Academic CV

Jun.-Prof. Dr. rer. nat. Dominik Göddeke
born August 22, 1978 in Düren, Germany

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Research Area: Hardware-Oriented Numerics

Main interests: numerics of partial differential equations, high performance computing, computational science and engineering

Especially: finite-element multigrid domain decomposition methods, parallelisation, GPU computing, cluster computing and big machines, efficient data structures and implementation techniques, continuum mechanics

Current focus: fault tolerance, communication-avoiding and asynchronicity, numerical cloud computing, software frameworks, uniformly scalable massively-parallel solvers, green computing

Education and Career

since 8/2011	Juniorprofessor for „Hardware-oriented Numerics for Large Systems“ at the Chair for Applied Mathematics and Numerics (LS3), Department of Mathematics, TU Dortmund Technical University
10/2004–08/2011	Research assistant at the above Chair
May 10, 2010	Graduation: Dr. rer. nat. (with highest honours) Dissertation title: *Fast and Accurate Finite-Element Multigrid Solvers for PDE Simulations on GPU Clusters* (Supervisors: S. Turek, H. Müller)
10/2004–05/2010	Doctoral studies, Department of Mathematics, TU Dortmund
August 31, 2004	Graduation: Diploma in Computer Science (with honours) Dissertation title: *Geometric Projection Methods on Surface Triangulations for Numerical Flow Simulation with Hierarchical Multigrid Methods* (Supervisors: S. Turek, H. Müller)
10/1999–08/2004	Studies of Computer Science (major) and Mathematics (minor), Dortmund University, Pre-Diploma in Computer Science (9/2001) and Mathematics (4/2002)

Awards

2011 Rudolf Chaudoire Award, jointly awarded by TU Dortmund and the Chaudoire Society to honour excellent junior researchers. The award includes 5.000 € financial support for a longer research visit abroad.

2011 Young Researcher Best Paper Award of the *Second International Conference on Parallel, Distributed, Grid and Cloud Computing for Engineering*, jointly awarded with M. Geveler, D. Ribbrock, P. Zajac and S. Turek (all TU Dortmund) for our submission *Efficient Finite Element Geometric Multigrid Solvers for Unstructured Grids on Graphics Processing Units* (500 € cash prize).

2010 Dissertation Award for the best doctoral dissertation of the Department of Mathematics, TU Dortmund.

2009 SIAM Travel Award for the *SIAM Conference on Computational Science and Engineering* (stipend of 500 $).

2008 PRACE Award of the *Partnership for Advanced Computing in Europe*, together with S. Turek, Ch. Becker, S.H.M. Buijssen and H. Wobker (all TU Dortmund) for our contribution *UCHPC – UnConventional High Performance Computing for Finite Element Simulations*. This award has been granted for the first time in 2008 and honours young European researchers in HPC (stipend to attend a thematic conference).

2002–2004 Studienstiftung des Deutschen Volkes

Third Party Funding Grants

2013 *Scalable, recursively configurable, massively-parallel FEM-multigrid solvers for heterogeneous computer architectures*, German Research Foundation, together with S. Turek (Dortmund). Proportional amount 121.900 €, 08/2013–07/2016, DFG grant number GO 1758/3-1.

2013 *Asynchronous and fault-tolerant multigrid methods for future HPC systems*, Mercator Research Center Ruhr (MERCUR), Initial Funding Programme. Amount: 45.475 €, 06/2013–05/2014, grant number An-2013-0019.

2013 *EXA-DUNE: Flexible PDE Solvers, Numerical Methods and Applications*, joint grant proposal for the Priority Programme „Software for Exascale Computing (SPP-1648)“ of the German Research Foundation, together with P. Bastian and O. Ippisch (Heidelberg), S. Turek (Dortmund), M. Ohlberger and Ch. Engwer (Münster) and O. Iliev (Kaiserslautern). Proportional amount 185.200 €, 01/2013–12/2015, DFG grant number GO 1758/2-1.

2012 Inclusion in the NVIDIA CUDA Teaching Center Program to support GPU Computing teaching activities. Amount: six GPUs, textbooks and 4600 $, 07/2012–06/2013.

2012 *F^3 – Future-proof High Performance Numerical Simulation for CFD with FEATFLOW*, PRACE DECI-8 Call, together with S. Turek. Amount: 3.75 Mio core hours, 05/2012–04/2013.

List of Publications

Doctoral Dissertation

1. Dominik Göddeke: *Fast and Accurate Finite-Element Multigrid Solvers for PDE Simulations on GPU Clusters*. Dissertation, Technische Universität Dortmund, Fakultät für Mathematik, May 2010. Logos Verlag, Berlin, ISBN: 978-3-8325-2768-6, Permalink: `http://hdl.handle.net/2003/27243`

Book Chapters

2. Dominik Göddeke, Matthias Möller and Dimitri Komatitsch: Finite and Spectral Element Methods on Unstructured Grids for Flow and Wave Propagation Problems. Chapter 9 in: Volodymyr Kindratenko (Editor), *Numerical Computations with GPUs*, Springer, Jul. 2014, DOI 10.1007/978-3-319-06548-9_9
3. Stefan Turek and Dominik Göddeke: Hardware-oriented Numerics. Accepted in *Encyclopedia of Applied and Computational Mathematics*, Springer, Feb. 2012
4. Dominik Göddeke and Robert Strzodka: Mixed Precision GPU-Multigrid Solvers with Strong Smoothers. Chapter 7 in: Jakub Kurzak, David A. Bader and Jack J. Dongarra (Eds.), *Scientific Computing with Multicore and Accelerators*, CRC Press, Dec. 2010, DOI 10.1201/b10376-11
5. Stefan Turek, Dominik Göddeke, Sven H.M. Buijssen and Hilmar Wobker: Hardware-Oriented Multigrid Finite Element Solvers on GPU-Accelerated Clusters. Chapter 6 in: Jakub Kurzak, David A. Bader and Jack J. Dongarra (Eds.), *Scientific Computing with Multicore and Accelerators*, CRC Press, Dec. 2010, DOI 10.1201/b10376-10

Journal Articles (peer-review)

6. Markus Geveler, Dirk Ribbrock, Dominik Göddeke, Peter Zajac and Stefan Turek: Towards a complete FEM-based simulation toolkit on GPUs: Unstructured Grid Finite Element Geometric Multigrid solvers with strong smoothers based on Sparse Approximate Inverses. *Computers & Fluids* 80:327–332, Jul. 2013, DOI 10.1016/j.compfluid.2012.01.025
7. Dominik Göddeke, Dimitri Komatitsch, Markus Geveler, Dirk Ribbrock, Nikola Rajovic, Nikola Puzovic and Alex Ramirez: Energy efficiency vs. performance of the numerical solution of PDEs: an application study on a low-power ARM-based cluster. *Journal of Computational Physics* 237:132–150, Mar. 2013, DOI 10.1016/j.jcp.2012.11.031

8. Markus Geveler, Dirk Ribbrock, Sven Mallach and Dominik Göddeke: A Simulation Suite for Lattice-Boltzmann based Real-Time CFD Applications Exploiting Multi-Level Parallelism on Modern Multi- and Many-Core Architectures. *Journal of Computational Science* 2:113–123, Jan. 2011, DOI 10.1016/j.jocs.2011.01.008
9. Dominik Göddeke and Robert Strzodka: Cyclic Reduction Tridiagonal Solvers on GPUs Applied to Mixed Precision Multigrid. *IEEE Transactions on Parallel and Distributed Systems* 22(1):22–32, Jan. 2011, DOI 10.1109/TPDS.2010.61
10. Dimitri Komatitsch, Gordon Erlebacher, Dominik Göddeke and David Michéa: High-order finite-element seismic wave propagation modeling with MPI on a large GPU cluster. *Journal of Computational Physics* 229:7692–7714, Oct. 2010, DOI 10.1016/j.jcp.2010.06.024
11. Dimitri Komatitsch, Dominik Göddeke, Gordon Erlebacher and David Michéa: Modeling the propagation of elastic waves using spectral elements on a cluster of 192 GPUs. *Computer Science – Research and Development* 25(1-2):75–82, Special Issue International Supercomputing Conference (ISC'10), May/Jun. 2010, DOI 10.1007/s00450-010-0109-1
12. Stefan Turek, Dominik Göddeke, Christian Becker, Sven H.M. Buijssen and Hilmar Wobker: FEAST – Realisation of Hardware-oriented Numerics for HPC Simulations with Finite Elements. *Concurrency and Computation: Practice and Experience* 22(6):2247–2265, May 2010, DOI 10.1002/cpe.1584
13. Danny van Dyk, Markus Geveler, Sven Mallach, Dirk Ribbrock, Dominik Göddeke and Carsten Gutwenger: HONEI: A collection of libraries for numerical computations targeting multiple processor architectures. *Computer Physics Communications* 180(12):2534–2543, Dec. 2009, DOI 10.1016/j.cpc.2009.04.018
14. Dominik Göddeke, Hilmar Wobker, Robert Strzodka, Jamaludin Mohd-Yusof, Patrick McCormick and Stefan Turek: Co-Processor Acceleration of an Unmodified Parallel Solid Mechanics Code with FEASTGPU. *International Journal of Computational Science and Engineering* 4(4):254–269, Oct. 2009, DOI 10.1504/IJCSE.2009.029162
15. Dominik Göddeke, Robert Strzodka, Jamaludin Mohd-Yusof, Patrick McCormick, Hilmar Wobker, Christian Becker and Stefan Turek: Using GPUs to Improve Multigrid Solver Performance on a Cluster. *International Journal of Computational Science and Engineering* 4(1):36–55, Nov. 2008, DOI 10.1504/IJCSE.2008.021111
16. Dominik Göddeke, Robert Strzodka, Jamaludin Mohd-Yusof, Patrick McCormick, Sven H.M. Buijssen, Matthias Grajewski and Stefan Turek: Exploring weak scalability for FEM calculations on a GPU-enhanced cluster. *Parallel Computing* 33(10–11):685–699, Sep. 2007, DOI 10.1016/j.parco.2007.09.002
17. Dominik Göddeke, Robert Strzodka and Stefan Turek: Performance and accuracy of hardware-oriented native-, emulated- and mixed-precision solvers in FEM simulations. *International Journal of Parallel, Emergent and Distributed Systems* 22(4):221–256, Jan. 2007, DOI 10.1080/17445760601122076

Conference Proceedings (peer-review)

18. Peter Bastian, Christian Engwer, Dominik Göddeke, Oleg Iliev, Olaf Ippisch, Mario Ohlberger, Stefan Turek, Jorrit Fahlke, Sven Kaulmann, Steffen Müthing and Dirk Ribbrock: EXA-DUNE: Flexible PDE Solvers, Numerical Methods and Applications. In *Proceedings of EuroPar 2014*, accepted, Sep. 2014
19. Steffen Müthing, Dirk Ribbrock and Dominik Göddeke: Integrating multithreading and accelerators into DUNE-ISTL. In *Proceedings of ENUMATH 2013*, accepted, Nov. 2013
20. Markus Geveler, Dirk Ribbrock, Dominik Göddeke, Peter Zajac and Stefan Turek: Towards a complete FEM-based simulation toolkit on GPUs: Geometric multigrid solvers. In *23rd International Conference on Parallel Computational Fluid Dynamics (ParCFD)*, May 2011
21. Markus Geveler, Dirk Ribbrock, Dominik Göddeke, Peter Zajac and Stefan Turek: Efficient Finite Element Geometric Multigrid Solvers for Unstructured Grids on GPUs. In Peter Iványi and Barry H.V. Topping (eds.), *Second International Conference on Parallel, Distributed, Grid and Cloud Computing for Engineering (PARENG)*, Apr. 2011, DOI 10.4203/ccp.95.22, **Young Researcher Best Paper Award**
22. Markus Geveler, Dirk Ribbrock, Dominik Göddeke and Stefan Turek: Lattice-Boltzmann Simulation of the Shallow-Water Equations with Fluid-Structure Interaction on Multi- and Manycore Processors. In Rainer Keller, David Kramer and Jan-Philipp Weiß (eds.), *Facing the Multicore Challenge*, Volume 6310, *Lecture Notes in Computer Science*, pp. 92–104, Sep. 2010, DOI 10.1007/978-3-642-16233-6_11
23. Dimitri Komatitsch, David Michéa, Gordon Erlebacher and Dominik Göddeke: Running 3D finite-difference or spectral-element wave propagation codes 25x to 50x faster using a GPU cluster. In *72nd European Association of Geoscientists and Engineers Conference and Exhibition (EAGE'2010)*, Volume 4, pp. 2920–2924, Jun. 2010
24. Dirk Ribbrock, Markus Geveler, Dominik Göddeke and Stefan Turek: Performance and Accuracy of Lattice-Boltzmann Kernels on Multi- and Manycore Architectures. In Peter M.A. Sloot, G. Dick van Albada and Jack J. Dongarra (eds.), *International Conference on Computational Science (ICCS'10)*, Volume 1, *Procedia Computer Science*, pp. 239–247, May/Jun. 2010, DOI 10.1016/j.procs.2010.04.027
25. Dominik Göddeke, Sven H.M.Buijssen, Hilmar Wobker and Stefan Turek: GPU Acceleration of an Unmodified Parallel Finite Element Navier-Stokes Solver. In Waleed W. Smari and John P. McIntire (eds.), *High Performance Computing & Simulation 2009*, S. 12–21, Jun. 2009, DOI 10.1109/HPCSIM.2009.5191718, **Best Paper Award nominee**

26. Sven H.M. Buijssen, Hilmar Wobker, Dominik Göddeke and Stefan Turek: FEASTSolid and FEASTFlow: FEM applications exploiting FEAST's HPC technologies. In Wolfgang Nagel, Dietmar Kröner and Michael Resch (eds.), *High Performance Computing in Science and Engineering '08*, Volume 2008, *Transactions of the High Performance Computing Center Stuttgart (HLRS)*, pp. 425–440, Dec. 2008, DOI /10.1007/978-3-540-88303-6_30
27. Stefan Turek, Dominik Göddeke, Christian Becker, Sven Buijssen and Hilmar Wobker: UCHPC - UnConventional High Performance Computing for Finite Element Simulations. In *International Supercomputing Conference (ISC'08)*, Jun. 2008, **PRACE Award**
28. Dominik Göddeke, Hilmar Wobker, Robert Strzodka, Jamaludin Mohd-Yusof, Patrick McCormick and Stefan Turek: Co-processor acceleration of an unmodified parallel structural mechanics code with FEAST-GPU. In Supercomputing 2007 Posters, Nov. 2007
29. Dominik Göddeke, Christian Becker and Stefan Turek: Integrating GPUs as fast co-processors into the existing parallel FE package FEAST. In Matthias Becker and Helena Szczerbicka (eds.), *19th Symposium Simulation Technique (ASIM'06)*, Frontiers in Simulation, pp. 277–282, Sep. 2006
30. Robert Strzodka and Dominik Göddeke: Mixed Precision Methods for Convergent Iterative Schemes. In Workshop on Edge Computing Using New Commodity Architectures, May 2006
31. Robert Strzodka and Dominik Göddeke: Pipelined Mixed Precision Algorithms on FPGAs for Fast and Accurate PDE Solvers from Low Precision Components. In *14th Annual IEEE Symposium on Field-Programmable Custom Computing Machines (FCCM'06)*, pp. 259–270, Apr. 2006, DOI 10.1109/FCCM.2006.57
32. Dominik Göddeke, Robert Strzodka and Stefan Turek: Accelerating Double Precision FEM Simulations with GPUs. In Frank Hülsemann, Matthias Kowarschik and Ulrich Rüde (eds.), *18th Symposium Simulation Technique (ASIM'05)*, Frontiers in Simulation, pp. 139–144, Sep. 2005

Technical Reports and Preprints

33. Michael Köster, Dominik Göddeke, Hilmar Wobker and Stefan Turek. How to gain speedups of 1000 on single processors with fast FEM solvers – Benchmarking numerical and computational efficiency. Ergebnisberichte des Instituts für Angewandte Mathematik, Number 382, Fakultät für Mathematik, TU Dortmund, Oct. 2008
34. Dominik Göddeke and Robert Strzodka. Performance and accuracy of hardware-oriented native, emulated- and mixed-precision solvers in FEM simulations (part 2: double precision GPUs). Ergebnisberichte des Instituts für Angewandte Mathematik, Number 370, Fakultät für Mathematik, TU Dortmund, Aug. 2008

35. Daniel Bachmann, Przemyslaw Beben, Till Becker-Adam, André Braun, Andreas Ehrenberg, Christian Groß, Michael Hein, Matthias Miemczyk, Raphael Münster, Mark Senne, Mirko Sykorra, Klaus Wohlgemuth, Claus-Peter Alberts and Dominik Göddeke. Beyond Graphics: Strömungssimulation auf der GPU. Endbericht der Projektgruppe 471, Fachbereich Informatik, Universität Dortmund, Apr. 2006
36. Dominik Göddeke. GPGPU–Basic math tutorial. Ergebnisberichte des Instituts für Angewandte Mathematik, Number 300, Fachbereich Mathematik, Universität Dortmund, Nov. 2005
37. Hendrik Becker, Christian Engels, Markus Glatter, Dominik Göddeke, Eduard Heinle, Matthias Kowalzik, Patrick Otto, Wissam Ousseili, Thomas Rohkämper, Matthias Schwenke, Nicole Skaradzinski, Tom Vollerthun, Claus-Peter Alberts, Jörg Ayasse and Christian Becker. Endbericht der Projektgruppe DeViSoR. Ergebnisberichte des Instituts für Angewandte Mathematik, Number 240T, Fachbereich Mathematik, Universität Dortmund, Jan. 2003

Diploma Thesis

38. Dominik Göddeke: *Geometrische Projektionstechniken auf Oberflächentriangulierungen zur numerischen Strömungssimulation mit hierarchischen Mehrgitterverfahren*. Diplomarbeit, Universität Dortmund, Fachbereich Informatik, Aug. 2004

Lecture Notes

39. Dominik Göddeke: Schnelle Löser. Vorlesungsskript, 240 pages, Fakultät für Mathematik, TU Dortmund, summer term 2013, winter term 2013/14
40. Dominik Göddeke: Lineare Optimierung durch Eckenabschneiden. Vorlesungsskript zum 20. Schülerzirkel, 30 pages, Fakultät für Mathematik, TU Dortmund, summer term 2013
41. Dominik Göddeke: Gebietszerlegungsverfahren. Vorlesungsskript, 70 pages, Fakultät für Mathematik, TU Dortmund, summer term 2012
42. Dominik Göddeke: High Performance Computing und parallele Numerik. Vorlesungsskript, 140 pages, Fakultät für Mathematik, TU Dortmund, summer term 2011

Invited Talks

1. *Fehlertolerante parallele Mehrgitterverfahren für zukünftige HPC-Rechner*, MERCUR Club, Mercator Research Center, Essen, Germany, Jan. 2014
2. *Exascale techniques for Numerics for PDEs*, Dagstuhl Seminar on Algorithms and Scheduling Techniques for Exascale Systems, Schloss Dagstuhl, Germany, Sep. 2013
3. *Energy efficiency aspects of high performance computing for PDEs*, 25th Biennial Numerical Analysis Conference, Minisymposium Scientific Software and HPC, Glasgow, UK, Jun. 2013

4. *Energy efficiency aspects of high performance computing for PDEs*, High Performance Computing in Science and Engineering, Centre of Excellence IT4Innovations, VSB-Technical University of Ostrava, Czech Republic, May 2013
5. *Hardware-oriented numerics for PDEs*, FH Aachen/Jülich, Fachbereich Medizintechnik und Technomathematik, Germany, Jan. 2013
6. *Hardware-oriented numerics for PDEs*, Software Frameworks for Challenging Computational Problems, Heraklion, Crete, Jan. 2013
7. *Hardware-oriented numerics for PDEs*, Algorithmy 2012, Podbanske, Slovakia, Sep. 2012
8. *Hardware-oriented numerics for PDEs*, International Workshop on PDE Software Frameworks – 10th Anniversary of DUNE, Münster, Germany, Jun. 2012
9. *High-order finite-element seismic wave propagation modeling with MPI on a large GPU cluster*, AGU Fall Meeting, special session 'High-Resolution Modeling in the Geosciences Using GPU and Many-Core Architectures', San Francisco, USA, Dec. 2011
10. *Mixed-Precision GPU-Multigrid Solvers with Strong Smoothers*, ILAS Conference: Pure and Applied Linear Algebra: The new Generation. Nachwuchswissenschaftler-Minisymposium „Parallel Computing in Numerical Linear Algebra", Technische Universität Braunschweig, Germany, Aug. 2011
11. *Mixed-Precision GPU-Multigrid Solvers with Strong Smoothers and Applications in CFD and CSM*, SIMTECH 2011 – International Conference on Simulation Technology, Universität Stuttgart, Germany, Jun. 2011
12. *Finite Element Multigrid Solvers for PDE Problems on GPUs and GPU Clusters*, INRIA Summer School: Toward petaflop numerical simulation on parallel hybrid architectures, INRIA Sophia Antipolis-Méditerranée, France, Jun. 2011
13. *GPUs in HPC: Introduction and Overview*, 27. Treffen Compute-Service, TU Dortmund, Germany, May 2011
14. *Fast and Accurate Finite Element Multigrid Solvers for PDE Problems on GPU Clusters*, Institut für Numerische und Angewandte Mathematik, Georg-August-Universität Göttingen, Germany, Apr. 2011
15. *Hardware-Oriented Finite Element Multigrid Solvers for PDEs*, ASIM Workshop 2011 – Trends in Computational Science and Engineering – Foundations of Modeling and Simulation, Leibniz Rechenzentrum und Technische Universität München, Garching, Germany, Mar. 2011
16. *Mixed-Precision GPU-Multigrid Solvers with Strong Smoothers*, Workshop: High Performance Computing and Emerging Architectures, Institute for Mathematics and Its Applications (IMA) at the University of Minnesota, Minneapolis, Minnesota, USA, Jan. 2011
17. *Introduction to GPU Computing*, Institut für Geophysik, Universität Münster, Germany, Nov. 2009

18. *GPU Cluster Computing for Finite Element Applications*, Minisymposium: GPU Computing in Computational Engineering, First International Workshop on Computational Engineering – Special Topic Fluid-Structure Interaction, Herrsching am Ammersee, Germany, Oct. 2009
19. *GPU Cluster Computing for Finite Element Applications*, 38th SPEEDUP Workshop on High-Performance Computing, EPF Lausanne, Switzerland, Sep. 2009
20. *GPU Computing with NVIDIA CUDA*, half-day tutorial, Sonderforschungsbereich 708, TU Dortmund, Germany, Jun. 2009
21. *GPU Computing with NVIDIA CUDA*, half-day tutorial, Universität Freiburg und Jedox AG (Freiburg), Germany, May 2009
22. *GPU Cluster Computing for Finite Element Applications*, Workshop: Experiences with the GPU and the Cell Processor, TU Delft, The Netherlands, Jan. 2009
23. *Mixed Precision Methods on GPUs*, NVISION 2008 – The World of Visual Computing, San Jose, USA, Aug. 2008
24. *Finite Element computations on GPU clusters*, Lehrstuhl für Systemsimulation, Universität Erlangen-Nürnberg, Germany, Sep. 2007
25. *Minimally invasive integration of GPUs to improve multigrid solver performance on a cluster*, Workshop: Software Issues in Computational Science and Engineering, Uppsala, Schweden, Aug. 2007
26. *Performance and accuracy of hardware-oriented native-, emulated- and mixed precision solvers in FEM simulations*, Workshop: General-Purpose GPU Computing – Practice And Experience, Supercomputing 2006, Tampa, Florida, USA, Nov. 2006
27. *GPUs as fast co-processors for scientific computing*, Institut für Theoretische Physik, Universität Wuppertal, Germany, Jun. 2006
28. *High Performance Computing for PDE: Some numerical aspects of Petascale Computing* (mit S. Turek), Dagstuhl Seminar on Algorithms and Architectures for Petascale Computing, Schloss Dagstuhl, Germany, Feb. 2006
29. *Introduction to data-stream based computations on graphics hardware*, 18th Symposium Simulation Technique (ASIM'05), Erlangen, Germany, Sep. 2005

Organisation of Workshops, Mini-Symposia and Conference Tutorials

Jul. 2014 *Practical aspects of advanced CFD simulations on emerging multi- and manycore systems*, Minisymposium, European Conference on Computational Fluid Dynamics (ECFD), Barcelona, Spain (with M. Möller)

Jul. 2014 *Fault-tolerant, communication-avoiding and asynchronous matrix computations*, Minisymposium, Parallel Matrix Algorithms with Applications (PMAA), Lugano, Switzerland (with S. Turek and M. Heroux)

Sep. 2013 *Advanced GPU Tutorial*, Parallel Processing and Applied Mathematics (PPAM 2013), Warschau, Poland (with R. Strzodka)

Aug. 2013 *Bridging software design and performance tuning for parallel numerical codes*, Minisymposium, ENUMATH 2013, Lausanne, Switzerland (with Ch. Engwer)

Sep. 2011 *GPU and OpenCL Tutorials*, Parallel Processing and Applied Mathematics (PPAM 2011), Toruń, Poland (with J. Kurzak and J.P. Weiß)

Sep. 2011 *Advanced Numerical Methods on GPUs*, Minisymposium, ENUMATH 2011, Leicester, UK (with S. Turek)

Jun. 2010 *GPU Computing in Computational Fluid Dynamics*, Minisymposium, ECCOMAS-CFD 2010, Lissabon, Portugal (with S. Turek)

Sep. 2009 *GPGPU and OpenCL Tutorials*, Parallel Processing and Applied Mathematics (PPAM 2009), Wroclaw, Poland (with R. Strzodka and D. Behr)

Sep. 2009 *Tutorial on the practical use of GPUs*, 38th SPEEDUP Workshop on High-Performance Computing, Lausanne, Switzerland (with R. Strzodka and Ch. Sigg)

Mar. 2009 *Scientific Computing on Emergent Many-Core Architectures*, Minisymposium, SIAM Conference on Computational Science and Engineering, Miami, Florida, USA (with M. Giles and S. Turek)

Feb. 2008 *GPGPU and CUDA Tutorials*, Architecture of Computer Systems (ARCS 2008), Dresden, Germany (with R. Strozdka and S. Green)

May 2006 *General Purpose Computation on Graphics Hardware: Methods, Algorithms and Applications*, Workshop, International Conference on Computational Science (ICCS 2006), Reading, UK (with S. Turek)

May 2006 *General Purpose Computation on Graphics Hardware*, Tutorial, International Conference on Computational Science (ICCS 2006), Reading, UK (with R. Strzodka)

Programme Committees

1. *High-Performance Stencil Computations*, HiPEAC 2015 (HiStencils 2015)
2. *Special Session on GPU Computing and Hybrid Computing*, 23rd Euromicro International Conference on Parallel, Distributed and Network-Based Computing (PDP 2015)
3. *Seventh Workshop on UnConventional High Performance Computing*, Euro-Par (UCHPC 2014)
4. *Parallel Matrix Algorithms with Applications*, (PMAA 2014)
5. *High-Performance Stencil Computations*, HiPEAC 2014 (HiStencils 2014)
6. *Multicore Computing and Parallel/Distributed Architecture Track*, 19th IEEE International Conference on Parallel and Distributed Systems (ICPADS 2013)
7. *Sixth Workshop on UnConventional High Performance Computing (UCHPC 2013)*, Euro-Par 2013

8. *Workshop on GPU Computing*, 10th International Conference on Parallel Processing and Applied Mathematics (PPAM 2013)
9. *Special Session on GPU Computing and Hybrid Computing*, 21st Euromicro International Conference on Parallel, Distributed and Network-Based Computing (PDP 2013)
10. *Facing the Multicore-Challenge III*, Conference for Young Researchers, 2012
11. *Fifth Workshop on UnConventional High Performance Computing (UCHPC 2012)*, Euro-Par 2012
12. *18th IEEE International Conference on Parallel and Distributed Systems (ICPADS 2012)*
13. *Forth Workshop on Emerging Parallel Architectures (WEPA)*, 12th International Conference on Computational Science (ICCS 2012)
14. *Special Session on GPU Computing and Hybrid Computing*, 20th Euromicro International Conference on Parallel, Distributed and Network-Based Computing (PDP 2012)
15. *Facing the Multicore-Challenge II*, Conference for Young Researchers, 2011
16. *Workshop on GPU Computing*, 9th International Conference on Parallel Processing and Applied Mathematics (PPAM 2011)
17. *Fourth Workshop on UnConventional High Performance Computing (UCHPC 2011)*, Euro-Par 2011
18. *New Frontiers in High-performance and Hardware-aware Computing (HipHac 2011)*, IEEE International Symposium on High-Performance Computer Architecture (HPCA'11)
19. *Third Workshop on UnConventional High Performance Computing (UCHPC 2010)*, Euro-Par 2010
20. *Computational Intelligence on Consumer Games and Graphics Hardware (CIGPU 2010)*, IEEE World Congress on Computational Intelligence (WCCI 2010)