Publications Olaf Schenk

Full Professor, Institute of Computing,
Faculty of Informatics, USI, Lugano, Switzerland; Director Panua Technologies Sagl, Lugano, Switzerland; June 2026, SIAM Fellow

Total: (only last 10 years): >50 journal papers, 1 book, 6 book chapters, >35 top computer science conference papers, **>8'500 citations**, h-index: >38 (Google Scholar); full publication list available at: `http://usi.to/ovv`. Olaf Schenk and his PhD students and postdocs are underlined.

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PARCO E. Agullo, P. Arbenz, L. Giraud, O. Schenk, *Guest editorial: Special Issue on Parallel Matrix Algorithms and Applications (PMAA'16)*, Parallel Computing, May 2018, vol 74, pp. 1-2. DOI: 10.1016/j.parco.2018.01.003

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PARCO P. Arbenz, L. Grigori, R. Krause, O. Schenk, *Guest editorial: Special Issue on Parallel Matrix Algorithms and Applications (PMAA'14, Part 2)*, Parallel Computing, pp. 135-136, August 2016, DOI: 10.1016/j.parco.2016.08.003

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PARCO C. Bekas, A. Grama, O. Schenk, Y. Saad, *Guest editorial: Special Issue on Parallel Matrix Algorithms and Applications (PMAA'12)*, Parallel Computing, Volume 40, Issue 7, pp. 159–160, July 2014. DOI: 10.1016/j.parco.2014.06.001

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JFGCS P. Arbenz, H. Burkhart, O. Schenk, E. Mähle, *SPEEDUP/PARS Workshop on Modern Algorithms in Computational Sciences and Information Technology*, J. of Future Generation Computer Systems, 21 (8), pp. 1249–1250, 2005, DOI: 10.1016/j.future.2004.09.002

Patent

European Patent

D. Kourounis, O. Schenk, *Processing of Multiperiod Optimal Power Flow Problems using Structure-Exploiting Interior Point Methods*, European Patent Office., PCT - International patent No. PCT/EP2017/057632, March 2017, European Patent Nr. 17719497.4, USA Patent Nr: 16/498,676.

Monographic Thesis

PhD Thesis

Title *Parallel Sparse LU Factorization Methods on Shared Memory Multiprocessors*

Supervisors Professor Wolfgang Fichtner (ETH Zurich) & Professor Martin Gutknecht (ETH Zurich)

Description This dissertation presents new techniques for solving large sparse symmetric and structurally symmetric linear systems on shared memory high performance parallel computers, using Gaussian elimination with complete supernode pivoting. Shared memory multiprocessors have recently attracted considerable interest in scientific and engineering computing and the objective is to increase the parallel performance on these architectures. The efficiencies of the algorithms are demonstrated for matrices from various application fields and for a variety of high performance computers

Place ETH Zurich, 2000, Series in Microelectronics, Volume 89, Hartung-Gorre, ISBN 3-89649-532-1.

doi dx.doi.org/10.3929/ethz-a-003876213

Habilitation Thesis

Title *Scientific Computing - Algorithms, Combinatorics, High-Performance Computing, and Applications*

Place Department of Computer Science and Mathematics, Faculty of Science, University of Basel, Switzerland, March 2010.

Description This research introduced some of the many ways in which combinatorial abstractions and numerical algorithms in computer science play a role in computational science. It is explained how these algorithms might be useful in scientific applications. It deals in particular with scientific algorithmic research and high-performance computing architectures to enable large-scale simulations and optimizations. This is a discipline where computing power is a critical issue in almost every application. Complex simulation models containing more degrees of freedom not only require more available space in memory, but also demand faster computing architectures, sophisticated algorithms, and modern HPC technology to compute solutions to these models within an acceptable time frame. In general, the research spans the entire stack, from advanced information technology to scientific algorithmic research.

Publication Impact

Citations

Number of citations for my ten most cited papers (Source: Google Scholar as of July 3, 2026, scholar.google.com)

citations	paper
2024	Solving unsymmetric sparse systems of linear equations with PARDISO (DOI)
706	On fast factorization pivoting methods for sparse symmetric indefinite systems (DOI)
440	Patus: A code generation and autotuning framework for parallel iterative stencil computations on modern microarchitectures (DOI)
413	PARDISO: a high-performance serial and parallel sparse linear solver in semiconductor device simulation (DOI)
274	On large-scale diagonalization techniques for the Anderson model of localization (DOI)
241	Matching-based preprocessing algorithms to the solution of saddle-point problems in large-scale nonconvex interior-point optimization (DOI)
249	Efficient sparse LU factorization with left-right looking strategy on shared memory multiprocessors (DOI)
230	An augmented incomplete factorization approach for computing the Schur complement in stochastic optimization (DOI)
197	Toward the next generation of multiperiod optimal power flow solvers in (DOI)
193	Fast methods for computing selected elements of the Green's function in massively parallel nanoelectronic device simulation (DOI)

Impact factors

Impact factors of the journals I have published in (Source: Journal Citation Reports 2016, Thomson Scientific.):

Journal	Impact Factor 2016	5-Year Impact Factor
IEEE Transactions on Pattern Analysis and Machine Intelligence	24.31	24.31
PNAS	12.78	12.78
IEEE Transactions on Power Systems	5.68	7.26
SIAM Review	4.89	7.26
Genetics	4.55	5.09
J. of Future Generation Computer Systems	3.99	4.78
Geochem. Geophys. Geosyst.	3.20	3.41
Computer&Structures	2.84	3.18
Journal of Computational Physics	2.74	3.12
IEEE Computing in Science & Engineering	2.07	3.09
Mathematical Programming Series B	2.44	2.98
IEEE Transactions on Electron Devices	2.60	2.84
SIAM J. Sci. Comput	2.19	2.80
Journal of Advanced Manufacturing Technology	2.20	2.29
Journal of Computational Geosciences	1.60	2.25
IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems	1.94	2.12
Parallel Computing	1.36	2.01
Journal of Computational Science	1.74	2.00
Journal of Parallel and Distributed Computing	1.93	1.97
BIT Numerical Mathematics	1.67	1.96