

# Christian Schulz

## Curriculum Vitae

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### Contact Information

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### University Education

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|--------------------------------|--|
| November 2019                  | UNIVERSITY OF VIENNA.<br>Habilitation, Computer Science.<br>Thesis: <i>Scalable Graph Algorithms</i>   |
| March 2010–<br>May 2013        | KARLSRUHE INSTITUTE OF TECHNOLOGY.<br>Ph.D., summa cum laude, Computer Science.<br>Thesis: <i>High Quality Graph Partitioning</i><br>Advisor: <i>Prof. Dr. Sanders</i> |
| October 2004–<br>December 2009 | KARLSRUHE INSTITUTE OF TECHNOLOGY.<br>Diplom, with highest distinction, GPA 1.0/1.0, Mathematics.  |
| February 2010                  | Diplom, with highest distinction, GPA 1.1/1.0, Computer Science.   |

### Professional Experience

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|---|--|
| October 2020–                               | UNIVERSITY OF HEIDELBERG.<br>Full Professor of Computer Science (W3)<br><i>Applied Computer Science</i>  |
| January 2017–<br>September 2020             | UNIVERSITY OF VIENNA.<br>Researcher in the Group of Prof. Dr. Henzinger<br>Universitätsassistent<br><i>Leading Algorithm Engineering Subgroup</i>          |
| March 2010–<br>December 2017<br>since 2013: | KARLSRUHE INSTITUTE OF TECHNOLOGY.<br>Researcher in the Group of Prof. Dr. Sanders<br><i>Leading Parallel Algorithms &amp; Graph Partitioning Subgroup</i> |
| October 2015–<br>December 2015              | TU VIENNA / VIENNA PHD SCHOOL OF INFORMATICS.<br>Visiting Professor  |
| September 2015–<br>February 2016            | TU VIENNA.<br>Researcher in the Group of Prof. Dr. Träff   |

## Honors and Awards

|      |   |
|------|---|
| 2020 | BEST PAPER AWARD @ IEEE CLUSTER   |
| 2019 | PACE IMPLEMENTATION CHALLENGE WINNER – TRACK A  |
| 2018 | SPP ALGORITHMS FOR BIG DATA: BEST PAPER AWARD   |
| 2018 | BEST PAPER AWARD @ IPDPS'18   |
| 2017 | BEST PAPER NOMINATION @ GECCO'17  |
| 2017 | HEINZ BILLING PRIZE FOR THE ADVANCEMENT OF SCIENTIFIC COMPUTING                               |
| 2014 | KIT DOCTORAL AWARD IN THE AREA OF COMPETENCE<br>“INFORMATION, COMMUNICATION AND ORGANIZATION” |
| 2014 | UNISERV DISSERTATION AWARD  |
| 2012 | BEST SCORES IN GRAPH PARTITIONING SUBCHALLENGE OF THE<br>10TH DIMACS IMPLEMENTATION CHALLENGE |
| 2010 | BEST STUDENT OF DEPARTMENT OF INFORMATICS (KIT)   |
| 2003 | BEST STUDENT OF FRITZ-REUTER-OBERSCHULE   |

## Faculty Service

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|------------|--|
| Apr 2022 – | DEPUTY MANAGING DIRECTOR<br>INSTITUTE OF COMPUTER SCIENCE HEIDELBERG               |
| Apr 2022 – | SELECTION COMMITTEE W3 PROFESSORSHIP<br>MACHINE LEARNING IN HUMANITIES, HEIDELBERG |
| Oct 2021 – | MEMBER OF STUDY COMMISSION COMPUTER SCIENCE  |
| Apr 2021 – | DEPUTY MEMBER OF COMPUTER SCIENCE EXAMINATION BOARD                                |
| Sept 2022  |  |

## Professional Service

|             |   |
|-------------|---|
| 2023        | CO-ORGANIZER DAGSTUHL MEETING ON<br>RECENT TRENDS IN GRAPH DECOMPOSITION                                    |
| 2022 – 2026 | STEERING COMMITTEE MEMBER<br>EUROPEAN SYMPOSIUM ON ALGORITHMS (ESA/ALGO)                                    |
| 2022 – 2025 | STEERING COMMITTEE MEMBER<br>SYMPOSIUM ON EXPERIMENTAL ALGORITHMS (SEA)                                     |
| 2022 –      | STEERING COMMITTEE MEMBER<br>PARAMETERIZED ALGORITHMS AND COMPUTATIONAL EXPERIMENTS                         |
| 2022 – 2024 | ASSOCIATE EDITOR TRANSACTIONS ON PARALLEL COMPUTING (TOPC)  |
| 2022        | CO-ORGANIZER SIAM PP MINISYMPOSIUM ON<br>PARTITIONING AND PROCESS MAPPING FOR EMERGING ARCHITECTURES        |
| 2022        | PC CHAIR AND OC CHAIR FOR SEA'22  |
| 2022        | PC CHAIR FOR PACE'22  |
| 2021        | SIAM ACDA NOMINATING COMMITTEE MEMBER   |
| 2021        | SIAM ENGAGEMENT COMMITTEE MEMBER  |
| 2019        | CO-ORGANIZER SHONAN MEETING ON<br>PARAMETERIZED GRAPH ALGORITHMS & DATA REDUCTION:<br>THEORY MEETS PRACTICE |

*PC Member* for SBAC-PAD 2015, HPGDMP 2016, ESA 2017, IC3 2017, IPDPS 2018, IC3 2018, SNAMS 2018, IPEC 2019, IPDPS 2019, ISC 2019, ALENEX'20, CSC'20, SC'20, IPDPS'21, CLUSTER'22, ALENEX'23.

*Reviewer* for JEA, ALENEX, SPAA, IPDPS, DIMACS, ESA, SEA, Euro-Par, HiPC, TPDS, EGPGV, EAAI, TDSC, JPDC, SODA, CLUS, PARCO, TVCG, JGAA, TOPC, KAIS, SISC, Algorithmica, EJCO, TC, Network Science, COR, TKDE, EJOR, ASOC.

## **Grants ( $\Sigma = 1.22\text{MM Euro}$ )**

- [1] Peter Sanders, Christian Schulz and Dorothea Wagner. Engineering Algorithms for Partitioning Large Graphs. DFG application for continuation of SA 933/10-1, SCHU 2567/1-2 and WA 654/19-1. Funded: 580T Euro.
- [2] Christian Schulz. Algorithm Engineering for Process Mapping. FWF application. Joint project P 31763-N31 between TU Vienna and University Vienna. Funded: 305T Euro.
- [3] Christian Schulz. Algorithm Engineering for Scalable Data Reduction. DFG application SCHU 2567/3-1. Funded: 324T Euro.
- [4] Christian Schulz. Machine Learning for Graph and Hypergraph Clustering Problems (HOMELAND). DAAD (PROCOPE), Support for Travel and International Cooperation. Funded: 6T Euro.

## **Teaching Experience as Lecturer**

|         |  |
|---------|--|
| 2022-23 | INTRODUCTION TO PRACTICAL COMPUTER SCIENCE (BSc) |
| 2021-22 | 2xALGORITHMS AND DATA STRUCTURES I (BSc)         |
| 2021-22 | 2xALGORITHM ENGINEERING                          |
| 2018-23 | 5xALGORITHMS AND DATA STRUCTURES II              |
| 2019-20 | ADVANCED TOPICS IN ALGORITHMS                    |
| 2019-20 | NUMERICAL ALGORITHMS                             |
| 2019    | PARALLEL AND DISTRIBUTED ALGORITHMS              |
| 2018-19 | NUMERICAL ALGORITHMS                             |
| 2018    | ALGORITHMS AND DATA STRUCTURES (MSc)             |
| 2017-18 | ADVANCED ALGORITHMS                              |
| 2016    | ALGORITHMS II                                    |
| 2014-17 | 5xGRAPH PARTITIONING AND CLUSTERING              |

## **Research Interests**

Graph Partitioning and Clustering, Parallel Algorithms, Combinatorial Optimization, Big Data

## Open Source Software

|      |   |
|------|---|
| 2020 | DYNGRAPHLAB – DYNAMIC GRAPH ALGORITHMS                |
| 2020 | DMAX – DATA REDUCTION FOR MAXIMUM CUT                 |
| 2019 | KASVM – KARLSRUHE SUPPORT VECTOR MACHINE              |
| 2019 | DYREACH – DYNAMIC REACHABILITY                        |
| 2019 | VIECUT – VIENNA MINIMUM CUTS                          |
| 2018 | VIECLUS – VIENNA GRAPH CLUSTERING                     |
| 2018 | KAGEN – KARLSRUHE GRAPH GENERATION                    |
| 2017 | VIEM – VIENNA MAPPING AND SPARSE QUADRATIC ASSIGNMENT |
| 2017 | KAHYPAR – KARLSRUHE HYPERGRAPH PARTITIONING           |
| 2017 | KALP – KARLSRUHE LONGEST PATHS                        |
| 2015 | KAMIS – KARLSRUHE MAXIMUM INDEPENDENT SET             |
| 2015 | KADRAW – KARLSRUHE GRAPH DRAWING                      |
| 2013 | KAHIP – KARLSRUHE HIGH QUALITY PARTITIONING           |

## Supervised Student Research Assistants

M. Djurev, S. Lamm, M. Wegner, J. Ebbing, R. Williger, T. Ribizel, S. Biedermann, R. Andre, D. Seemaier, M. Schmitt, R. Paul, K. Kirchbach, Q. Cheng, J. Trummer, A. Chhabra, J. Holten, M. Haag, J. Borowitz, P. Steil

## Examiner in PhD Defenses of

M. Hartmann, G. Li

## Supervised Theses

M. Schuler (BA), J. Fietz (MA), M. Birn (MA), F. Ziegler (BA), A. Wagner (MA), K. Hübner (BA), M. Wegner (BA), S. Lamm (BA), V. Henne (MA), J. Dahlum (BA), J. Ebbing (BA), S. Lamm (MA), R. Williger (BA), M. Samson (BA), D. Hespe (MA), R. Andre (BA), Y. Kolev (BA), D. Seemaier (BA), S. Biedermann (BA), C. Öhl (BA), T. Ribizel (MA), M. Schmitt (BA), C. Mercatoris (BA), R. Zimmermann (BA), R. Paul (BA), D. Ferizovic (MA), D. Seemaier (MA), K. von Kirchbach (MA), W. Ost (MA), J. Trummer (BA), J. Niedermüller (MA), A. Stockinger (BA), A. Gellner (MA), T. Fuchs (BA), O. Kröger (MA), J. Trummer (MA), M. Haag (BA), K. Eyubov (BA), F. Hausberger (MA), H. Reinstädler (MA), R. Erhardt (MA), J. Borowitz (BA), D. Hammer (BA), P. Steil (BA), A. Chhabra (MA), K. Straube (MA), F. Wörner (BA)

*Currently running student projects:*

H. Reinstädler (MA), R. Erhardt (MA), P. Steil (BA), A. Chhabra (MA), K. Straube (MA), F. Wörner (BA)

## Book Chapters and Lecture Notes

- [1] David Bader, Andrea Kappes, Henning Meyerhenke, Peter Sanders, Christian Schulz and Dorothea Wagner. Benchmarking for Graph Clustering and Partitioning. In *Encyclopedia of Social Network Analysis and Mining*, 2014. Updated article appeared 2018. DOI: [https://doi.org/10.1007/978-1-4614-6170-8\\_23](https://doi.org/10.1007/978-1-4614-6170-8_23).
- [2] Christian Schulz and Sebastian Korbinian Bayer, Jan Jacob, Robert Hangu, Sergey Hayrapetyan, Demian Hespe, Christoph Hess, Sebastian Lamm, Eike Röhrs, Henning Schulz, Christian Steiger, Matthias Stumpp, Marvin Teichmann. Graph Partitioning and Graph Clustering in Theory and Practice. Lecture Notes. Karlsruhe Institute of Technology and Vienna PhD School of Informatics. 2015. PDF.
- [3] Aydin Buluc, Henning Meyerhenke, Ilya Safro, Peter Sanders, Christian Schulz. Recent Advances in Graph Partitioning. Algorithm Engineering: Selected Results and Surveys. Volume 9220 of LNCS. Springer-Verlag. 2016. DOI: [https://doi.org/10.1007/978-3-319-49487-6\\_4](https://doi.org/10.1007/978-3-319-49487-6_4).
- [4] Christian Schulz and Darren Strash. Graph Partitioning: Formulations and Applications to Big Data. In *Encyclopedia on Big Data Technologies*, Springer, 2019. DOI: [https://doi.org/10.1007/978-3-319-63962-8\\_312-2](https://doi.org/10.1007/978-3-319-63962-8_312-2).
- [5] Sonja Biedermann, Monika Henzinger, Christian Schulz and Bernhard Schuster. Vienna Graph Clustering. Invited chapter for *Methods in Molecular Biology: Protein-Protein Interaction Networks*, Volume 2074 of Methods in Molecular Biology, pages 215–231, Springer, 2020, DOI: [https://doi.org/10.1007/978-1-4939-9873-9\\_16](https://doi.org/10.1007/978-1-4939-9873-9_16).
- [6] Manuel Penschuck, Ulrik Brandes, Michael Hamann, Sebastian Lamm, Ulrich Meyer, Ilya Safro, Peter Sanders, and Christian Schulz. Recent Advances in Scalable Network Generation. Book chapter for Massive Graph Analytics, Hall/CRC, 2022.
- [7] Faisal Abu-Khzam, Sebastian Lamm, Matthias Mnich, Christian Schulz, Darren Strash. Recent Advances in Practical Data Reduction. In *Special Issue of SPP Big Data*, 2022, to appear.
- [8] Christian Schulz, Bora Ucar. Proceedings of 20th International Symposium on Experimental Algorithms, SEA 2022, Heidelberg, Germany, July 25-28, LIPIcs, Volume 233, ISBN 978-3-95977-251-8, 2022. DOI: <https://doi.org/10.4230/LIPIcs.SEA.2022>.
- [9] Ernestine Großmann, Tobias Heuer, Christian Schulz, Darren Strash. The PACE 2022 Parameterized Algorithms and Computational Experiments Challenge: Directed Feedback Vertex Set. In *IPEC*, 2022.

## Journal Articles

- [10] Ilya Safro, Peter Sanders, and Christian Schulz. Advanced Coarsening Schemes for Graph Partitioning. *ACM Journal of Experimental Algorithms*. Volume 19, Article No. 2.2, 2015. DOI: <http://doi.acm.org/10.1145/2670338>.

- [11] Heiko Papenfuß, Peter Sanders, and Christian Schulz. Turbo für Graphdatenbanken: Graphpartitionierung mit KaHIP. *JavaSPEKTRUM 01/2015*. PDF.
- [12] Roland Glantz, Henning Meyerhenke, and Christian Schulz. Tree-based Coarsening and Partitioning of Complex Networks. *Invited to special issue of ACM Journal of Experimental Algorithms*. Volume 21, Article No. 1, 2016. DOI: <http://doi.acm.org/10.1145/2851496>.
- [13] Peter Sanders and Christian Schulz. Scalable Generation of Scale-free Graphs. *Information Processing Letters*. Volume 116, Article No. 7, pages 489–491, 2016. DOI: <https://doi.org/10.1016/j.ipl.2016.02.004>.
- [14] Henning Meyerhenke, Peter Sanders and Christian Schulz. Partitioning (Hierarchically Clustered) Complex Networks via Size-Constrained Graph Clustering. *ACM Journal of Heuristics*, Volume 22, Issue 5, pages 759–782, 2016. DOI: <https://doi.org/10.1007/s10732-016-9315-8>.
- [15] Henning Meyerhenke, Peter Sanders and Christian Schulz. Parallel Graph Partitioning for Complex Networks. *IEEE Transactions on Parallel and Distributed Systems*, Volume 28, Issue 9, pages 2625–2638, 2017. DOI: <https://doi.org/10.1109/TPDS.2017.2671868>.
- [16] Sebastian Lamm, Peter Sanders, Christian Schulz, Darren Strash, and Renato F. Werneck. Finding Near-Optimal Independent Sets at Scale. *ACM Journal of Heuristics*, Volume 23, Issue 4, pages 207–229, 2017. DOI: <https://doi.org/10.1007/s10732-017-9337-x>.
- [17] Henning Meyerhenke, Martin Nöllenburg and Christian Schulz. Drawing Large Graphs by Multilevel Maxent-Stress Optimization. *IEEE Transactions on Visualization and Computer Graphics*, Volume 24, Issue 5, pages 1814–1827. 2018. DOI: <https://doi.org/10.1109/TVCG.2017.2689016>.
- [18] Monika Henzinger, Alexander Noe, Christian Schulz and Darren Strash. Practical Minimum Cut Algorithms. *Invited to special issue of ACM Journal of Experimental Algorithms (ACM JEA) for ALENEX 2018*, Volume 23, pages 1.9:1–1.8:22, 2018. DOI: <https://doi.org/10.1145/3274662>.
- [19] Daniel Funke, Sebastian Lamm, Ulrich Meyer, Peter Sanders, Christian Schulz, Darren Strash and Moritz von Looz. Communication-free Massively Distributed Graph Generation. *Invited to special issue of Journal of Parallel and Distributed Computing for IPDPS'18*, Volume 131, pages 200–217, 2019. DOI: <https://doi.org/10.1016/j.jpdc.2019.03.011>.
- [20] Demian Hespe, Christian Schulz and Darren Strash. Scalable Kernelization for Maximum Independent Sets. In *ACM Journal of Experimental Algorithms (ACM JEA)*, Volume 24, Issue 1, pages 1.16:1–1.16:22, 2019. DOI: <http://doi.acm.org/10.1145/3355502>.

- [21] Alexandra Henzinger, Alexander Noe and Christian Schulz. ILP-based Local Search for Graph Partitioning. In *ACM Journal of Experimental Algorithms (ACM JEA)*, Volume 25, Article No. 1.9, 2020. DOI: <https://doi.org/10.1145/3398634>.
- [22] Yaroslav Akhremtsev, Peter Sanders and Christian Schulz. High-Quality Shared-Memory Graph Partitioning. *IEEE Transactions on Parallel and Distributed Systems*, Volume 31, Issue 11, pages 2710–2722, 2020. DOI: <https://doi.org/10.1109/TPDS.2020.3001645>.
- [23] Christian Schulz, Jesper Larsson Träff and Konrad von Kirchbach. Better Process Mapping and Sparse Quadratic Assignment. In *ACM Journal of Experimental Algorithms (ACM JEA)*, Volume 25, Article No 1.11, 2020. DOI: <https://doi.org/10.1145/3409667>.
- [24] Orlando Moreira, Merten Popp and Christian Schulz. Evolutionary Multi-Level Acyclic Graph Partitioning. In *ACM Journal of Heuristics*, Volume 29, pages 771–799, 2020. DOI: <https://doi.org/10.1007/s10732-020-09448-8>.
- [25] Sherif Sakr, Angela Bonifati, Hannes Voigt, Alexandru Iosup, Khaled Ammar, Renzo Angles, Walid Aref, Marcelo Arenas, Maciej Besta, Peter A. Boncz, Khuzaima Daudjee, Emanuele Della Valle, Stefania Dumbrava, Olaf Hartig, Bernhard Haslhofer, Tim Hegeman, Jan Hidders, Katja Hose, Adriana Iamnitchi, Vasiliki Kalavri, Hugo Kapp, Wim Martens, M. Tamer Özsu, Eric Peukert, Stefan Plantikow, Mohamed Ragab, Matei R. Ripeanu, Semih Salihoglu, Christian Schulz, Petra Selmer, Juan F. Sequeda, Joshua Shinavier, Gábor Szárnyas, Riccardo Tommasini, Antonino Tumeo, Alexandru Uta, Ana Lucia Varbanescu, Hsiang-Yun Wu, Nikolay Yakovets, Da Yan, Eiko Yoneki. The Future is Big Graphs! A Community View on Graph Processing Systems. In *Communications of ACM (CACM)*, Volume 64, No. 9, pages 62–71, 2021. DOI: <https://doi.org/10.1145/3434642>.
- [26] Sebastian Schlag, Matthias Schmitt and Christian Schulz. Faster Support Vector Machines. In *ACM Journal of Experimental Algorithms (ACM JEA)*, Volume 26, Article No. 15, pages 1–21, 2021. DOI: <https://doi.org/10.1145/3484730>.
- [27] Marcelo Fonseca Faraj and Christian Schulz. Buffered Streaming Graph Partitioning. In *ACM Journal of Experimental Algorithms (ACM JEA)*, Volume 27, Article No. 1.10, pages 1–26, 2022. DOI: <https://doi.org/10.1145/3546911>.
- [28] Kathrin Hanauer, Christian Schulz and Jonathan Trummer. O’Reach: Even Faster Reachability in Large Graphs. Invited to special issue of *ACM Journal of Experimental Algorithms (ACM JEA) for SEA 2021*, Volume 27, Article No. 4.2, pages 1–27, 2022. DOI: <https://doi.org/10.1145/3556540>.
- [29] Sebastian Schlag, Tobias Heuer, Lars Gottesbüren, Yaroslav Akhremtsev, Christian Schulz, Peter Sanders. High-Quality Hypergraph Partitioning. In *ACM Journal of Experimental Algorithms (ACM JEA)*, to appear 2022.
- [30] Kathrin Hanauer, Monika Henzinger, Christian Schulz. Recent Advances in Fully Dynamic Graph Algorithms. In *ACM Journal of Experimental Algorithms (ACM JEA)*, to appear 2022.

- [31] Umit Catalyurek, Karen Devin, Marcelo Fonseca Faraj, Lars Gottesbüren, Tobias Heuer, Henning Meyerhenke, Peter Sanders, Sebastian Schlag, Christian Schulz, Daniel Seemaier and Dorothea Wagner. More Recent Advances in Graph Partitioning. In *ACM Computing Surveys*, to appear 2022.

## Conference Articles

- [32] Daniel Delling, Robert Görke, Christian Schulz and Dorothea Wagner. Orca Reduction and ContrAction Graph Clustering. In *Proceedings of the 5th International Conference on Algorithmic Aspects in Information and Management (AAIM)*, volume 5564 of LNCS, pages 152–165. Springer, 2009. DOI: [https://doi.org/10.1007/978-3-642-02158-9\\_14](https://doi.org/10.1007/978-3-642-02158-9_14).
- [33] Manuel Holtgrewe, Peter Sanders and Christian Schulz. Engineering a Scalable High Quality Graph Partitioner. In *24th IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, 2010. DOI: <https://doi.org/10.1109/IPDPS.2010.5470485>.
- [34] Vitaly Osipov, Peter Sanders, Christian Schulz and Manuel Holtgrewe. Engineering State-of-the-Art Graph Partitioning Libraries @KIT. In *Proceedings of the Workshop on Computational Methods in Science and Engineering (SimLabs@KIT)*, KIT Scientific Publishing, pages 117–130. 2010. PDF.
- [35] Peter Sanders and Christian Schulz. Engineering Multilevel Graph Partitioning Algorithms. In *Proceedings of the 19th European Symposium on Algorithms (ESA)*, volume 6942 of LNCS, pages 469–480. Springer, 2011. DOI: [https://doi.org/10.1007/978-3-642-23719-5\\_40](https://doi.org/10.1007/978-3-642-23719-5_40).
- [36] Peter Sanders and Christian Schulz. Distributed Evolutionary Graph Partitioning. In *Proceedings of the 14th Workshop on Algorithm Engineering and Experimentation (ALENEX)*, pages 16–19, 2012. DOI: <https://doi.org/10.1137/1.9781611972924.2>.
- [37] Ilya Safro, Peter Sanders and Christian Schulz. Advanced Coarsening Schemes for Graph Partitioning. In *Proceedings of the 11th Symposium on Experimental Algorithms (SEA)*, volume 7276 of LNCS, pages 369–380. Springer, 2012. DOI: [https://doi.org/10.1007/978-3-642-30850-5\\_32](https://doi.org/10.1007/978-3-642-30850-5_32).
- [38] Vitaly Osipov, Peter Sanders and Christian Schulz. Engineering Graph Partitioning Algorithms. In *Proceedings of the 11th Symposium on Experimental Algorithms (SEA)*, volume 7276 of LNCS, pages 18–26. Springer, 2012. DOI: [https://doi.org/10.1007/978-3-642-30850-5\\_3](https://doi.org/10.1007/978-3-642-30850-5_3).
- [39] Jonas Fietz, Matthias Krause, Peter Sanders, Christian Schulz and Vincent Heuveline. Optimized Hybrid Parallel Lattice Boltzmann Fluid Flow Simulations on Complex Geometries. In *Proceedings of the 18th International European Conference on Parallel Computing (Euro-Par)*, volume 7484 of LNCS, pages 818–829. Springer, 2012. DOI: [https://doi.org/10.1007/978-3-642-32820-6\\_81](https://doi.org/10.1007/978-3-642-32820-6_81).



- [40] Peter Sanders and Christian Schulz. High Quality Graph Partitioning. In *Proceedings of the 10th DIMACS Implementation Challenge Workshop: Graph Partitioning and Clustering*, pages 1–17, AMS, 2013. PDF.
- [41] Peter Sanders and Christian Schulz. Think Locally, Act Globally: Highly Balanced Graph Partitioning. In *Proceedings of the 12th Symposium on Experimental Algorithms (SEA)*, volume 7933 of LNCS, pages 164–175. Springer, 2013. DOI: [https://doi.org/10.1007/978-3-642-38527-8\\_16](https://doi.org/10.1007/978-3-642-38527-8_16).
- [42] Marcel Birn, Vitaly Osipov, Peter Sanders, Christian Schulz and Nodari Sitchinava. Efficient Parallel and External Matchings. In *Proceedings of the 19th International European Conference on Parallel Computing (Euro-Par)*, volume 8097 of LNCS, pages 659–670. Springer, 2013. DOI: [https://doi.org/10.1007/978-3-642-40047-6\\_66](https://doi.org/10.1007/978-3-642-40047-6_66).
- [43] Roland Glantz, Henning Meyerhenke and Christian Schulz. Tree-based Coarsening and Partitioning of Complex Networks. In *Proceedings of the 13th Symposium on Experimental Algorithms (SEA)*, volume 8504 of LNCS, pages 364–375. Springer, 2014. DOI: [https://doi.org/10.1007/978-3-319-07959-2\\_31](https://doi.org/10.1007/978-3-319-07959-2_31).
- [44] Henning Meyerhenke, Peter Sanders and Christian Schulz. Partitioning Complex Networks via Size-constrained Clustering. In *Proceedings of the 13th Symposium on Experimental Algorithms (SEA)*, volume 8504 of LNCS, pages 351–363. Springer, 2014. DOI: [https://doi.org/10.1007/978-3-319-07959-2\\_30](https://doi.org/10.1007/978-3-319-07959-2_30).
- [45] Yaroslav Akhremtsev, Peter Sanders and Christian Schulz. (Semi-)External Algorithms for Graph Partitioning and Clustering. In *Proceedings of the 17th Workshop on Algorithm Engineering and Experimentation (ALENEX)*, pages 33–43, 2015. DOI: <https://doi.org/10.1137/1.9781611973754.4>.
- [46] Henning Meyerhenke, Peter Sanders and Christian Schulz. Parallel Graph Partitioning for Complex Networks. In *29th IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, 2015. DOI: <https://doi.org/10.1109/IPDPS.2015.18>.
- [47] Michael Axtmann, Timo Bingmann, Peter Sanders and Christian Schulz. Practical Massively Parallel Sorting. In *Proceedings of the 27th ACM Symposium on Parallelism in Algorithms and Architectures (SPAA)*, pages 13–23. ACM, 2015. DOI: <https://doi.org/10.1145/2755573.2755595>.
- [48] Sebastian Lamm, Peter Sanders and Christian Schulz. Graph Partitioning for Independent Sets. In *Proceedings of the 14th Symposium on Experimental Algorithms (SEA)*, volume 8504 of LNCS, pages 68–81. Springer, 2015. DOI: [https://doi.org/10.1007/978-3-319-20086-6\\_6](https://doi.org/10.1007/978-3-319-20086-6_6).
- [49] Henning Meyerhenke, Martin Nöllenburg and Christian Schulz. Drawing Large Graphs by Multilevel Maxent-Stress Optimization. In *Proceedings of the 23rd International Symposium on Graph Drawing & Network Visualization (GD)*, volume 9411 of LNCS, pages 30–43. Springer, 2015. DOI: [https://doi.org/10.1007/978-3-319-27261-0\\_3](https://doi.org/10.1007/978-3-319-27261-0_3).

- [50] Nitin Ahuja, Matthias Bender, Peter Sanders, Christian Schulz and Andreas Wagner. Incorporating Road Networks into Territory Design. In *Proceedings of the 23rd International Conference on Advances in Geographic Information Systems (GIS)*. ACM Press, 2015. DOI: <https://doi.org/10.1145/2820783.2820800>.
- [51] Sebastian Schlag, Vitali Henne, Tobias Heuer, Henning Meyerhenke, Peter Sanders and Christian Schulz.  $k$ -way Hypergraph Partitioning via  $n$ -Level Recursive Bisection. In *Proceedings of the 18th Workshop on Algorithm Engineering and Experimentation (ALENEX)*, pages 53-67. 2016. DOI: <https://doi.org/10.1137/1.9781611974317.5>.
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