head of the PhD commission (Promotionsausschuss) Dr. Ing. at University of Siegen, 07/2020 – 10/2024

Deputy head of the PhD commission (Promotionsausschuss) Dr. Ing. at University of Siegen, 07/2017–06/2020, since 11/2024

Head of the PhD commission (Promotionsausschuss) for computer science at University of Leipzig, 09/2009–08/2013

Member of the faculty board (Fakultätsrat) of the Faculty of Mathematics and Computer Science at University of Leipzig, 10/2008–06/2010