

Books

- Resch, Michael M., Wolfgang Bez, Erich Focht, Hiroaki Kobayashi, Jiaying Qi, and Sabine Roller, eds. *Sustained Simulation Performance 2015. Proceedings of the joint Workshop on Sustained Simulation Performance, University of Stuttgart (HLRS) and Tohoku University, 2015*. Springer, 2015. ISBN: 978-3-319-20339-3. DOI: 10.1007/978-3-319-20340-9.
- Resch, Michael, Xin Wang, Martin Galle, Wolfgang Bez, Hiroaki Kobayashi, and Sabine Roller, eds. *High Performance Computing on Vector Systems 2011*. Springer, Oct. 2011.
- Resch, Michael, Katharina Benkert, Xin Wang, Martin Galle, Wolfgang Bez, Hiroaki Kobayashi, and Sabine Roller, eds. *High Performance Computing on Vector Systems 2010*. Springer, 2010.
- Resch, Michael, Sabine Roller, Katharina Benkert, Martin Galle, Wolfgang Bez, and Hiroaki Kobayashi, eds. *High Performance Computing on Vector Systems 2009*. Springer, 2009.
- Resch, Michael, Sabine Roller, Katharina Benkert, Martin Galle, Wolfgang Bez, Hiroaki Kobayashi, and Toshio Hirayama, eds. *High Performance Computing on Vector Systems 2008*. Springer, 2008.
- Resch, Michael, Sabine Roller, Peter Lammers, Toshiyuki Furui, Martin Galle, and Wolfgang Bez, eds. *High Performance Computing on Vector Systems 2007*. Springer, 2007.
- Roller, Sabine. *Ein numerisches Verfahren zur Simulation schwach kompressibler Strömungen (PhD Thesis)*. Logos Berlin, June 2005.

Journal Papers

- Totounferoush, Amin, Neda Ebrahimi Pour, Juri Schröder, Sabine Roller, and Miriam Mehl. “A data-based inter-code load balancing method for partitioned solvers”. In: *Journal of Computational Science* 51 (2021), p. 101329. ISSN: 1877-7503. DOI: 10.1016/j.jocs.2021.101329. URL: <https://www.sciencedirect.com/science/article/pii/S1877750321000272>.
- Anand, Nikhil, Neda Ebrahimi Pour, Harald Klimach, and Sabine Roller. “Utilization of the Brinkman Penalization to Represent Geometries in a High-Order Discontinuous Galerkin Scheme on Octree Meshes”. In: *Symmetry* 11.9 (2019). ISSN: 2073-8994. DOI: 10.3390/sym11091126. URL: <https://www.mdpi.com/2073-8994/11/9/1126>.
- Hess, Volker, Thomas von Rekowski, Sabine Roller, and Nicole Walger. “Synergieeffekte durch Kooperation: Hintergründe, Aufgaben und Potentiale des Projekts FoDaKo”. In: *Bibliothek Forschung & Praxis* 43.1 (2019), pp. 98–104. ISSN: 1865-7648. DOI: 10.1515/bfp-2019-2009. URL: <https://www.degruyter.com/view/j/bfup.2019.43.issue-1/bfp-2019-2009/bfp-2019-2009.xml>.
- Valen-Sendstad, Kristian, Aslak W. Bergersen, Yuji Shimogonya, Leonid Goubergrits, Jan Bruening, Jordi Pallares, Salvatore Cito, Senol Piskin, Kerem Pekkan, Arjan J. Geers, Ignacio Larrabide, Saikiran Rapaka, Viorel Mihalef, Wenyu Fu, Aike Qiao, Kartik Jain, Sabine Roller, Kent-Andre Mardal, Ramji Kamakoti, Thomas Spirka, Neil Ashton, Alistair Revell, Nicolas Aristokleous, J. Graeme Houston, Masanori Tsuji, Fujimaro Ishida, Prahlad G.

- Menon, Leonard D. Browne, Stephen Broderick, Masaaki Shojima, Satoshi Koizumi, Michael Barbour, Alberto Aliseda, Hernán G. Morales, Thierry Lefèvre, Simona Hodis, Yahia M. Al-Smadi, Justin S. Tran, Alison L. Marsden, Sreeja Vaippummadhom, G. Albert Einstein, Alistair G. Brown, Kristian Debus, Kuniyasu Niizuma, Sherif Rashad, Shin-ichiro Sugiyama, M. Owais Khan, Adam R. Updegrove, Shawn C. Shadden, Bart M. W. Cornelissen, Charles B. L. M. Majoie, Philipp Berg, Sylvia Saalfeld, Kenichi Kono, and David A. Steinman. “Real-World Variability in the Prediction of Intracranial Aneurysm Wall Shear Stress: The 2015 International Aneurysm CFD Challenge”. In: *Cardiovascular Engineering and Technology* 9.4 (Dec. 2018), pp. 544–564. ISSN: 1869-4098. DOI: 10.1007/s13239-018-00374-2.
- Zudrop, Jens, Kannan Masilamani, Sabine Roller, and Pietro Asinari. “A robust lattice Boltzmann method for parallel simulations of multicomponent flows in complex geometries”. In: *Computers and Fluids* 153 (2017), pp. 20–33. ISSN: 0045-7930. DOI: 10.1016/j.compfluid.2017.04.021. URL: <http://www.sciencedirect.com/science/article/pii/S0045793017301482>.
- Jain, Kartik, Sabine Roller, and Kent-André Mardal. “Transitional flow in intracranial aneurysms—a space and time refinement study below the Kolmogorov scales using Lattice Boltzmann Method”. In: *Computers & Fluids* 127 (Mar. 2016), pp. 36–46. DOI: doi:10.1016/j.compfluid.2015.12.011.
- Qi, Jiaying, Harald Klimach, and Sabine Roller. “Implementation of the compact interpolation within the octree based Lattice Boltzmann solver Musubi”. In: *Computers & Mathematics with Applications* 78.4 (2016), pp. 1131–1141. ISSN: 0898-1221. DOI: 10.1016/j.camwa.2016.06.025. URL: <http://www.sciencedirect.com/science/article/pii/S0898122116303571>.
- Johannink, Matthias, Kannan Masilamani, Adel Mhamdi, Sabine Roller, and Wolfgang Marquardt. “Predictive Pressure Drop Models for Membrane Channels with Non-woven and Woven Spacers”. In: *Desalination* 376 (2015), pp. 41–54. ISSN: 0011-9164. DOI: 10.1016/j.desal.2015.07.024. URL: <http://www.sciencedirect.com/science/article/pii/S0011916415300321>.
- Klimach, Harald G., Jens Zudrop, and Sabine P. Roller. “Generation of high order geometry representations in Octree meshes”. In: *PeerJ Computer Science* 1 (Nov. 2015), e35. DOI: 10.7717/peerj-cs.35.
- Hasert, Manuel, Kannan Masilamani, Simon Zimny, Harald Klimach, Jiaying Qi, Jörg Bernsdorf, and Sabine Roller. “Complex fluid simulations with the parallel tree-based Lattice Boltzmann solver Musubi”. In: *Journal of Computational Science* 5.5 (Sept. 2014), pp. 784–794. ISSN: 1877-7503. DOI: 10.1016/j.jocs.2013.11.001.
- Zudrop, Jens, Sabine Roller, and Pietro Asinari. “Lattice Boltzmann scheme for electrolytes by an extended Maxwell-Stefan approach”. In: *Phys. Rev. E* 89 (5 May 2014), p. 053310. DOI: 10.1103/PhysRevE.89.053310.
- Zimny, Simon, Bastien Chopard, Orestis Malaspinas, Eric Lorenz, Kartik Jain, Sabine Roller, and Jörg Bernsdorf. “A Multiscale Approach for the Coupled Simulation of Blood Flow and Thrombus Formation in Intracranial Aneurysms”. In: *Procedia Computer Science* 18 (2013). 2013 International Conference on Computational Science, pp. 1006–1015. ISSN: 1877-0509. DOI: 10.1016/j.procs.2013.05.266.
- Neudorfer, Jonathan, Andreas Stock, Jens Flamm, Florian Hindenlang, Gregor Gassner, Claus-Dieter Munz, Rudolf Schneider, and Sabine Roller. “Numerical Investigation of High-Order Gyrotron Mode Propagation in Launchers

- at 170 GHz”. In: *IEEE Transactions on Plasma Science* 40.6 (June 2012), pp. 1512–1521. ISSN: 0093-3813. DOI: 10.1109/TPS.2012.2191575.
- Stock, Andreas, Jonathan Neudorfer, Marc Riedlinger, Georg Pirrung, Gregor Gassner, Rudolf Schneider, Sabine Roller, and Claus-Dieter Munz. “Three-Dimensional Numerical Simulation of a 30 GHz Gyrotron Resonator with an Explicit High-Order Discontinuous Galerkin based Particle-In-Cell Method”. In: *IEEE Transactions on Plasma Science* 40 (7 July 2012), pp. 1860–1870.
- Hasert, Manuel, Jörg Bernsdorf, and Sabine Roller. “Lattice Boltzmann Simulation of non-Darcy Flow”. In: *Procedia Computer Science* 4 (2011), pp. 1048–1057.
- “Towards aeroacoustic sound generation by flow through porous media”. In: *Phil. Trans. R. Soc. A* 369.1945 (June 2011), pp. 2467–2475.
- Stindl, Torsten, Jonathan Neudorfer, Andres Stock, Monika Auweter-Kurtz, Claus-Dieter Munz, Sabine Roller, and Rudolf Schneider. “Comparison of coupling techniques in a high-order discontinuous Galerkin based particle in cell solver”. In: *J. Phys. D: Applied Physics* 44 (2011), p. 194004.
- Klimach, Harald, Sabine Roller, and Claus-Dieter Munz. “Heterogeneous Parallelism of Aero-Acoustic Applications Using PACX-MPI”. In: *GSIS Interdisciplinary Information Sciences* 15.1 (2009), pp. 79–83.
- Roller, Sabine, Michael Resch, Martin Galle, and Wolfgang Bez. “The Teraflop Workbench - Enhancing High Sustained Performance on Vector Systems”. In: *GSIS Interdisciplinary Information Sciences* 15.1 (2009), pp. 45–49.
- Munz, Claus-Dieter, Michael Dumbser, and Sabine Roller. “Linearized acoustic perturbation equations for low Mach number flow with variable density and temperature”. In: *Journal of Comput. Phys.* 224 (2007), pp. 352–364.
- Roller, Sabine, Roland Fortenbach, Thomas Schwartzkopff, and Claus-Dieter Munz. “The numerical modeling of acoustic wave propagation using the multiple pressure variables approach”. In: *Comput. Visual. Sci* 9 (2006), pp. 229–237.
- Roller, Sabine, Thomas Schwartzkopff, Roland Fortenbach, Michael Dumbser, and Claus-Dieter Munz. “Calculation of Low Mach number acoustics: a comparison of MPV, EIF and Linearized Euler equations”. In: *Mathematical Modelling and Numerical Analysis (M2AN)* 39.3 (2005), pp. 561–576.
- Munz, Claus-Dieter, Sabine Roller, Rupert Klein, and Karl J. Geratz. “The Extension of Incompressible Flow Solvers to the Weakly Compressible Regime”. In: *Computers and Fluids* 32.2 (Sept. 2003), pp. 173–196.
- Klein, Rupert, Nicola Botta, L. Hofmann, Andreas Meister, Claus-Dieter Munz, Sabine Roller, and T. Sonar. “Asymptotic Adaptive Methods for Multiscale Problems in Fluid Mechanics”. In: *Journal of Engineering Mathematics* 39.2 (2001), pp. 261–343.
- Roller, Sabine and Claus-Dieter Munz. “A low Mach number scheme based on multi-scale asymptotics”. In: *Comput. Visual. Sci* 3 (2000), pp. 85–91.
- Ratzel, Marc, Sabine Roller, and Claus-Dieter Munz. “A semi-implicit pressure correction scheme for low Mach number flows”. In: *Proceedings of the 8th International Symposium on Computational Fluid Dynamics* (Bremen, Sept. 5–10, 1999). Vol. 9. 1. 1999.
- Munz, Claus-Dieter and Sabine Roller. “Multiple Pressure Variables (MPV) Method for weakly compressible Fluid Flow”. In: *GAMM 96. Proceedings of the Annual Meeting* (Prague, Czech Republic, May 27–31, 1996). Vol. 77. ZAMM. Prag: Akademie Verlag, 27. - 31. May 1997.

Roller, Sabine, Claus-Dieter Munz, Karl J. Geratz, and Rupert Klein. “The Multiple Pressure Variables Method for Weakly Compressible Fluids”. In: *GAMM 96. Proceedings of the Annual Meeting* (Prague, Czech Republic, May 27–31, 1996). Ed. by M. Hortel and J. Marek. Vol. 77. ZAMM S2. Akademie Verlag, 1997, pp. 481–484. DOI: 10.1002/zamm.19970771403.

Other Peer Reviewed Papers

Ebrahimi Pour, Neda, Verena Krupp, Harald Klimach, and Sabine Roller. “Load Balancing for Immersed Boundaries in Coupled Simulations”. In: *Sustained Simulation Performance 2018 and 2019*. Ed. by Michael M. Resch, Yevgeniya Kovalenko, Wolfgang Bez, Erich Focht, and Hiroaki Kobayashi. Springer International Publishing, 2019, pp. 185–201. DOI: 10.1007/978-3-030-39181-2_15.

Klimach, Harald and Sabine Roller. “Using the NEC Aurora TSUBASA for High-Order Discontinuous Galerkin in Ateles”. In: *Sustained Simulation Performance 2018 and 2019*. Ed. by Michael M. Resch, Yevgeniya Kovalenko, Wolfgang Bez, Erich Focht, and Hiroaki Kobayashi. Springer International Publishing, 2019, pp. 57–68. DOI: 10.1007/978-3-030-39181-2_6.

Totounferoush, Amin, Neda Ebrahimi Pour, Juri Schroder, Sabine Roller, and Miriam Mehl. “A new load balancing approach for coupled multi-physics simulations”. In: *In Proceedings of IEEE International Parallel and Distributed Processing Symposium Workshops (IPDPSW)* (Rio de Janeiro, Brazil, May 20–24, 2019). 2019. DOI: 10.1109/IPDPSW.2019.00115.

Ebrahimi Pour, Neda and Sabine Roller. “Error investigation for coupled simulations using Discontinuous Galerkin method for discretisation”. In: *In Proceedings of ECCM VI / ECFD VII* (Glasgow, UK, June 11–15, 2018). 2018.

Ebrahimi Pour, Neda, Verena Krupp, Harald Klimach, and Sabine Roller. “Coupled Simulation with Two Coupling Approaches on Parallel Systems”. In: *Sustained Simulation Performance 2017*. Ed. by Michael M. Resch, Wolfgang Bez, Erich Focht, Michael Gienger, and Hiroaki Kobayashi. Springer International Publishing, 2017, pp. 151–164. DOI: 10.1007/978-3-319-66896-3_10.

Klimach, Harald, Jiaying Qi, Stephan Walter, and Sabine Roller. “Vectorization of high-order DG in Ateles for the NEC SX-ACE”. In: *Sustained Simulation Performance 2017*. Ed. by Michael M. Resch, Wolfgang Bez, Erich Focht, Michael Gienger, and Hiroaki Kobayashi. Springer International Publishing, 2017, pp. 75–88. DOI: 10.1007/978-3-319-66896-3_10.

Lopez, Ania, Raimund Vogl, and Sabine Roller. “Research Data Infrastructures - A Perspective for the State of North Rhine-Westphalia in Germany”. In: *EUNIS 2017: shaping the digital future of universities*. Book of Proceedings, EUNIS 23rd Annual Congress (Münster, Germany, June 7–9, 2017). European University Information Systems Organization (EUNIS), 2017, pp. 105–112. DOI: 10.17879/21299722960.

Klimach, Harald, Jiaying Qi, and Sabine Roller. “APES on SX-ACE”. In: *Sustained Simulation Performance 2016*. Ed. by Michael M. Resch, Wolfgang Bez, Erich Focht, Nisarg Patel, and Hiroaki Kobayashi. Springer International Publishing, 2016. DOI: 10.1007/978-3-319-66896-3_10.

- Krupp, Verena, Kannan Masilamani, Harald Klimach, and Sabine Roller. “Efficient Coupling of Fluid and Acoustic Interaction on Massive Parallel Systems”. In: *Sustained Simulation Performance 2016*. Ed. by Michael M. Resch, Wolfgang Bez, Erich Focht, Nisarg Patel, and Hiroaki Kobayashi. Springer International Publishing, 2016, pp. 61–81. DOI: 10.1007/978-3-3199-46735-1_6.
- Qi, Jiaying, Kartik Jain, Harald Klimach, and Sabine Roller. “Performance Evaluation of the LBM Solver Musubi on Various HPC Architectures”. In: *Parallel Computing: On the Road to Exascale*. Ed. by Gerhard R. Joubert, Hugh Leather, Mark Parsons, Frans Peters, and Mark Sawyer. Vol. 27. Advances in Parallel Computing, 2016, pp. 807–816.
- Blom, David S., Verena Krupp, Alexander H. Van Zuijlen, Harald Klimach, Sabine Roller, and Hester Bijl. “On parallel scalability aspects of strongly coupled partitioned fluid-structure-acoustics interaction”. In: *Proceedings of the 6th international conference on computational methods for coupled problems in science and engineering* (Venice, Italy, May 18–20, 2015). Ed. by Bernhard A. Schrefler, Eugenio Oñate, and Manolis Papadrakakis. Barcelona, Spain: CIMNE, 2015, pp. 556–565.
- Bungartz, Hans-Joachim, Harald Klimach, Verena Krupp, Florian Lindner, Miriam Mehl, Sabine Roller, and Benjamin Uekermann. “Fluid-Acoustics Interaction on Massively Parallel Systems”. In: *International Workshop on Computational Engineering CE 2014* (Stuttgart, Germany, Oct. 6–10, 2014). Ed. by Miriam Mehl, Manfred Bischoff, and Michael Schäfer. Lecture Notes in Computational Science and Engineering. accepted for publication. Heidelberg, Berlin: Springer, 2015.
- Masilamani, Kannan, Harald Klimach, and Sabine Roller. “Highly Efficient Integrated Simulation of Electro-Membrane Processes for Desalination of Sea Water”. In: *High Performance Computing in Science and Engineering '15*. Ed. by Wolfgang E. Nagel, Dietmar B. Kröner, and Michael M. Resch. Springer Cham Heidelberg New York Dordrecht London, 2015, pp. 579–590. ISBN: 978-3-319-24631-4. DOI: 10.1007/978-3-319-24633-8_37.
- Qi, Jiaying, Manuel Hasert, Harald Klimach, and Sabine Roller. “Aeroacoustic Simulation of Flow Through Porous Media Based on Lattice Boltzmann Method”. In: *Sustained Simulation Performance 2015*. Ed. by Michael Resch, Wolfgang Bez, Erich Focht, Hiroaki Kobayashi, Jiaying Qi, and Sabine Roller. Springer International Publishing, 2015, pp. 195–204. DOI: 10.1007/978-3-319-20340-9_16.
- Klimach, Harald, Kartik Jain, and Sabine Roller. “End-to-end parallel simulations with APES”. In: *Parallel Computing: Accelerating Computational Science and Engineering (CSE)*. Ed. by Michael Bader, Arndt Bode, Hans-Joachim Bungartz, Michael Gerndt, Gerhard R. Joubert, and Frans Peters. Vol. 25. Advances in Parallel Computing. Munich, Germany: IOS Press, Sept. 2014, pp. 703–711.
- Masilamani, Kannan, Harald Klimach, and Sabine Roller. “Highly Efficient Integrated Simulation of Electro-Membrane Processes for Desalination of Sea Water”. In: *High Performance Computing in Science and Engineering '14*. Ed. by Wolfgang E. Nagel, Dietmar B. Kröner, and Michael M. Resch. Springer Cham Heidelberg New York Dordrecht London, 2014, pp. 533–543. ISBN: 978-3-319-10809-4. DOI: 10.1007/978-3-319-10810-0_35.

- Jain, Kartik, Simon Zimny, Harald Klimach, and Sabine Roller. “Thrombosis modeling in stented cerebral aneurysms with Lattice Boltzmann method”. In: *Proceedings of the 26th Nordic Seminar on Computational Mechanics* (Oslo, Norway, Oct. 23–25, 2013). 2013, pp. 206–209.
- Masilamani, Kannan, Harald Klimach, and Sabine Roller. “Highly Efficient Integrated Simulation of Electro-Membrane Processes for Desalination of Sea Water”. In: *High Performance Computing in Science and Engineering '13*. Ed. by Wolfgang E. Nagel, Dietmar B. Kröner, and Michael M. Resch. Springer Cham Heidelberg New York Dordrecht London, 2013, pp. 493–508. ISBN: 978-3-319-02164-5. DOI: 10.1007/978-3-319-02165-2_34.
- Masilamani, Kannan, Jens Zudrop, and Sabine Roller. “Towards simulation of electro-dialytic sea water desalination”. In: *Sustained Simulation Performance 2013*. Ed. by Michael Resch, Yevgeniya Kovalenko, Eric Focht, Wolfgang Bez, and Hiroaki Kobayashi. Springer International Publishing, 2013, pp. 137–146. ISBN: 978-3-319-01439-5. DOI: 10.1007/978-3-319-01439-5_10.
- Zimny, Simon, Kannan Masilamani, Kartik Jain, and Sabine Roller. “Lattice Boltzmann Simulations On Complex Geometries”. In: *Sustained Simulation Performance 2013*. Ed. by Michael Resch, Yevgeniya Kovalenko, Eric Focht, Wolfgang Bez, and Hiroaki Kobayashi. Springer International Publishing, 2013, pp. 49–62. ISBN: 978-3-319-01439-5. DOI: 10.1007/978-3-319-01439-5_4.
- Bernsdorf, Jörg, Jiaying Qi, Harald Klimach, and Sabine Roller. “A Framework for the Numerical Simulation of Early Stage Aneurysm Formation with the Lattice Boltzmann Method”. In: *Sustained Simulation Performance 2012*. Ed. by Michael Resch, Xin Wang, Wolfgang Bez, Erich Focht, and Hiroaki Kobayashi. Springer, 2012, pp. 115–122.
- Harlacher, Daniel F., Manuel Hasert, Harald Klimach, Simon Zimny, and Sabine Roller. “Tree Based Voxelization of STL Data”. In: *High Performance Computing on Vector Systems 2011*. Ed. by Michael Resch, Xin Wang, Wolfgang Bez, Erich Focht, Hiroaki Kobayashi, and Sabine Roller. Springer Berlin Heidelberg, 2012, pp. 81–92. ISBN: 978-3-642-22244-3. DOI: 10.1007/978-3-642-22244-3_6.
- Harlacher, Daniel F., Harald Klimach, Sabine Roller, Christian Siebert, and Felix Wolf. “Dynamic Load Balancing for Unstructured Meshes on Space-Filling Curves”. In: *2012 IEEE 26th International Parallel and Distributed Processing Symposium Workshops & PhD Forum (IPDPSW)* (Shanghai, China, May 21–25, 2012). 2012, pp. 1661–1669.
- Harlacher, Daniel F., Sabine Roller, Florian Hindenlang, Claus-Dieter Munz, Tim Kraus, Martin Fischer, Koen Geurts, Matthias Meinke, Tobias Klühspies, Volker Metsch, and Katharina Benkert. “Highly Efficient and Scalable Software for the Simulation of Turbulent Flows in Complex Geometries”. In: *High Performance Computing in Science and Engineering '11*. Ed. by Wolfgang E. Nagel, Dietmar B. Kröner, and Michael M. Resch. Springer Berlin Heidelberg, 2012, pp. 289–307. ISBN: 978-3-642-23869-7. DOI: 10.1007/978-3-642-23869-7_22.
- Hasert, Manuel, Harald Klimach, Jörg Bernsdorf, and Sabine P. Roller. “Aeroacoustic Validation of the Lattice Boltzmann Method on Non-Uniform Grids”. In: *ECCOMAS 2012* (Vienna, Austria, Sept. 10–14, 2012). Ed. by Josef Eberhardsteiner, Helmut J. Böhm, and Franz G. Rammerstorfer. German Research School for Simulation Sciences GmbH, Schinkelstr. 2a, 52062 Aachen,

- Germany and RWTH Aachen University, Germany. Vienna, Austria, Oct. 2012, pp. 2376–2393.
- Klimach, Harald G., Manuel Hasert, Jens Zudrop, and Sabine P. Roller. “Distributed octree mesh infrastructure for flow simulations”. In: *ECCOMAS 2012 - European Congress on Computational Methods in Applied Sciences and Engineering, e-Book Full Papers* (Vienna, Austria, Sept. 10–14, 2012). Ed. by Josef Eberhardsteiner, Helmut J. Böhm, and Franz G. Rammerstorfer. Vienna, Austria, Oct. 2012.
- Masilamani, Kannan, Jens Zudrop, Khaled Ibrahim, Matthias Johannink, Harald Klimach, Jörg Bernsdorf, Adel Mhamdi, E. M. Fernandez Sanchis, A. Hauser, Wolfgang Marquardt, and Sabine Roller. “Large scale flow simulation with complex spacer geometry in electro dialysis for sea water desalination”. In: *Proceedings of the European Congress on Computational Methods in Applied Sciences and Engineering ECCOMAS 2012* (Vienna, Austria, Sept. 10–14, 2012). Oct. 2012.
- Roller, Sabine, Jörg Bernsdorf, Harald Klimach, Manuel Hasert, Daniel Harlacher, Metin Cakircali, Simon Zimny, Kannan Masilamani, Laura Didinger, and Jens Zudrop. “An Adaptable Simulation Framework Based on a Linearized Octree”. In: *High Performance Computing on Vector Systems 2011*. Ed. by Michael Resch, Xin Wang, Wolfgang Bez, Erich Focht, Hiroaki Kobayashi, and Sabine Roller. Springer Berlin Heidelberg, 2012, pp. 93–105. ISBN: 978-3-642-22244-3. DOI: 10.1007/978-3-642-22244-3_7.
- Stock, Andreas, Jonathan Neudorfer, B. Steinbusch, Torsten Stindl, Rudolf Schneider, Sabine Roller, Claus-Dieter Munz, and Monika Auweter-Kurtz. “Three-Dimensional Gyrotron Simulation Using a High-Order Particle-in-Cell Method”. In: *High Performance Computing in Science and Engineering '11*. Ed. by Wolfgang E. Nagel, Dietmar B. Kröner, and Michael M. Resch. Springer Berlin Heidelberg, 2012, pp. 637–649. ISBN: 978-3-642-23869-7. DOI: 10.1007/978-3-642-23869-7_47.
- Benkert, Katharina, Edgar Gabriel, and Sabine Roller. “Timing Collective Communication in an Empirical Optimization Framework”. In: *Proceedings of the Second International Conference on Parallel, Distributed, Grid and Cloud Computing for Engineering* (Ajaccio, Corsica, France, Apr. 12–15, 2011). Ed. by P. Ivanyi and B.H.V. Topping. Stirlingshire, UK, 2011. ISBN: 978-1-905088-44-7.
- Hasert, Manuel, Harald Klimach, and Sabine Roller. “CAF versus MPI - Applicability of Coarray Fortran to a Flow Solver”. In: *Recent Advances in the Message Passing Interface*. Ed. by Yiannis Cotronis, Anthony Danalis, Dimitrios Nikolopoulos, and Jack Dongarra. Vol. 6960. Lecture Notes in Computer Science. Springer Berlin / Heidelberg, 2011, pp. 228–236. ISBN: 978-3-642-24448-3. DOI: 10.1007/978-3-642-24449-0_26.
- Klimach, Harald and Sabine Roller. “Distributed Coupling for Multi-Scale Simulations”. In: *Proceedings of the Second International Conference on Parallel, Distributed, Grid and Cloud Computing for Engineering* (Ajaccio, Corsica, France, Apr. 12–15, 2011). Ed. by P. Ivanyi and B.H.V. Topping. Stirlingshire, UK: Civil-Comp Ltd., 2011. ISBN: 978-1-905088-44-7.
- Neudorfer, Jonathan, Torsten Stindl, Rudolf Schneider, Sabine Roller, Claus-Dieter Munz, and Monika Auweter-Kurtz. “Three-dimensional Particle-In-Cell Simulation of a Pulsed Plasma Thruster: Modeling and Challenges”.

- In: *Proceedings of 32nd International Electric Propulsion Conference* (Wiesbaden, Germany, Sept. 2011). 2011.
- Neudorfer, Jonathan, Torsten Stindl, Andreas Stock, Rudolf Schneider, Dejan Petkow, Sabine Roller, Claus-Dieter Munz, and Monika Auweter-Kurtz. “Three-Dimensional Simulation of Rarefied Plasma Flows Using a High Order Particle-in-Cell Method”. In: *High Performance Computing in Science and Engineering '10*. Ed. by Wolfgang E. Nagel, Dietmar B. Kröner, and Michael M. Resch. Springer Berlin Heidelberg, 2011, pp. 593–604. ISBN: 978-3-642-15748-6. DOI: 10.1007/978-3-642-15748-6_43.
- Stock, Andreas, Jonathan Neudorfer, Danilo D’Andrea, Claus-Dieter Munz, Rudolf Schneider, and Sabine Roller. “High-Order PIC Simulation of High-Power Millimeter Wave Sources Components”. In: *Proceedings of 38th Plasma Physics Conference (EPS), Strasbourg, June 2011* (Strasbourg, France, June 27–July 1, 2011). Ed. by A. Becoulet. Strasbourg, France, 2011.
- Stock, Andreas, Jonathan Neudorfer, Claus-Dieter Munz, Sabine Roller, Rudolf Schneider, and Danilo D’Andrea. “High-order PIC simulations of microwave sources”. In: *36th International Conference on Infrared, Millimeter and Terahertz Waves (IRMMW-THz), 2011* (Houston, Texas, USA, Oct. 2–7, 2011). 2011, pp. 1–2.
- Flamm, Jens, Jian-Bo Jin, Jonathan Neudorfer, Sabine Roller, and Manfred Thumm. “Investigations on wave propagation in launchers of advanced gyrotron output couplers”. In: *35th International Conference on Infrared Millimeter and Terahertz Waves (IRMMW-THz)* (Sept. 2010), pp. 1–2.
- Klimach, Harald and Sabine Roller. “A Multi-Scale Coupling Scheme on Heterogeneous Supercomputers”. In: *Proceedings of the Seventh International Conference on Engineering Computational Technology*. Ed. by B.H.V. Topping, J.M. Adam, F.J. Pallarés, R. Bru, and M.L. Romero. Civil-Comp Press, 2010. ISBN: 978-1-905088-41-6.
- Klimach, Harald, Sabine Roller, Jens Utzmann, and Claus-Dieter Munz. “Simulation of Automotive Injector Nozzle Noise with fully coupled CFD/CAA Solver”. In: *Proceedings of the V European Conference on Computational Fluid Dynamics ECCOMAS CFD 2010* (Lisbon, Portugal, June 14–17, 2010). Ed. by J.C.F. Pereira, A. Sequeira, and J.M.C. Pereira. June 2010. ISBN: 978-989-96778-1-4.
- Fertig, Markus, Dejan Petkow, Torsten Stindl, Monika Auweter-Kurtz, Martin Quandt, Claus-Dieter Munz, Jonathan Neudorfer, Sabine Roller, Danilo D’Andrea, and Rudolf Schneider. “Hybrid Code Development for the Numerical Simulation of Instationary Magnetoplasma-dynamic Thrusters”. In: *Transactions of the High Performance Computing Center, Stuttgart (HLRS) 2008 High Performance Computing in Science and Engineering '08.8* (Jan. 2009), pp. 585–597.
- Hérenger, Hubert, Sabine Roller, and Eberhard Göde. “Implementation of a Virtual Turbine - Toward interactive design of hydraulic turbomachinery”. In: *Proceedings of the Fourth Open FOAM Workshop* (Montreal, Canada). 2009.
- “Interactive Design of Hydraulic Turbomachinery”. In: *Proceedings of the Twelfth International Conference on Civil, Structural and Environmental Engineering Computing* (Funchal, Madeira, Portugal, Sept. 1–4, 2009). Ed. by B.H.V. Topping, Luis F. Costa Neves, and Rui C. Barros. Vol. Paper 262.

- Stirlingshire, UK: Civil-Comp Press, 2009, pp. 4023–4039. DOI: 104203/ccp.91.262.
- Hérenger, Hubert, Sabine Roller, and Eberhard Göde. “Interactive Design of Hydraulic Turbomachines”. In: *International Conference on Computational Modelling and Advanced Simulations CMAS* (Bratislava, Slovakia, June 30, 2009). 2009.
- Klimach, Harald, Sabine P. Roller, Jens Utzmann, and Claus-Dieter Munz. “Parallel Coupling of Heterogeneous Domains with KOP3D using PACX-MPI”. In: *Parallel Computational Fluid Dynamics 2007*. Ed. by Timothy J. Barth, Michael Griebel, David E. Keyes, Risto M. Nieminen, Dirk Roose, and Tamar Schlick. Vol. 67. Lecture Notes in Computational Science and Engineering. Springer Berlin Heidelberg, 2009, pp. 339–345. ISBN: 978-3-540-92744-0. DOI: 10.1007/978-3-540-92744-0_42.
- Neudorfer, Jonathan, Claus-Dieter Munz, Torsten Stindl, Markus Fertig, Sabine Roller, Rudolf Schneider, and Monika Auweter-Kurtz. “Particle In Cell Simulation Using a Discontinuous Galerkin Method”. In: *Proceedings of 31st International Electric Propulsion Conference*. Sept. 2009.
- Neudorfer, Jonathan, Sabine Roller, and Claus-Dieter Munz. “Simulation of Plasma Flows Using PIC, DSMC and Fokker-Planck Methods”. In: *Particle-Based Methods - Fundamentals and Applications*. Ed. by Eugenio Oñate and Roger Owen. Barcelona, Spain: CIMNE, Nov. 2009, pp. 386–388. ISBN: 978-84-96736-82-5.
- Wesner, Stefan, Harald Klimach, and Sabine Roller. “Challenges and opportunities of hybrid computing systems”. In: *High Performance Computing on Vector Systems 2009*. Ed. by Michael Resch, Sabine Roller, Katharina Benkert, Martin Galle, Wolfgang Bez, and Hiroaki Kobayashi. Springer, 2009.
- Klimach, Harald, Claus-Dieter Munz, Sabine Roller, Jens Utzmann, and A.V. Tscherjurina. “Heterogeneous Parallelism with KOP-3D using PACX-MPI”. In: *Scientific Papers of State University of Kemerovo. Innovative resources of Kuzbass: IT-Technologies 2008*. INT, 2008, pp. 356–360. ISBN: 978-5-8353-0692-3.
- Klimach, Harald, Sabine Roller, and Claus-Dieter Munz. “Heterogeneous parallel aero-acoustics using PACX-MPI”. In: *High Performance Computing on Vector Systems 2008*. Ed. by Michael Resch, Sabine Roller, Katharina Benkert, Martin Galle, Wolfgang Bez, Hiroaki Kobayashi, and Toshio Hirayama. Springer, 2008.
- Roller, Sabine. “Multi-Scale and Multi-Physics Applications - User Requirements for Future Applications”. In: *High Performance Computing on Vector Systems 2008*. Ed. by Michael Resch, Sabine Roller, Katharina Benkert, Martin Galle, Hiroaki Kobayashi, and Toshio Hirayama. Springer, 2008.
- D’Andrea, Danilo, Martin Quandt, Dejan Petkow, Torsten Stindl, Markus Fertig, Monika Auweter-Kurtz, Claus-Dieter Munz, Sabine Roller, Panos Adamidis, and Rudolf Schneider. “Numerical Simulation of Instationary Magnetoplasma-dynamic Thrusters”. In: *ESAIM: PROCEEDINGS of CEMRACS 2005* (Marseille, France, July 18–Aug. 26, 2005). Feb. 2007.
- D’Andrea, Danilo, Rudolf Schneider, Martin Quandt, Claus-Dieter Munz, Sabine Roller, and Markus Fertig. “Long Range Particle Collisions for the PIC/DSMC Simulation Code PicLas”. In: *IEPC-2007-36. The 30th International Electric Propulsion Conference* (Sept. 17–20, 2007). Florence, Italy, 2007.

- Roller, Sabine, Martin Quandt, Torsten Stindl, and Dejan Petkow. "Pulsed Plasma Thruster for a Lunar Satellite". In: *ESAIM Proceedings of CEM-RACS summer school* (Marseille, France). Feb. 2007.
- Petkow, Dejan, Markus Fertig, Torsten Stindl, Monika Auweter-Kurtz, Martin Quandt, Claus-Dieter Munz, Sabine Roller, Danilo D'Andrea, and Rudolf Schneider. "Development of a 3-dimensional, time accurate particle method for rarefied plasma flows". In: *AIAA-2006-3601, Proceedings of the 9th AIAA/ASME Joint Thermophysics and Heat Transfer Conference* (San Francisco, USA, June 5–8, 2006). 2006.
- Roller, Sabine, Harald Klimach, and Claus-Dieter Munz. "A block structured Low Mach Number MPV scheme for heterogeneous domain decomposition". In: *Proceedings of Eccomas CFD 2006* (Egmond aan Zee, The Netherlands, Sept. 5–8, 2006). Ed. by P. Wesseling, Eugenio Oñate, and J. Périaux. 2006.
- Auweter-Kurtz, Monika, Markus Fertig, Dejan Petkow, Torsten Stindl, Martin Quandt, Claus-Dieter Munz, Panos Adamidis, Michael Resch, Sabine Roller, Danilo D'Andrea, and Rudolf Schneider. "Development of a hybrid PIC/DSMC code". In: *IEPC-2005-71, Proceedings of the 29th International ELECTRIC PROPULSION CONFERENCE*. Princeton, USA, 2005.
- Munz, Claus-Dieter, Michael Dumbser, and Sabine Roller. "Über den Einsatz von Notebooks in der Ingenieursausbildung am Beispiel der Vorlesung "Numerische Gasdynamik"". In: Gesellschaft für Medien in der Wissenschaft. Universität Duisburg, 16.-19. September 2003, p. 10.
- Ratzel, Marc, Sabine Roller, and Claus-Dieter Munz. "A semi-implicite pressure correction scheme for low Mach number flows". In: *Proc. of the ISCFD99 in Bremen, K. Oshima, ed., Comput. Fluid Dynamics Journal Special Number* (2001).
- Roller, Sabine and Claus-Dieter Munz. "The Multiple Pressure Variables Method for Low Mach Number Flows". In: *37th Aerospace Sciences Meeting and Exhibit* (Reno, Nevada, USA, Jan. 11–14, 1999). AIAA. American Institute of Aeronautics and Astronautics, 1999. DOI: doi:10.2514/6.1999-174.
- Klein, Rupert, Karl J. Geratz, Peter Terhoeven, Claus-Dieter Munz, Sabine Roller, Bruno Denet, and Geoffrey Searby. "Numerical Techniques for Multi-Scale Weakly Compressible Reactive Flows". In: *Numerical Flow Simulation I. CNRS-DFG Collaborative Research Programme, Results 1996-1998*. Ed. by Ernst Heinrich Hirschel, K. Fujii, B. van Leer, M. Leschziner, M. Pandolfi, A. Rizzi, and B. Roux. Vol. 66. Notes on Numerical Fluid Mechanics. Braunschweig, Germany: Vieweg Verlag, 1998, pp. 242–259.
- Munz, Claus-Dieter and Sabine Roller. "A Low Mach Number Scheme based on the Multiple Pressure Variables Approach". In: *Computational Fluid Dynamics '98*. Ed. by Kyriacos D. Papailiou, D. Tsahalis, Jacques Periaux, and D. Knörzer. Vol. 2. ECCOMAS. Wiley, 1998, pp. 104–109.
- Geratz, Karl J., Sabine Roller, Claus-Dieter Munz, and Rupert Klein. "Using Low Mach Number Asymptotics in Extending a Godunov-Type Compressible Flow Solver to the Weakly Compressible Regime". In: SIAM Minisymposium. Stanford, July 1997, pp. 1–15.
- Munz, Claus-Dieter, Sabine Roller, and Eric Sonnendrücker. "A numerical approach to multiple scale problems based on asymptotic analysis". In: *Numerical Treatment of Multi-Scale Problems. Proceedings of the 13th GAMM-Seminar, Kiel, January 24-26, 1997* (Kiel, Germany, Jan. 24–26, 1997). Ed.

- by W. Hackbusch and G. Wittum. Vol. 70. Notes on Numerical Fluid Mechanics. Braunschweig, Germany: Vieweg Verlag, 1997.
- Geratz, Karl J., Rupert Klein, Claus-Dieter Munz, and Sabine Roller. “Multiple Pressure Variable (MPV) Approach for Low Mach Number Flows Based on Asymptotic Analysis”. In: *Flow simulation with high-performance computers II. DFG priority research program results*. Ed. by Ernst Heinrich Hirschel. Vol. 52. Notes on Numerical Fluid Mechanics. Braunschweig, Germany: Vieweg Verlag, 1996.

Other Papers

- Bijl, Hester, Thomas Ertl, Miriam Mehl, Sabine Roller, and Dörte Stenel. “ExaFSA—Exascale Simulation of Fluid-Structure-Acoustics Interactions”. In: *Inside* (autumn 2014).
- Zudrop, Jens, Harald Klimach, Manuel Hasert, Kannan Masilamani, and Sabine Roller. “A fully distributed CFD framework for massively parallel systems”. In: *Cray User Group 2012*. Stuttgart, Germany, Apr. 2012.
- Roller, Sabine. “STEDG - Highly efficient, scalable software for the simulation of turbulent fluid flows in complex geometries”. In: *inSIDE* Vol. 1 No. 1 (Spring 2009).
- Roller, Sabine and Harald Klimach. “Coupled Simulations in Heterogeneous High Performance Environments”. In: *inSIDE* Vol. 6 No. 2 (Aut. 2008).
- Roller, Sabine. “Aktuelles Schlagwort: ”(Computational) Aero-Akustik””. In: *Informatik Verbund Stuttgart (IVS) Newsletter*. Vol. 10. 2006.
- “InGrid - Innovative Grid Developments for Engineering Applications”. In: *inSIDE* Vol 4.No 1 (Spring 2006).
- Alef, Manfred, Udo Gentner, Claus-Dieter Munz, and Sabine Roller. “Parallele Mehrgittermethoden mit Anwendung in der Strömungsmechanik”. In: *FZK-Nachrichten* 2-3 (1996), pp. 154–162.