

# Author Index

The numbers in this index are paper numbers.

- Adamidis, P., 58  
Agullo, E., 40  
Alcayde, A., 29  
Allix, O., 6, 10  
Ament, M., 18  
Amin, A.H.M., 50, 73  
Amir, A., 73  
Ari, I., 87  
Assel, M., 66  
Aubert, S., 39
- Badia, R., 69  
Bahi, J., 83  
Baños, R., 47, 49  
Barber, R.W., 77  
Barbera, R., 78  
Batti, A., 17  
Bayrasy, P., 43  
Bellens, P., 69  
Benenati, D., 85  
Benkert, K., 54  
Berhe, G., 11  
Bianchi, A., 84  
Bletzinger, K.-U., 67  
Bonelle, J., 63  
Borković, A., 94  
Borouchaki, H., 14, 64  
Bouvry, P., 32  
Brozovsky, J., 71  
Brun, M., 17  
Buisson, M., 39
- Cardoso, J.B., 48  
Castro, H.E., 88  
Cavalieri, S., 85  
Cen, K.F., 12
- Čermák, M., 5  
Chan, A.H.C., 26  
Chau, M., 82, 83  
Chen, H.M., 86  
Cheptsov, A., 66  
Chetverushkin, B.N., 19, 25  
Chmielik, M., 51  
Chraibi, M., 95  
Christmann, W., 33  
Churbanova, N.G., 19  
Coelho, P.G., 48  
Combescure, A., 17  
Cotela, J., 56  
Couturier, R., 83  
Cresta, Ph., 6  
Custódio, A.L., 48
- Da Costa, G., 30, 35  
Dadvand, P., 56  
Dahan, M., 79  
Davydov, A.A., 25  
Denis, C., 77  
Denis, R., 97  
Devloo, P.R.B., 38  
Dias dos Santos, T., 38  
Digonnet, H., 61  
Dolenc, M., 89  
Dooley, R., 79  
Dostál, Z., 1, 3  
Dufaud, T., 41  
Durand, N., 77  
Dziubecki, P., 80
- Eitzen, M., 28  
Emerson, D.R., 77  
Ertl, T., 18, 20

Espona Pernas, L., 81

Falzone, A., 78  
Fan, J.R., 12, 90  
Fernández, A., 47  
Ferronato, M., 37  
Firl, M., 67  
Fischer, M., 67  
Focht, E., 45  
Fournier, Y., 63, 65  
Fox, G.C., 93  
Frantík, P., 62  
Frey, S., 18, 20

Gabriel, E., 54  
Galiano, V., 24  
Gallizo, G., 66  
Gambolati, G., 37  
Garcia, T., 82  
Geller, S., 42  
Geveler, M., 22  
Gil, C., 29, 47, 49  
Giraud, L., 40  
Göddecke, D., 22  
Gómez, J., 29  
Gosselet, P., 10  
Grabowski, P., 80  
Gravouil, A., 17  
Grinberg, L., 91  
Gu, X.J., 77  
Guermouche, A., 40  
Guidault, P.-A., 6  
Guinand, F., 31

Haidar, A., 40  
Hajduković, M., 94  
Hanlon, M., 79  
Hervouet, J.-M., 77  
Heuveline, V., 36, 58  
Hinojosa, J., 6  
Horák, D., 1, 4  
Hunt, E., 81  
Hurley, P., 79

Iakovovski, M.V., 23  
Issa, R., 77  
Iványi, A., 76  
Iványi, M.M., 76

Izzuddin, B.A., 7, 16

Janna, C., 37  
Janssen, C., 42  
Jiang, T., 33  
Jokhio, G.A., 16

Kabelíková, P., 4  
Kačeniauskas, A., 75  
Kačianauskas, R., 75  
Kanayama, H., 13  
Karniadakis, G.E., 91  
Kauker, D., 20  
Kaupužs, J., 72  
Kemloh, U., 95  
Keršner, Z., 62  
Khan, A.I., 50  
Kipp, A., 33  
Klimach, H., 44  
Klinc, R., 89  
Koller, B., 66  
Kollmannsberger, S., 42  
Konecny, P., 71  
Kononov, A., 27  
Kornilina, M.A., 23  
Kosolapov, O., 27  
Kotas, P., 74  
Koudelka, T., 8  
Kozubek, T., 3, 5  
Krafczyk, M., 42  
Krejčí, T., 8  
Kruis, J., 8, 9  
Krysiński, M., 80  
Kübert, R., 52  
Kuczyński, T., 80  
Kudryashova, T., 27  
Kunszt, P., 81  
Kurowski, K., 80  
Küster, U., 45

La Rocca, G., 78  
Lau, Y.H., 70  
Laug, P., 14, 64  
Li, D.B., 12, 90  
Lin, Y.C., 86  
Liu, J., 33, 34  
Lizé, B., 59  
Ljucović, M., 53

Lo, S.H., 14  
Lu, S.Q., 12, 90  
Lukarski, D., 36  
Luo, K., 90

Macorini, L., 7  
Maděra, J., 9  
Maggi, P., 78  
Magiera, J., 51  
Mahinthakumar, G.K., 93  
Malmström, L., 81  
Manelli, L., 84  
Manzano-Agugliaro, F., 49  
Marić, P., 94  
Markauskas, D., 75  
Markopoulos, A., 5  
Márquez, A.L., 29, 47, 49  
Martinell, L., 69  
Martins, C.J., 96  
Masching, H., 67  
Mastriani, E., 85  
Melnik, R.V.N., 72  
Menezes, F.A.M., 38  
Menšík, M., 2  
Merta, M., 4  
Meschke, G., 28  
Migallón, H., 24  
Migallón, V., 24  
Milaković, I., 94  
Milašinović, D.D., 94  
Mock, S., 79  
Molero, G., 29  
Molnárka, G., 60  
Montoya, F.G., 29, 49  
Montoya, M.G., 47, 49  
Morozov, D.N., 19  
Moulinec, C., 63, 65, 77  
Muhtaroglu, N., 87  
Mundani, R.-P., 53  
Muylle, J., 97

Nikolić, M., 94  
Nuthulapati, P., 79

Obrok, P., 57  
Ogino, M., 13  
Oñate, E., 56  
Ortiz, A., 35

Otero, A.D., 68

Pacevič, R., 75  
Pacull, F., 39  
Panagiotidis, A., 20  
Parra, M., 47  
Paszyński, M., 57  
Patzák, B., 15, 46  
Peetz, J.V., 43  
Penadés, J., 24  
Peters, B., 11  
Pham, T., 55  
Pinel, F., 32  
Piontek, T., 80  
Pizzutilo, S., 84  
Polyakov, S., 27  
Praks, P., 74

Quandt, A., 81  
Quigley, S.F., 26  
Quinteros, J., 68

Rank, E., 42, 53, 92  
Razafindrakoto, E., 77  
Resch, M., 45  
Ribbrock, D., 22  
Rimšāns, J., 72  
Roller, S., 44, 54  
Roman, J., 40  
Rosales, E.E., 88  
Rossi, R., 56  
Rotondo, R., 78  
Rypl, D., 15

Saavedra, K., 10  
Sadlo, F., 18  
Sadowská, M., 3  
Samieš, K., 11  
Sayah, A., 35  
Schiller, A., 69  
Schmid, E., 81  
Schubert, L., 33  
Seyfried, A., 95  
Shauer, N., 38  
Shilnikov, E.V., 25  
Spiteri, P., 82, 83  
Srinivasan, B., 73  
Stachoň, M., 74

Stascheit, J., 28  
Steffen, B., 95  
Stolf, P., 35  
Subramanian, C., 36  
Sunderland, A.G., 63  
Sutmann, G., 69  
Sverdlin, A., 27  
Sylvand, G., 59  
Szejnfeld, D., 80

Tallet, N., 65  
Thiam, C., 30  
Thiebolt, F., 35  
Tikhonravov, A.V., 21  
Topping, B.H.V., 97  
Trapeznikova, M.A., 19  
Tromeur-Dervout, D., 41, 55  
Trubetskov, M.K., 21  
Turek, S., 22

Varjasi, N., 60  
Venuti, N., 78  
Veselý, V., 62  
Vezolle, P., 63, 65  
Villamizar, M.J., 88  
von Laszewski, G., 93  
Vondrák, V., 3, 4, 74  
vor dem Berge, M., 33  
Voroniuk, M.N., 23

Wang, F., 93  
Wang, L., 93  
Wang, X., 45  
Weiskopf, D., 18  
Weiss, J.-P., 36  
Wenisch, O., 92  
Wenisch, P., 92  
Wilhelm, F., 58  
Wolf, K., 43

Yao, Q., 13  
Yi, F.X., 12, 90

Zajac, P., 22  
Zhang, L., 26  
Živanov, Ž., 94

# Keyword Index

The numbers in this index are paper numbers.

- ABINIT, 80
- abstract data and communication library, 54
- abstraction layer, 20
- adaptation, 33
- additive Schwarz, 39
- Adobe Flex, 80
- aero-acoustics, 44
- aerogenerators, 49
- Aitken-Schwarz method, 41
- american options, 83
- anisotropic meshing, 64
- arterial flow, 91
- associative memory, 73
- asynchronous iteration, 82, 83
- audit tools, 29
- augmented-indefinite linear systems, 40
- automatic decomposition, 14
  
- backward acting grates, 11
- barotropic subsystem, 58
- boundary element method, 3, 59
- Bratu problem, 24
- brute force, 29
- buckling, 10
- business software, 85
  
- C++, 67, 68
- CAD modeler, 64
- CalculiX, 87
- cell broadband engine, 69
- cell superscalar, 69
- characteristic curve method, 13
- civil engineering, 89
- climate simulation, 58
- cloud, 35
- cloud computing, 52, 87, 88, 89
  
- cluster computing, 60
- co-simulation, 43
- CO2 emission, 34
- CO2 lifecycle, 34
- code coupling interfaces, 43
- collaborative engineering, 73
- collective communication, 54
- combustion, 90
- component searching, 73
- component tracking, 73
- computational fluid dynamics, 39, 91, 92
- computational steering, 18, 92
- conjugate gradient method, 2, 58
- consumption, 33
- contact problem, 1, 3
- continuous-flow electrophoresis, 82
- convection-diffusion equation, 36
- correlation functions, 72
- coupled heat and moisture transfer, 9
- coupled problems, 8, 44, 45
- creep of concrete, 8
- CUDA, 29, 62
- curve discretization, 64
- cyberaide workflow, 93
  
- data center, 32
- data streaming, 45
- degrees of freedom, 13
- delamination, 10
- derivative-free optimization, 48
- design, 21
- desktop grids, 88
- diffusion approximation, 27
- direct numerical simulation, 90
- direct search methods, 48

direct solver, 59, 68  
 direct-iterative hybrid methods, 40  
 discrete element method, 11, 26, 75  
 distributed abstract state machine, 84  
 distributed computing, 92  
 distributed data structures, 4  
 distributed hierarchical graph neuron, 50  
 distributed memory, 28, 44  
 distributed systems, 73, 84  
 distributed visualization, 75  
 domain decomposition, 1, 3, 4, 5, 6, 9, 10, 11, 12, 13, 15, 26, 41, 65, 91  
 domain partitioning approach, 7  
 dynamic structural analysis, 71  
 dynamic voltage scaling, 31  
 dynamical systems, 55

e-collaboration, 78  
 e-science, 78  
 elasto-plasticity, 5  
 empirical optimization, 54  
 end-user, 61  
 energy, 30, 32, 33  
 energy dissipation, 62  
 energy efficiency, 34  
 engineering collaboration, 89  
 engineering software, 97  
 EnginFrame, 78  
 error estimation, 76  
 error in grid-connected processors, 76  
 error in parallel computation, 76  
 error in serial-computation, 76  
 evacuation, 95  
 event detection, 50  
 event tracking, 50  
 explicit difference schemes, 25  
 explicit finite difference schemes, 19  
 explicit finite different method, 12  
 explicit integration, 97  
 external code coupling, 17

FDEM, 26  
 FETI, 1, 2  
 finite difference, 57  
 finite element based optimization, 67  
 finite element method, 3, 7, 17, 20, 22, 28, 38, 61, 67, 68, 71, 87

finite element simulation, 13  
 finite elements method, 8  
 finite-time Lyapunov exponent, 18  
 flame surface, 90  
 flooding, 77  
 flow visualization, 18  
 fluid-structure interaction, 42  
 force based model, 95  
 formal models, 84  
 fracture process zone, 62  
 framework, 53

gas dynamics, 25  
 general purpose graphic processing unit, 26  
 genetic algorithms, 48  
 GENIUS, 78  
 geometric nonlinear analysis, 94  
 gLite middleware, 75  
 GMRES, 36  
 Goldstone mode singularities, 72  
 GPGPU, 20, 22, 24, 28  
 GPU, 18, 19, 23, 26, 36  
 GPU libraries, 24  
 granular matter, 11  
 graph grammar, 57  
 graphical accelerators, 21  
 green computing, 31  
 grid computing, 30, 35, 50, 78, 81, 82, 83, 85, 88, 93  
 grid portal, 78  
 grid technology, 84, 86  
 grid-point ordering, 39  
 GSI-SSH, 79

harmonic coupled finite-strip method, 94  
 hash, 29  
 heuristic, 30  
 high-order finite elements, 42  
 high-order spectral method, 91  
 high-performance communication, 45  
 high-performance computing, 25, 33, 40, 52, 58, 59, 63, 65, 66, 77, 91, 92  
 hybrid, 53  
 hybrid algorithm, 49  
 hybrid architecture, 19, 25  
 hybrid computing system, 23  
 hydrodynamics, 77  
 hyperbolic system of equations, 19

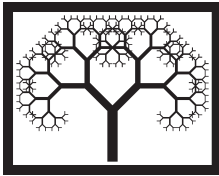
- identical processors, 31
- ill-conditioned factors, 39
- ILU factorizations, 24
- image retrieval, 74
- implicit integration, 11
- incomplete Cholesky decomposition, 58
- incomplete LU, 39
- industry, 34
- information technology, 86
- infrastructure, 33
- input error, 76
- integral equations, 59
- interactive grid visualization, 75
- interactive simulation, 92
- internet, 86
- island parallel model, 49
- island-based model, 47
- isogeometric analysis, 15
- IT service centers, 34
- iterative methods, 37, 38, 60
- iterative solvers, 36, 68
  
- Java, 66
- joining, 63
  
- kinetic Ising, 70
- kinetic schemes, 19, 25
- Krylov subspace methods, 39
- Künzel model, 9
  
- Lagrangian coherent structures, 18
- large scale problems, 4, 45
- large sparse systems, 39
- latent semantic indexing, 74
- LaTIn solver, 10
- lattice Boltzmann method, 42, 92
- lattice spin models, 72
- Liferay, 78, 79, 80
- lifted jet flame, 90
- linear equation, 60
- LU decomposition, 60
  
- maintainability, 20
- management, 33
- mass transfer, 82
- massively parallel, 61
- material science, 80
- mathematical modelling, 58
  
- matrix algorithms, 74
- Matsol library, 5
- memetic algorithms, 47
- memory distributed computing platforms, 15
- memory optimization, 57
- mesh adaptation, 61
- mesh adaptive direct search, 48
- mesh renumbering, 65
- mesoscale model, 7
- message-passing interface, 66, 92
- Metropolis, 70
- middleware, 86
- migration, 35
- millicomputing, 32
- Modelisar FMI, 43
- modular framework, 20
- monitoring, 33
- Monte Carlo simulation, 70, 71, 72
- MpCCI-FMI interface, 43
- MPI, 29, 53, 56, 87, 94, 96
- MPIOM, 58
- multi-body contact problems, 4
- multi-colouring, 36
- multi-core, 24, 32, 36, 51, 57, 69, 87
- multi-grid, 22, 65
- multi-level parallelism, 91
- multi-objective evolutionary algorithm, 49
- multi-particle collision dynamics, 69
- multi-phase porous media flow, 19
- multi-physics simulations, 46
- multi-scale, 10, 43, 44
- multi-thread, 64, 65, 97
  
- nanotechnology, 80
- NAS parallel benchmarks, 54
- natural coarse grid, 5
- Navier-Stokes, 56
- non-conformal meshes, 63
- non-linear analysis, 7
- non-linear conjugate gradient algorithms, 24
- non-linear dynamic system, 62
- non-linear re-localization, 6
- non-linear structural analysis, 6
- non-matching time scales, 17
- non-symmetric matrices, 39
- NUMA technology, 25
- numerical simulation, 77

- numerical validation, 77
- NURBS, 15
- object-oriented design, 46
- object-oriented programming, 67
- obstacle problem, 83
- ocean model, 58
- OOSol library, 4
- open grid service architecture, 84
- OpenMP, 51, 53, 56, 94
- operating system, 32
- optical coatings, 21
- optimization, 32, 33
- orthotropic damage, 8
- out-of-core, 59
- p-grade, 81
- PaaS, 87
- parallel BLAS libraries, 51
- parallel cluster algorithms, 72
- parallel computing, 8, 9, 11, 12, 14, 16, 20, 26, 27, 38, 41, 44, 47, 48, 55, 56, 64, 68, 69, 82, 90
- parallel conservative simulation, 70
- Parallel Extensions to .NET, 51
- parallel finite element method, 96
- parallel implementation, 1
- parallel iterative algorithms, 83
- parallel multi-frontal solver, 57
- parallel preconditioning, 24
- parallel preconditioning, 36, 37
- parallel programming, 3, 60, 67
- parallel scalability, 4
- parallel solver, 59
- parallelization, 15, 21, 28, 53, 65, 66, 71, 87, 95
- parameter-free optimization, 67
- parameterization, 14
- parametric surface meshing, 64
- particle simulations, 69
- particle-laden jet, 12
- partitioning, 16
- pattern recognition, 50, 73
- pattern search methods, 48
- peer-to-peer, 73
- percolation models, 23
- Petaflops, 65
- petascale, 63
- PETSc, 1, 39
- p*-FEM, 42
- physical discretization, 62
- pipelining, 32
- PISO algorithm, 82
- poly-dispersed particle systems, 75
- portal, 81
- post-buckling, 6
- power law, 72
- preconditioning, 39
- pressure Schur complement, 56
- prestressed concrete, 8
- production simulation, 21
- proper orthogonal decomposition, 55
- proteomics, 81
- pseudorandom numbers, 23
- quality of service, 52
- quasi-brittle fracture, 62
- quasi-gas dynamics, 27
- radiative heat transfer, 27
- rainbow tables, 29
- real time computation, 95
- reduced-order modeling, 55
- reinforced concrete, 71
- requirements, 89
- restricted additive Schwarz preconditioner, 41
- rigid body simulation, 42
- round-off error propagation, 77
- saddle-point problems, 37
- SAP ERP R/3, 85
- scalability, 5, 44, 59, 70
- scheduling, 52
- Schur complement method, 8, 9
- Schwarz alternating method, 82
- science gateway, 78, 80
- scientific software architecture, 59
- scientific workflow, 45
- seismic wave propagation, 96
- service level agreements, 52
- simulation, 28, 53, 86, 95
- singular value decomposition, 74
- social networks, 89
- software integration, 46
- sparse linear solver, 65
- sparse linear systems, 40
- sparse matrices, 22



- spectral element, 68
- speed scaling scheduling, 31
- SPMD, 12
- stability, 25
- stability condition, 19
- steepest descent, 2
- storage, 35
- structural analysis, 16, 86
- structural mechanics, 87
- structural models, 86
- structural optimization, 48, 67
- sub-domain decomposition method, 17
- substructuring, 38
- successive-over-relaxation, 58
- surface curvatures, 64
- system error, 76
- system management, 34
  
- task scheduling, 87
- task-based parallelisation, 97
- technical seismicity, 71
- TeraGrid, 79
- thin films, 21
- threaded computation, 49
- time-dependent vector fields, 18
- trace theory, 57
- transient non-linear dynamic problems, 17
- triangulated surfaces, 14
- Trilinos, 56
- tunnelling, 28
- turbulence, 90
- two-dimensional bin-packing problem, 47
- two-stage methods, 24
- two-way, 12
  
- uncoupling, 56
- uniform processors, 31
- unreinforced masonry, 7
- unstructured, 63
- unstructured grids, 22
  
- variable speed processors, 31
- vector field topology, 18
- Vine Toolkit, 80
- virtual machines, 30, 35
- virtual reality, 92
- visualization, 61, 95
- volunteer computing, 88
  
- von Mises, 5
- VTK, 75
  
- water distribution system, 93
- Web 2.0, 80, 89
- Web Portal, 79
- web services, 84
- weighted graph of isogeometric mesh, 15
- wide area network, 35
- Win32 multithreaded programming, 51
- wind farm planning, 49
- wireless sensor network, 50
- workflow, 45, 80, 81





**CIVIL-COMP PRESS**  
**Stirlingshire, Scotland**  
**mmxi**

