

## **Publication List**

### **Books**

Bode, A.; Karl, W.: *Multicore-Architekturen*. Reihe Informatik im Fokus. Springer-Verlag Heidelberg, to appear

Karl, W.: *Architektur und effiziente Programmierung von Cluster-Systemen*. Habilitationsschrift, Technische Universität München, Januar 2002.

Karl, W.: *Architektureigenschaften und Parallelisierungsmethoden für Rechner mit Funktionspipelining*. Dissertation. Technische Universität München, 1992.

Karl, W.: *Parallele Prozessorarchitekturen – Codegenerierung für superskalare, superpipelined und VLIW-Prozessoren*. Reihe Informatik, Bd. 93, BI-Wissenschaftsverlag, Mannheim, 1993

### **Publications as Editor**

Karl, W.: Mitherausgeber der Buchreihe Informatik im Fokus, Springer-Verlag

Karl, W.; Dimitrios Soudris: *ARCS'11 24th International Conference on Architecture of Computing Systems Workshop Proceedings, February 2011, Como, Italy, VDE-Verlag*

Müller-Schloer, Ch.; Karl, W.; Yehia, S.: *Architecture of Computing Systems – ARCS 2010 23rd International Conference Hannover, Germany, February 2010 Proceedings. Lecture Notes in Computer Science, Vol. 5974, Springer Verlag, Heidelberg, 2010*

Patterson, D. A.; Hennessy, J. L.: *Rechnerorganisation und -entwurf Die Hardware / Software-Schnittstelle*. Elsevier Spektrum Akademischer Verlag, 3. Auflage, 2005. Deutsche Ausgabe herausgegeben von A. Bode, W. Karl, T. Ungerer.

Karl, W. (Gastherausgeber): *Rechnerarchitektur in Deutschland. it – Information Technology, Vol. 47, No. 3, Oldenbourg-Verlag, München, 2005*

Bode, A.; Karl, W. (Hrsg.): *APC 2001 Arbeitsplatzcomputer, Vorträge der Fachtagung der GI/ITG Fachgruppe APS+PC zum Thema „Pervasive Ubiquitous Computing“ vom 10. bis 12. Oktober 2001 in München. ITG Fachberichte Nr. 168, VDE-Verlag, Berlin, Oktober 2001*

Bode, A.; Ludwig, T.; Karl, W.; Wismüller, R. (Eds.): *Euro-Par 2000 Parallel Processing / 6th International Euro-Par Conference München, Germany, August/September 2000 Proceedings*. Springer-Verlag, Heidelberg, Lecture Notes in Computer Science, Band 1900, August 2000

Karl, W.; Horn, G. (Eds.): *Proceedings of the SCI-Europe 2000 Conference – 3<sup>rd</sup> International Conference on SCI-based Technology and Research*. München, Germany, August 29-30, 2000. SINTEF Electronics and Cybernetics, August 2000, ISBN 82-595-9964-3

Karl, W.; Horn, G. (Eds.): *Proceedings of the SCI-Europe'99 Conference – 2<sup>nd</sup> International Conference on SCI-based Technology and Research*. Toulouse, France, September 2-3, 1999. SINTEF Electronics and Cybernetics, August 2000, ISBN 82-14-00014-9

## Publications in Journals and Book Chapters

Kicherer, M.; Nowak, F.; Buchty, R.; Karl, W.: Seamlessly Portable Applications: Managing the Diversity of Modern Heterogeneous Systems. ACM Transactions on Architecture and Code Optimization (TACO) Volume 8 Issue 4, January 2012

Kramer, D.; Buchty, R.; Karl, W.: *Monitoring and Self-awareness for Heterogeneous, Adaptive Computing Systems*. In: Organic Computing - A Paradigm Shift for Complex Systems, pages 163-177. Springer Basel, Series "Autonomic Systems", Volume 1, Part 2, ISBN 978-3-0348-0130-0, June 2011.

Ebi, T.; Kramer, D.; Schuck, C.; von Renteln, A.; Becker, J.; Brinkschulte, U.; Henkel, J.; Karl, W.: *DodOrg -- A Self-adaptive Organic Many-core Architecture*. In: Organic Computing - A Paradigm Shift for Complex Systems, pages 353-368. Springer Basel, Series "Autonomic Systems", Volume 1, Part 2, ISBN 978-3-0348-0130-0, June 2011.

Rainer Buchty, Vincent Heuveline, Wolfgang Karl, Jan-Philipp Weiß: *A Survey on Hardware-aware and Heterogeneous Computing on Multicore Processors and Accelerators*. "Concurrency and Computation: Practice and Experience", Journal, John Wiley & Sons, Ltd., ISSN 1532-0634, September 2011

Eichinger, F.; Kramer, D.; Böhm, K.; Karl, W.: *From Source Code to Runtime Behaviour: Software Metrics Help to Select the Computer Architecture*. In: Knowledge Based Systems, Volume 23, Issue 4, May 2010, pp. 343-349, Elsevier, Mai 2010

Tao, J.; Kunze, M.; Nowak, F.; Buchty, R.; Karl, W.: *Performance Analysis of Reconfigurable Cache Design on Multicore Processor Systems*. In: International Journal on Parallel Programming, Vol. 36, No. 3, Springer-Verlag, Heidelberg, June 2008, pp. 347-360

Buchty, R.; Karl, W.: *Design Aspects for Self-Organizing Heterogeneous Multi-Core Architectures*. In: it – Information Technology, 5/2008, Special Issue "Computer Architecture Challenges", Oldenbourg Wissenschaftsverlag, 2008, pp. 293-299

Brandes, T.; Schwamborn, H.; Gerndt, M.; Jeitner, J.; Kereku, E.; Schulz, M.; Brunst, H.; Nagel, W.; Neumann, R.; Müller-Pfefferkorn, R.; Trenkler, B.; Karl, W.; Tao, J.; Hoppe, H.: *Monitoring Cache Behavior on Parallel SMP Architectures and Related Programming Tools*. In: Future Generation Computer Systems, Elsevier B.V., Vol. 21, No. 8, October 2005, pp. 1298 - 1311

Tao, J.; Schulz, M.; Karl, W.: *Simulation as a Tool for Optimizing Memory Accesses on NUMA Machines*. In: Performance Evaluation, Vol. 60, No. 1-4, Elsevier B.V., May 2005, pp. 31-50

Tao, J.; Schulz, M.; Karl, W.: *ARS: An Adaptive Runtime System for Locality Optimization*. In: Future Generation Computer Systems. Elsevier B.V., Vol. 19, No. 5, 2003, pp.761-776.

Schulz, M.; Tao, J.; Trinitis, C.; Karl, W.: *SMiLE: An Integrated, Multi-paradigm Software Infrastructure for SCI-based Clusters*. Future Generation Computer Systems. Elsevier B.V., Vol. 19, No. 4, 2003, pp.521-532.

Wismüller, R.; Ludwig, T.; Karl, W.; Bode, A.: *Monitoring Concepts for Parallel Systems AN Evolution Towards Interoperable Tool Environments*. In: Ludwig, T.; Miller, B. (Eds.): Parallel and Distributed Computing Practices, Nova Science Publishers, New York, Vol. 4, No. 3, September 2003, pp. 1-21

Karl, W.; Torralba, G.; Gonzáles, V.; Sanchis, E.; Tao, J.; Schulz, M.: *Data Monitoring in High-Performance Clusters for Computing Applications*. IEEE Transactions on Nuclear Science. Vol. 49, No. 2, April 2002, pp. 525-531

Tao, J.; Schulz, M.; Karl, W.: *Memory access behavior analysis of NUMA-based shared memory programs*. In: Perrott, R.H., Szymanski, B.K.: *Scientific Programming, Special Issue: PADDA 2001*, Vol. 10, No.1, IOS Press, Amsterdam, 2002, pp.45-53

Weiß, C.; Kowarschik, M.; Rüde, U.; Karl, W.: *Cache-aware Multigrid Methods for Solving Poisson's Equation in Two Dimensions*. *Computing*, Vol. 64, Issue 4, Springer-Verlag, 2000, pp. 0381-0399.

Acher, G.; Karl W.; Leberecht, M.: *The TUM PCI/SCI Adapter*. In: Hellwagner, H., Reinefeld, A. (Eds.): *SCI Scalable Coherent Interface Architecture and Software for High-Performance Compute Clusters*, Springer-Verlag, LNCS State-of -the Arte Survey, Vol. 1734, Berlin, (1999), pp. 89-101

Karl, W.; Leberecht, M.; Oberhuber, M.: *SCI Monitoring Hardware and Software: Supporting Performance Evaluation and Debugging*. In: Hellwagner, H., Reinefeld, A. (Eds.): *SCI Scalable Coherent Interface Architecture and Software for High-Performance Compute Clusters*, Springer-Verlag, LNCS State-of -the Arte Survey, Vol. 1734, Berlin, (1999), pp. 417-432

Hellwagner, H.; Karl, W.; Leberecht, M.: *Enabling a PC Cluster for High Performance Computing*. *SPEEDUP Journal*, Vol.11, No. 1, (1997)

Bode, A.; Karl, W.: *Architektur und Technologie von Mikroprozessoren*. In: *it + ti - Informationstechnik und Technische Informatik*, 37,1, R. Oldenbourg Verlag, 1995, pp. 7-12

Karl, W.: *Leistungsmessungen an einem RISC-Prozessor*. In: *Elektronik*, 11, 1989, pp. 130-135

## Publications in Conferences

Nehir Sonmez, Oriol Arcas, Philipp Kirchhofer, Martin Schindewolf, Osman S. Unsal, Adrián Cristal, and Wolfgang Karl. *A low-overhead Profiling and Visualization Framework for Hybrid Transactional Memory*. In *FCCM 2012: The 20th Annual IEEE International Symposium on Field-Programmable Custom Computing Machines*, pages 1–8, 2012. <http://fccm12.cse.sc.edu/4699a001.pdf>.

Ebi, T.; Kramer, D.; Henkel, J.; Karl, W.: *Economic Learning for Thermal-aware Power Budgeting in Many-core Architectures*. In: *Proceedings of the seventh IEEE/ACM/IFIP international conference on Hardware/software codesign and system synthesis - CODES+ISSS '11*, pages 189-196, ACM, Series "CODES+ISSS '11", ISBN 978-1-4503-0715-4, New York, NY, USA, October 9-14 2011

David Kramer, Rainer Buchty, Wolfgang Karl: *A Light-Weight Approach for Online State Classification of Self-organizing Parallel Systems*. In: *Architecture of Computing Systems - ARCS 2011*, pages 183-194. Springer, Series "Lecture Notes of Computer Science (LNCS)", Volume 6566, ISBN 978-3-642-19136-7, Lake Como, Italy, February 22-25 2011

Alexander von Renteln, Uwe Brinkschulte, David Kramer, Wolfgang Karl, Christian Schuck, Jürgen Becker: *Digital On-demand Computing Organism - Interaction between Monitoring and Middleware*. In: *14th IEEE International Symposium on Object/Component/Service-Oriented Real-Time Distributed Computing*, pages 189-196, IEEE Computer Society, Newport Beach, CA, USA, March 28-31, 2011

Mario Kicherer, Rainer Buchty, Wolfgang Karl: *Cost-Aware Function Migration in Heterogeneous Systems*. *HiPEAC 2011 - Proceedings of the 6th International Conference on High Performance and Embedded Architectures and Compilers*. ACM Digital Library, 2011, ISBN 978-1-4503-0241-8, Heraklion, Greece, January 2011, pp. 137 - 145

Martin Schindewolf, Alexander Esselson and Wolfgang Karl. : Compiler-Assisted Selection of a Software Transactional Memory System. In: Architecture of Computing Systems - ARCS 2011, Seiten 147-157. Springer, Reihe "Lecture Notes in Computer Science", Volume 6566, ISBN 978-3-642-19136-7, Lake Como, Italien, 22.-25. Februar 2011.

Martin Schindewolf, Oliver Mattes, Wolfgang Karl: Thread Creation for Self-aware Parallel Systems. In: Facing the Multicore-Challenge, Seiten 42-53. Springer Berlin / Heidelberg, Reihe "Lecture Notes in Computer Science", Volume 6310, ISBN 978-3-642-16232-9, Heidelberg, Deutschland, 17.-19. März 2010.

Mattes, O.; Schindewolf, M.; Karl, W.: Facing the Multicore-Challenge, Heidelberger Akademie der Wissenschaften, Heidelberg, Germany, March 17-19, 2010

Eichinger, F.; Kramer, D.; Böhm, K.; Karl, W.: *From Source Code to Runtime Behaviour: Software Metrics Help to Select the Computer Architecture*. In: Proceedings AI-2009 Twenty-ninth SGA International Conference on Artificial Intelligence, Cambridge, UK, Dec. 2009, Springer,

Kurze, T.; Wang, L.; von Laszewski, G.; Tao, J.; Kunze, M.; Wang, F.; Kramer, D.; Karl, W.; Ekanayake, J.: *Cyberaide Virtual Appliance: On-demand Deploying Middleware for Cyberinfrastructure*. In: Proceedings of the First International Conference on Cloud Computing, Munich, Germany, October 19-21 2009

Buchty, R.; Kicherer, M.; Kramer, D.; Karl, W.: An Embrace-and-Extend Approach to Managing the Complexity of Future Heterogeneous Systems. In: Bartels, K. et.al.: Embedded Computer Systems: Architectures, Modeling, and Simulation. Lecture Notes in Computer Science, 2009, Volume 5657/2009, 227-236, DOI: 10.1007/978-3-642-03138-0\_25

Buchty, R.; Kramer, D.; Kicherer, M.; Karl, W.: *A Light-Weight Approach to Dynamical Runtime Linking Supporting Heterogeneous, Parallel, and Reconfigurable Architectures*. In: Mladen Berenkovic, Christian Müller-Schloer, Christian Hochberger, and Stephan Wong (Eds.) Architecture of Computing Systems – ARCS 2009 22nd International Conference, Delft, The Netherlands, March 2009. Proceedings, Lecture Notes in Computer Science Vol. 5455, Springer Heidelberg / Berlin, March 2009, pp. 60 - 71

Lizhe Wang, Jie Tao, Marcel Kunze, Alvaro Canales Castellanos, David Kramer, Wolfgang Karl: *Scientific Cloud Computing: Early Definition and Experience*. The 10th IEEE Conference on High Performance Computing and Communications (HPCC'08), DeLian, China, September 25-27, 2008

Buchty, R.; Kramer, D.; Karl, W.: *An Organic Computing Approach to Sustained Real-time Monitoring*. In: Biologically-Inspired Collaborative Computing - IFIP 20th World Computer Congress, Second IFIP TC 10 International Conference on Biologically-Inspired Collaborative Computing, September 8-9, 2008, Milano, Italy. IFIP International Federation for Information Processing. Vol. 268/2008, Springer, Boston, 2008, pp. 151-162

Buchty, R.; Mattes, O.; Karl, W.: *Self-aware Memory: Managing Distributed Memory in an Autonomous Multi-master Environment*. In: Uwe Brinkschulte, Theo Ungerer, Christian Hochberger und Rainer G. Spallek (Eds.) Architecture of Computing Systems – ARCS 2008 21st International Conference, Dresden, Germany, February 25-28, 2008. Proceedings, Lecture Notes in Computer Science Vol. 4934, Springer Heidelberg / Berlin, Februar 2008, pp. 98-113

Tao, J.; Kunze, M.; Karl, W.: *Evaluating the Cache Architecture of Multicore Processors*. Proceedings 16<sup>th</sup> Euromicro International Conference on Parallel, Distributed and Network-based Processing PDP 2008, Toulouse, France, IEEE Computer Press, Feb. 2008

Tao, J.; Shahbahrani, A.; Juurlink, B.; Buchty, R.; Karl, W.; Vassiliadis, S.: *Optimizing Cache Performance of the Discrete Wavelet Transform Using a Visualization Tool*. In: Proceedings Ninth IEEE International Symposium on Multimedia ISM 2007, December 2007, Taichung, Taiwan, 2007, pp. 153 – 160

Buchty, R.; Nowak, F.; Karl, W.: *A Run-Time Reconfigurable Cache Architecture*. Proceedings of the International Conference ParCo 2007, p. 757-766, IOS Press, Series "Advances in Parallel Computing", Volume 15, ISBN 978-3-9810843-4-4, Jülich, September 2007

Tao, J.; Dressler, T.; Karl, W.: *An Interactive Graphical Environment for Code Optimization*. Computational Science – ICCS 2007 7th International Conference, Beijing, China, May 27 - 30, 2007, Proceedings, Part II, Lecture Notes in Computer Science, Vol. 4488, Springer-Verlag, Berlin / Heidelberg, 2007, pp. 831-838

Tao, J.; Gaugler, T.; Karl, W.: *A Profiling Tool for Detecting Cache-Critical Data Structures*. In: Anne-Marie Kermarrec, Luc Bougé und Thierry Priol (Eds.) Euro-Par 2007 Parallel Processing 13th International Euro-Par Conference, Rennes, France, August 28-31, 2007. Proceedings. Lecture Notes in Computer Science Vol. 4641, Springer Berlin/Heidelberg, September 2007, pp. 52-61

Tao, J.; Karl, W.: *Supporting Cache Locality Optimization with a Toolset*. In: Wolfgang E. Nagel, Wolfgang V. Walter and Wolfgang Lehner (Eds.): Euro-Par 2006 Parallel Processing 12th International Euro-Par Conference, Dresden, Germany, August 28 – September 1, 2006. Proceedings, LNCS, Nr. 4128, Springer, Heidelberg, 2006, p. 25-34

Löw, H.-P.; Buchty, R.; Karl, W.: *A Network Agent for Diagnosis and Analysis of Real-Time Ethernet Networks*. International Conference on Compilers, Architecture, and Synthesis for Embedded Systems (CASES 2006), ACM Press, ISBN 1-59593-543-6, Seoul, Korea, October 2006, pp. 65-73

Tao, J.; Schloissnig, S.; Karl, W.: *Analysis of the Spatial and Temporal Locality in Data Accesses*. In: Vassil N. Alexandrov, Geert Dick van Albada, Peter M.A. Sloot, Jack Dongarra (Eds.): Computational Science – ICCS 2006: 6th International Conference, Reading, UK, May 28-31, 2006. Proceedings, Part II, Lecture Notes in Computer Science, Vol. 3992, Springer, Berlin, Heidelberg, 2006, pp. 502 – 509

Tao, J.; Karl, W.: *Performance Evaluation of Adaptive Caching Schemes*. In: Karl, W.; Becker, J.; Großpietsch; E. Hochberger, C.; Maehle, E.: ARCS'06 19th International Conference on Architecture of Computing Systems Workshop Proceedings, March 16, 2006, Frankfurt am Main, GI-Edition Lecture Notes in Informatik, P-81, März 2006, pp. 351-360

Quaing, B.; Tao, J. Karl, W.: *YACO: A User Conducted Visualization Tool for Supporting Cache Optimization*. In: Laurence T. Yang, Omer F. Rana, Beniamino Di Martino, Jack Dongarra (Eds.): High Performance Computing and Communications: First International Conference, HPC2005, Sorrento, Italy, September 21-23, 2005. Proceedings. Lecture Notes in Computer Science, Band 3726, Springer-Verlag, Heidelberg, September 2005, pp. 694-703

Tao, J.; Jeitner, J.; Trinitis, C.; Karl, W.; Weidendorfer, J.: *Comprehensive Cache Inspection with Hardware Monitors*. In: Victor Malyshev (Ed.): Parallel Computing Technologies: 8th International Conference, PaCT 2005, Krasnoyarsk, Russia, September 5-9, 2005. Proceedings. Lecture Notes in Computer Science, Band 3606, Springer-Verlag, Heidelberg, September 2005, pp. 331-345

Tao, J.; Karl, W.: *CacheIn: A Toolset for Comprehensive Cache Inspection*. In: Vaidy S. Sunderam, Geert Dick van Albada, Peter M. A. Sloot, Jack J. Dongarra (Eds.): Computational Science ICCS 2005: 5th International Conference, Atlanta, GA, USA, May 22-25, 2005, Proceedings, Part III. Lecture Notes in Computer Science, Band 3515, Springer-Verlag, Heidelberg, Mai 2005, pp. 182-190

Tao, J.; Karl, W.: *Optimization-oriented Visualization of Cache Access Behaviour*. In: Vaidy S. Sunderam, Geert Dick van Albada, Peter M. A. Sloot, Jack J. Dongarra (Eds.): Computational

Science ICCS 2005: 5th International Conference, Atlanta, GA, USA, May 22-25, 2005, Proceedings, Part III. Lecture Notes in Computer Science, Band 3515, Springer-Verlag, Heidelberg, Mai 2005, pp. 174-181

Tao, J.; Karl, W.: *Impact of Cache Coherence Models on Performance of OpenMP Applications*. In: Danelutto M., Vanneschi M., Laforenza D. (Hrsg.): 10th International Euro-Par Conference, Pisa, Italy, August 31 - September 3, 2004, Proceedings Reihe : Lecture Notes in Computer Science , Band 3149, August 2004

Tao, J.; Karl, W.: *On the Accuracy of Architecture Simulation*. Proceedings of the IASTED International Conference on Applied Simulation and Modelling (ASM 2004), Rhodos, Greece. June 2004, pp.484-489.

Tao, J.; Schulz, M.; Karl, W.: *A Simulation Tool for Evaluating Shared Memory Systems*. Proceedings of the 36th Annual Simulation Symposium, Orlando, USA. April 2003, pp.335-342

Tao, J.; Karl, W.: *On the Cache Access Behavior of OpenMP Applications*. Workshop Proceedings of the International Conference on Architecture of Computing Systems (ARCS 2004), Augsburg, Germany. March 2004, pp.410-419.

Schulz, M.; Tao, J.; Trinitis, C.; Karl, W.: *SMiLE: An Integrated Multi-Paradigm Software Infrastructure for SCI-based Clusters*. Proceedings of the IEEE/ACM International Symposium on Cluster Computing and the Grid (CCGrid 2002), Berlin, Germany, May 2002, pp. 247-254

Tao, J.; Schulz, M.; Karl, W.: *Improving Data Locality Using Dynamic Page Migration Based on Memory Access Histograms*. In: Sloot, P.M.A.; Tan, C.J.K. Dongarra, J.J.; Hoekstra, A.G. (Eds.): Computational Science - ICCS 2002 International Conference, Amsterdam, The Netherlands, April 21-24, 2002. Proceedings, Part II, Lecture Notes in Computer Science, Vol. 2330, Springer-Verlag, Heidelberg, 2002

Walter, M.; Trinitis, C.; Karl, W.: *OpenSESAME: An Intuitive Dependability Modeling Environment Supporting Inter-Component Dependencies*. In: Proceedings PRDC 2001 Pacific Rim International Symposium on Dependable Computing, Seoul Korea, 17 - 19 December 2001, IEEE Computer Society, pp.76-83

Tao, J.; Karl, W. Schulz, M.: *Using Simulation to Understand the Data Layout of Programs*. In: Proceedings of the IAESTE Conference on Applied Simulation and Modelling (ASM), Marbella, Spain, September 2001.

Trinitis, C.; Schulz, M.; Eberl, M.; Karl, W.: *SCI-Based LINUX PC Clusters as a Platform for Electromagnetic Field Calculations*. In: V. Malyskhin (Eds.): Parallel Computing Technologies 6th International Conference, PaCT 2001, Novosibirsk, Russia, September 3-7, 2001, Proceedings, LNCS 2127, Springer-Verlag, Heidelberg, Sept. 2001, pp. 510-514

Torralba, G.; Gonzáles, V.; Sanchis, E.; Tao, J.; Schulz, M.; Karl, W.: *Data Monitoring in High Performance Clusters*. Proceedings of the 12th IEEE International Congress on Real Time for Nuclear and Plasma Sciences. Valencia, Spain, June 2001, pp. 90-95

Tao, J.; Karl, W.; Schulz, M.: *Visualizing the Memory Access Behavior of Shared Memory Applications on NUMA Architectures*. In: Alexandrov, V.N.; Dongarra, J.J.; Juliano, B.A.; Renner, R.S.; Tan, C.J.K. (Eds.): Computational Science - ICCS 2001 International Conference, San Francisco, CA, USA, May 28-30, 2001. Proceedings, Part II Springer-Verlag, Heidelberg, LNCS 2074, May 2001, pp. 861-870

Karl, W.; Schulz, M.; Völk, M.; Ziegler, S.: *Meeting the Computational Demands of Nuclear Medical Imaging using Commodity Clusters*. In: Alexandrov, V.N.; Dongarra, J.J.; Juliano, B.A.; Renner, R.S.; Tan, C.J.K. (Eds.): Computational Science - ICCS 2001 International Conference, San Francisco, CA, USA, May 28-30, 2001. Proceedings, Part II Springer-Verlag,

Heidelberg, LNCS 2074, May 2001, pp. 27-36.

Trinitis, C.; Karl, W.; Leberecht, M.: *Electrical Phenomena during Hot Swap Events*. Proceedings of 2000 Pacific Rim International Symposium on Dependable Computing (PRDC2000) December 18 -20, 2000, Los Angeles, USA, 2000, IEEE Computer Society, pp.19-26

Karl, W.; Schulz, M.; Völk, M., Ziegler, S.: *NEPHEW: Applying a Toolset for the Efficient Deployment of a Medical Image Application on SCI-based Clusters*. In: Bode, A.; Ludwig, T.; Karl, W.; Wismüller, R. (Editors): Euro-Par 2000 Parallel Processing 6th International Euro-Par Conference, Munich, Germany, August/September 2000. Proceedings, Springer-Verlag Heidelberg Berlin, LNCS 1900, August/September 2000, pp. 851ff.

Hockauf, J.; Jeitner, J.; Karl, W.; Lindhof, R.; Schulz, M.; Gonzales, V.; Sanquis, E.; Torralba, G.: *Design and Implementation Aspects for the SMiLE Hardware Monitor*. In: Karl, W.; Horn, G.: Scalable Coherent Interface - Conference Proceedings of SCI Europe 2000 3rd International Conference on SCI-based Technology and Research. 29. - 30. August 2000, München, SINTEF Electronics and Cybernetics, Oslo, August 2000

Tao, J.; Karl, W.; Schulz, M.: *Understanding the Behavior of Shared Memory Applications*. In: Karl, W.; Horn, G.: Scalable Coherent Interface - Conference Proceedings of SCI Europe 2000 3rd International Conference on SCI-based Technology and Research. 29. - 30. August 2000, München, SINTEF Electronics and Cybernetics, Oslo, August 2000

Trinitis, C.; Eberl, M.; Karl, W.: *Numerical Calculation of Electromagnetic Problems on an SCI-Based PC-Cluster*. Proceedings International Conference on Parallel Computing in Electrical Engineering PARELEC 2000, Trois-Rivière, Québec, Canada, 27-30 August 2000, IEEE Computer Society, August 2000, pp. 166-170

Karl, W.; Schulz, M.; Tao, J.: Using the SMiLE Monitoring Infrastructure to Detect and Lower the Inefficiency of Parallel Applications. In: Bubak, M.; Williams, R.; Afsarmanesh, H.; Hertzberger, B. (Eds.): High-Performance Computing and Networking 8th International Conference, HPCN Europe 2000 Amsterdam, The Netherlands, May 8-10, 2000 Proceedings, Springer-Verlag Heidelberg Berlin, LNCS 1823, May 2000

Karl, W.; Schulz, M.; Trinitis, J.: *Multilayer Online-Monitoring for Hybrid DSM systems on top of PC clusters with a SMiLE*. In: Haverkort, B.R.; Bohnenkamp, H.C.; Smith, C.U. (Eds.): Computer Performance Evaluation. Modelling Techniques and Tools 11th International Conference, TOOLS 2000 Schaumburg, IL, USA, March 25-31, 2000 Proceedings, Springer-Verlag Heidelberg Berlin, LNCS 1786, März 2000

Douglas, C.C.; Hu, J.; Karl, W.; Kowarschik, M.; Rüde, U.; Weiß, C.: *Fixed and Adaptive Cache Aware Algorithms for Multigrid Methods*. In: MultigridVI. Proceedings of the European Multigrid Meeting 1999, Gent, Belgium, September 1999.

Weiß, C.; Karl, W.; Kowarschik, M.; Rüde, U.: *Memory Characteristics of Iterative Methods*. In: Proceedings SC'99, Portland, Oregon, November 13 -19, 1999

Karl, W.; Leberecht, M.; Schulz, M.: *Optimizing Data Locality for SCI-Based PC-Clusters with the SMiLE Monitoring Approach*. In: Proceedings 1999 International Conference on Parallel Architectures and Compilation Techniques (PACT'99) October 12-16, 1999 Newport Beach, CA, IEEE Computer Society, (1999), pp. 169 - 176

Karl, W.; Schulz, M.; Völk, M.; Ziegler, S.: *Running a Spectral Analysis Code on top of SCI Shared Memory Using the TreadMarks API*. In: Karl, W., Horn, G. (Eds.): Scalable Coherent Interface Proceedings of the SCI-Europe'99 Conference, Toulouse, France, September 2nd - 3rd, 1999, SINTEF Electronics and Cybernetics, (1999), pp. 35-43

Karl, W.; Leberecht, M.; Oberhuber, M.: *Enforcing Deterministic Execution of Parallel Programs - Debugging Support Through the SMiLE Monitoring Approach*. In: Hellwagner, H., Reinefeld, A. (Eds.) *Scalable Coherent Interface: Technology and Applications*. Proceedings of the SCI-Europe'98. Bordeaux, France, September 29-30, 1998, Cheshire Henbury, 1998, pp. 83-90.

Eberl, M.; Hellwagner, H.; Karl, W.; Leberecht, M.; Weidendorfer, J.: *Fast Communication Libraries on an SCI Cluster*. In: Hellwagner, H., Reinefeld, A. (Eds.) *Scalable Coherent Interface: Technology and Applications*. Proceedings of the SCI-Europe'98. Bordeaux, France, September 29-30, 1998, Cheshire Henbury, 1998, pp. 165-175.

Hockauf, R.; Karl, W.; Leberecht, M.; Oberhuber, M.; Wagner, M.: *Exploiting Spatial and Temporal Locality of Accesses: A New Hardware-Based Monitoring Approach for DSM Systems*. In: D. Pritchard, Jeff Reeve (Eds.): *Euro-Par'98 Parallel Processing / 4th International Euro-Par Conference* Southampton, UK, September 1-4, 1998 Proceedings. Springer-Verlag, Heidelberg, Lecture Notes in Computer Science Vol.1470, 1998, pp. 206-215

Hellwagner, H.; Karl, W.; Leberecht, M.: *Fast Communication Mechanisms - Coupling Hardware Distributed Shared Memory and User-Level Messaging*. In: Proceedings The 1997 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'97), Las Vegas, Nevada, USA, (Juni 1997)

Karl, W.: *Some Design Aspects for VLIW Architectures Exploiting Fine-Grained Parallelism*. In Bode, Arndt, Mike Reeve und G. Wolf (Eds.): *PARLE'93 Parallel Architectures and Languages Europe*, 5th International PARLE Conference. München: Springer-Verlag, (Juni 1993), LNCS 694, pp. 582-599.

Bemmerl, T.; Karl, W.; Luksch, P.: *Evaluierung von Architekturparametern verschiedener Rechnerstrukturen mit Hilfe von CAE-Workstations*. In: P. Müller-Stoy: *Architektur von Rechensystemen*. Tagungsband 11. ITG/GI Fachtagung München, März 1990, Berlin: VDE Verlag, pp. 255-274

Karl, W.: *Entwurf mikroprogrammierbarer Koprozessorstrukturen auf einer CAE-Workstation*. In: *Proceeding Algoritmy '89*, Strbské Pleso, CSSR, April 1989, pp. 154-156

Karl, W., Krammer, J.: *Performance Measurements of a RISC Processor on a CAE Workstation*. In: *Proceedings 13. International Conference on Microelectronics*, München, electronica '88, (1988), pp. 141-149

## **Publications in Workshops**

Buchty, R.; Kicherer, M.; Kramer, D.; Karl, W.: *An Embrace-and-Extend Approach to Managing the Complexity of Future Heterogeneous Systems*. In: *Embedded Computer Systems: Architecture, Modeling, and Simulation*. 9<sup>th</sup> International Workshop, SAMOS 2009, Greece, July 20-23, 2009, Proceedings, Lecture Notes in Computer Science (LNCS), Vol. 5657, Springer Berlin/ Heidelberg, 2009, pp. 226-235

Buchty, R.; Kramer, Nowak, F.; Karl, W.: *A Seamless Virtualization Approach for Transparent Dynamical Function Mapping Targeting Heterogeneous and Reconfigurable Systems*. In: *Applied Reconfigurable Computing: Architectures, Tools, and Applications* 5<sup>th</sup> International Workshop, ARC 2009, Karlsruhe, Germany, March 16-18, 2009. Proceeding. Lecture Notes in Computer Science (LNCS), Vol. 5453, Springer Berlin / Heidelberg, 2009, pp. 362-367

Nowak, F.; Buchty, R.; Kramer, D.; Karl, W.: *Exploiting the HTX-Board as a Coprocessor for Exact Arithmetics*. Proceeding of the Second International Workshop on Hypertransport Research and Applications (WHTRA 2009), Mannheim, Germany, February 2009



Kramer, D.; Vogel, T.; Buchty, R.; Nowak, F.; Karl, W.: *A General Purpose HyperTransport-based Application Accelerator Framework*. Proceeding of the Second International Workshop on Hypertransport Research and Applications (WHTRA 2009), Mannheim, Germany, February 2009

Martin Schindewolf, Albert Cohen, Wolfgang Karl, Andrea Marongiu, Luca Benini: *Towards Transactional Memory Support for GCC*. GROW '09: First International Workshop on GCC Research Opportunities. Held in conjunction with: the fourth International Conference on High-Performance Embedded Architectures and Compilers (HiPEAC), Paphos, Zypern Thread Creation for Self-aware Parallel Systems.

Tao, J.; Karl, W.; Trinitis, C.: *Implementing an OpenMP Execution Environment on InfiniBand Clusters*. In: OpenMP Shared Memory Parallel Programming - International Workshops, IWOMP 2005 and IWOMP 2006, Eugene, OR, USA, June 1-4, 2005, Reims, France, June 12-15, 2006. Proceedings. LNCS Vol. 4315, Springer Berlin, Heidelberg, 2008, pp. 65-77

Nowak, D.; Buchty, R.; Karl, W.: *Adaptive Cache Infrastructure: Supporting Dynamic Program Changes Following Dynamic Program behaviour*. Proceedings of the 9<sup>th</sup> Workshop on Parallel Systems and Algorithms (PASA 2008), GI Lecture Notes in Informatics (LNI), Vol. 124, Dresden, Germany, 2008, pp. 59-68

Buchty R.; Tao, J. Karl, W.: *Automatic Data Locality Optimization Through Self-optimization*. In: De Meer, H; Sterbenz, J. P. G. (Eds.): *Self-Organizing Systems First International Workshop, IWSOS 2006, and Third International Workshop on New Trends in Network Architectures and Services, EuroNGI 2006*, Passau, Germany, September 18-20, 2006 Proceedings, Lecture Notes in Computer Science, Vol. 4124, Springer Berlin, Heidelberg, 2006, pp. 187-201

Becker, J.; Brändle, K.; Brinkschulte, U.; Henkel, J.; Karl, W.; Köster, T.; Wenz, M.; Wörn, H.: *Digital On-Demand Computing Organism for Real-Time Systems*. In: Karl, W.; Becker, J.; Großpietsch; E. Hochberger, C.; Maehle, E. (Eds.): *ARCS'06 19th International Conference on Architecture of Computing Systems Workshop Proceedings*, March 16, 2006, Frankfurt am Main, GI-Edition Lecture Notes in Informatik, P-81, März 2006, pp. 231-245

Tao, J.; Karl, W.; Trinitis, C.: *Implementing an OpenMP Execution Environment on InfiniBand Clusters*. In: *International Workshop on OpenMP IWOMP 2005*, Eugene, USA, June 2005, Proceedings. Lecture Notes in Computer Science, Springer-Verlag, Heidelberg, to appear

Tao, J.; Schulz, M.; Karl, W.: *SIMT/OMP: A Toolset to Study and Exploit Memory Locality of OpenMP Applications on NUMA Architectures*. In: Chapman, B. (Ed.) *Shared Memory Parallel Programming with Open MP: 5th International Workshop on Open MP Applications and Tools, WOMPAT 2004*, Houston, TX, USA, May 17-18, 2004, Revised Selected Papers, Lecture Notes in Computer Science, Vol. 3349, Springer-Verlag, 2004

Tao, J.; Karl, W.: *On the Cache Access Behavior of OpenMP Applications*. Workshop Proceedings of the International Conference on Architecture of Computing Systems (ARCS 2004), Augsburg, Germany. March 2004, pp.410-419.

Brandes, T., Schwamborn, H., Gerndt, M.; Jeitner, J.; Kereku, E.; Karl, W.; Schulz, M.; Tao, J.; Brunst, H., Nagel, W.; Neumann, R.; Müller-Pfefferkorn, R.; Trenkler, B.; Hoppe, H.-C.: *Werkzeuge für die effiziente Programmierung von Cache-Architekturen*. In: *Mitteilungen Gesellschaft für Informatik e.V., Parallel-Algorithmen, -Rechnerstrukturen und Software*, ISSN 0177 – 0454, 19. PARS-Workshop Basel, November 2003, pp. 43-49.

Trinitis, C.; Schulz, M.; Karl, W.: *A Comprehensive Electric Field Simulation Environment on Top of SCI*. In: Kranzlmüller, D.; Kacsuk, P.; Dongarra, J.; Volkert, J.: *Recent Advances in Parallel Virtual Machine and Message Passing Interface 9<sup>th</sup> European PVN/MPI User's Group Meeting*, Linz, Austria, September/October 2002 Proceedings. Lecture Notes in Computer Science, Vol. 2474, Springer-Verlag, Heidelberg, 2002, pp. 114-121

Schulz, M.; Tao, J.; Karl, W.: *Improving the Scalability of Shared Memory Systems Through Relaxed Consistency*. Proceedings of the Second Workshop on Caching, Coherence, and Consistency (WC3'02), New York, USA, June 2002

Schulz, M.; Tao, J.; Jeitner, J.; Karl, W.: *A Proposal for a New Hardware Cache Monitoring Architecture*. ACM SIGPLAN Workshop on Memory System Performance (MSP2002), Berlin, Germany, June 2002, also published in: ACM SIGPLAN Notices, Volume 38, Issue 2 supplement (February 2003), MSP 2002 and ISMM 2002, pp. 76 – 85, Feb. 2003

Tao, J.; Karl, W.; Schulz, M.: *A Novel Approach for Data Distribution on NUMA Machines*. In: U. Bringschulte, K.-E. Großpietsch, C. Hochberger, E. W. Mayr (Eds.): International Conference of Computing Systems ARCS 2002, Workshop Proceedings Dependability and Fault Tolerance, Java in Embedded Systems, Parallel Systems and Algorithms PASA, Karlsruhe Germany April 8 - 12, 2002, VDE-Verlag, Berlin, 2002

Walter, M.; Trinitis, C.; Karl, W.: *Evaluierung von verteilten hochverfügbaren Systemen mit OpenSESAME*. Mitteilungen -- Gesellschaft für Informatik e.V., Parallel-Algorithmen und Rechnerstrukturen, ISSN 0177-0454, PARS 2001 Workshop, November 2001, pp. 29-39

Tao, J.; Karl, W.: *A Tool Environment for Efficient Execution of Shared Memory Programs on NUMA Systems*. In: Jähnichen, S.; Zhou, X. (Eds.): Proceedings The Fourth International Workshop on Advanced Parallel Processing Technologies. September 17-19, 2001, Ilmenau, Germany, pp. 156-165

Bode, A.; Karl, W.; Ludwig, T.; Wismüller, R.: *Monitoring Technologies for Parallel On-Line Tools*. SFB 342 Final Colloquium: Methods and Tools for the Efficient Use of Parallel Systems, München, 2000, pp. 1-29

Schulz, M.; Karl, W.: *HybridDSM: An Efficient Alternative to Pure Software DSM Systems on NUMA Architectures*. In: Iftode, L.; Keleher, P. (Eds.): Proceedings of the Second International Workshop on Software Distributed Shared Memory (WSDSM'00), Santa Fee, New Mexico, May 2000

Eberl, M.; Karl, W.; Trinitis, C.; Blaszczyk, A.: *Parallel Computing on PC Clusters - An Alternative to Supercomputers for Industrial Applications*. In: Dongarra, J.; Luque E.; Margalef, T.: Recent Advances in Parallel Virtual Machine and Message Passing Interface - 6th European PVM/MPI User's group Meeting, Barcelona, Spain, September 26-29, 1999, Proceedings, Springer-Verlag, Berlin, LNCS, Vol. 1697, (1999), pp. 493 - 498

Eberl, M.; Karl, W.; Leberecht, M.; Schulz, M.: *Eine Software-Infrastruktur für Nachrichtenaustausch und gemeinsamen Speicher auf SCI-basierten PC-Clustern*. In: W. Rehm, T. Ungerer (Ed.) Cluster-Computing Tagungsband zum 2. Workshop 25./26. März 1999, Karlsruhe, Chemnitzer Informatik Berichte, CSR-99-02, 1999, pp. 25-33

Karl, W.; Leberecht, M.; Schulz, M.: *Supporting Shared Memory and Message Passing on Clusters of PCs with a SMiLE*. In: Sivasubramaniam, A. Lauria, M. (Eds.) Network-Based Parallel Computing: Communication, Architecture, and Applications / Third International Workshop, CANPC'99, Orlando, Florida, USA, January 9th, 1999. Springer Verlag, Heidelberg, LectureNotes in Computer Science Vol.1602, 1999

Karl, W.; Leberecht, M.; Oberhuber, M.: *Kontrolliert deterministische Ausführung paralleler Programme auf SCI-basierten PC-Clustern*. PARS Workshop, 16.-17. September 1998, Karlsruhe, Mitteilungen - Gesellschaft für Informatik e.V., Parallel-Algorithmen und Rechnerstrukturen, 1998, S. 13-22.

Macketanz, R.; Karl, W.: *Java-basierter Co-Entwurf eingebetteter Systeme*. In: A. Hergenhan, W. Rosenstiehl: Tagungsband GI/ITG Workshop JAVA und Eingebettete Systeme, 15.

September 1998, Karlsruhe, FZI-Bericht 4-13-9/98, Forschungszentrum Karlsruhe, 1998, S. 57-65

Macketanz, R.; Karl, W.: *JVX- A Rapid Prototyping System Based on Java and FPGAs*. R.W. Hartenstein, A. Keevallik (Eds.): *Field-Programmable Logic and Applications / 8th International Workshop, FPL'98, Tallinn, Estonia, August 31 - September 3, 1998, Proceedings*. Springer Verlag, Heidelberg, *Lecture Notes in Computer Science, Vol.1482, 1998, pp. 99-108*

Acher, G.; Karl, W.; Leberecht, M.: *PCI-SCI Protocol Translations: Applying Microprogramming Concepts to FPGAs*. R.W. Hartenstein, A. Keevallik (Eds.): *Field-Programmable Logic and Applications / 8th International Workshop, FPL'98, Tallinn, Estonia, August 31 - September 3, 1998, Proceedings*. Springer Verlag, Heidelberg, *Lecture Notes in Computer Science Vol.1482, 1998, pp. 238-247*

Karl, W.; Leberecht, M.: *Ein Monitorkonzept für Systeme mit verteiltem gemeinsamen Speicher*. ARCS'97: *Architektur von Rechensystemen 1997; Vorträge der Workshops im Rahmen der 14.ITG/GI-Fachtagung vom 8. - 11. September 1997 in Rostock*. Rostock: Univ., 1997 (*Workshops zur Architektur von Rechensystemen*), pp.169 - 177; auch in : *PARS-Mitteilungen, Nr. 16, PARS-Workshop, Rostock, 11. Sept. 1997*.

Acher, G.; Hellwagner, H.; Karl, W.; Leberecht, M.: *Eine PCI-SCI-Adapterkarte für ein PC-Cluster mit verteiltem gemeinsamen Speicher*. In: Chr. Steigner (Hrsg.): *Proceedings der 4. ITG/GI-Fachtagung Arbeitsplatz-Rechensysteme (APS'97) Anwendungen, Architekturen, Betriebssysteme und Netzwerke, Universität Koblenz-Landau, Verlag Dietmar Fölbach, (21. - 22. Mai 1997)*, pp. 114 -- 122

Acher, G.; Hellwagner, H.; Karl, W.; Leberecht, M.: *A PCI-SCI Bridge for Building a PC-Cluster with Distributed Shared Memory*. *Proceedings The Sixth International Workshop on SCI-based High-Performance Low-Cost Computing, SCiZZL, Santa Clara, CA, (September 1996)*, pp. 1-8

Karl, W.; Hellwagner, H.: *SMiLE-- Entwurf eines Multirechnersystems auf der Basis von Standardkomponenten*. *PARS'95 -- Mitteilung -- Gesellschaft für Informatik e.V., Parallel-Algorithmen und Rechnerstrukturen, Nr. 14, (Dezember 1995)*, pp. 19-26

Karl, W.; Krings, V.; Leberecht, M.; Schmidt, B.: *Simulation aus SCI-gekoppelten Arbeitsplatzrechnern*. *PARS'95 -- Mitteilung -- Gesellschaft für Informatik e.V., Parallel-Algorithmen und Rechnerstrukturen, Nr. 14, (Dezember 1995)*, pp. 35-40

Hellwagner, H.; Karl, W.; Leberecht, M.; Richter, H.: *SCI-Based Local-Area Shared-Memory Multiprocessor*. In: *Proceedings of APPT'95 - International Workshop on Advanced Parallel Processing Technologies, Beijing, China, (Sep. 1995)*, pp. 32-39

Karl, W.: *Evaluating High Performance Combinations of VLIW Architectures and Parallelizing Compilers*. In: *Workshop über Parallelverarbeitung, Lessach (Österreich), 26.9. - 30.9.1994, K. Ecker, J. Apsel (Hrsg.), Informatik-Bericht 95/1, Institut für Informatik, Technische Universität Clausthal*, pp. 70 -- 86, 1995

Karl, W.: *Architektureigenschaften und Parallelisierungsmethoden für VLIW--Rechner*. In: *Mitteilungen - Gesellschaft für Informatik e.V., Parallel-Algorithmen und Rechnerstrukturen, 11, Juli 1993*, pp. 101 - 106.

Karl, W.: *Evaluierung von Architektureigenschaften und Parallelisierungskonzepten für VLIW--Architekturen*. In: *Mitteilungen -- Gesellschaft für Informatik, Parallel-Algorithmen und Rechnerstrukturen, 12, Juli 1993*, pp. 236--248.

Karl, W.: *A Simulation Environment for VLIW Architectures and Their Parallelizing Compilers*. In: *Conference Proceedings International Workshop on Compilers for Parallel Computers, Paris, 1990*, pp. 287-292

Bode, A.; Karl, W.: *Lösung strömungsmechanischer Gleichungen auf mikroprogrammierbaren Multiprozessorsystemen*. In: Ecker, K. (Hrsg.): Workshop über Parallelverarbeitung, Informatik-Bericht, 88/3 (1988), Technische Universität Clausthal-Zellerfeld, pp. 34-46

Bode, A.; Karl, W.: *Effiziente Implementierung strömungsmechanischer Gleichungen auf mikroprogrammierbaren Multiprozessorsystemen*. In: Mitteilungen -- Gesellschaft für Informatik e.V. Parallelalgorithmen und Rechnerstrukturen, 4 (1987), pp. 122-131

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