



ELSEVIER

Available online at [www.sciencedirect.com](http://www.sciencedirect.com) ScienceDirectJOURNAL OF  
COMPUTATIONAL AND  
APPLIED MATHEMATICS

Journal of Computational and Applied Mathematics 201–210 (2007) 273–286

[www.elsevier.com/locate/cam](http://www.elsevier.com/locate/cam)

## Subject Index for Volumes 201–210 (2007)

- 4-bit model 206 432
- $\alpha$ -invexity 206 122
- A coupled KdV equation 207 35
- A coupled MKdV equation 207 35
- A posteriori 205 72
- A posteriori error bounds 208 316
- A posteriori error estimates 206 440
- A priori error analysis 204 375
- A priori error bounds 206 873
- A priori estimate 204 549
- A system of nonlinear variational inclusions 203 80
- $A(x)$ -stability 204 124
- ABC 204 400
- Abel's integral equations 206 322
- Abel's lemma on summation by parts 207 360
- Absolute stability 204 124
- Absorbing boundary 204 505
- Acceleration parameters 205 364
- Accuracy 207 186
- Accurate dot product 205 533
- Acoustic equation 205 53
- Acoustic scattering 204 526
- Acoustic wave equation 206 420
- Acoustics 204 219, 306, 363, 493
- Active sets 203 533
- Adaptive systems 205 687
- Adaptive time-stepping 206 631
- Additivity 204 56
- Adjoint 203 397, 548
- Adjoint calculus 203 419
- Adomian decomposition method 207 59, 92, 96, 129, 137
- Adomian's decomposition method 206 927; 207 53, 64
- Advection problems 207 129
- Advection–diffusion–reaction equations 210 56
- Advection–reaction–diffusion problem 206 440
- Advective diffusion process 204 187
- Aeroacoustics 204 428
- Aeroelastic 203 548
- Affine control 205 957
- Airfoil equation 206 278
- Airy–Hardy integrals 207 192
- Algebraic matrix inequalities 201 153
- Algebraic–logarithmic singularity 205 487
- Algorithm of creative telescoping 202 450
- Almost periodic solution 203 159; 206 293
- American option pricing 206 306
- Analytic method 204 268
- Analytic solution 202 402; 209 22
- Analytical solution 207 137
- Anderson–Chaplain model 204 48
- Angle between two subspaces 206 625
- Anisotropic elasticity 204 268
- Ant colony optimization 209 160
- Antiretroviral therapy 204 159, 172
- AOR iteration 206 656
- Apéry's approximations 202 450
- Approximate inverse 210 64
- Approximate solution of Fourier type 207 345
- Approximation by truncation 208 354
- Approximation numbers 208 20
- Approximation problem 206 578
- Arc-length technique 210 22
- Arrival time 202 377
- Articular cartilage 203 237
- Askey scheme 207 214
- Askey–Wilson polynomials 207 214
- Aspect ratios 203 219
- Asymptotic approximation 205 186; 207 331
- Asymptotic behavior of solutions 205 640
- Asymptotic error bound 206 99
- Asymptotic error constant 205 116
- Asymptotic expansions 201 3, 300; 202 26
- Asymptotic integration 202 352
- Asymptotics 202 105; 204 356; 206 454; 207 186, 258, 273
- Atmospheric dispersion 206 534
- Atmospheric dynamics 203 387
- Attracting periodic orbits 206 599
- Augmentation sequence 205 394
- Augmented Lagrangians 203 533
- Augmented variational formulation 204 408
- Automatic integration routine 205 394
- Automatic stopping rule 210 84
- Axial conditions 201 217
- Axis of symmetry 201 217
- Bäcklund transformation and Lax pair 202 133
- Backscattering 204 477
- Backward-facing step 206 392
- Bailey's transformations 206 498
- Bakhvalov mesh 203 177
- Balancing threshold 204 25
- Banach space 205 584
- Banach's fixed point theorem 207 121
- Bandis–Barton model 204 292
- Barrier options 204 144
- Basic hypergeometric series 202 48; 206 498; 207 360
- Basis functions 201 217
- $B$ -convergence 205 882
- BDF-type methods 204 124

- Bell polynomials 206 755  
 BEM 203 125  
 Benjamin–Feir instability 207 345  
 Bernstein and Kolmogorov widths 208 20  
 Bernstein polynomial 205 272  
 Bernstein width 208 102  
 Besov spaces with slowly varying smoothness 208 235  
 Bessel differential equation 208 3  
 Bessel functions 204 282; 207 186  
 Bessel functions of fractional order 207 192  
 Best bound 206 1007  
 BiCGStab 201 284  
 Bi-CGSTAB method 201 175  
 Bicharacteristics 204 537  
 Bidirectional associative memory neural networks 202 266  
 Bifurcation set 207 192  
 Bifurcation structure 201 317  
 Bifurcations 205 296  
 Biharmonic problems 201 30  
 Binary alloys 206 409  
 Binomial expansion theorem 202 435  
 B-input-to-state stability 205 633  
 Bioengineering 201 164  
 Biological systems 205 687  
 Biomathematical modelling 205 835  
 Biorthogonal basis 205 545  
 Bi-orthogonality 206 950  
 Bipolar coordinates 204 219  
 Bjorck Pereira algorithm 210 149  
 Black–Scholes equation 206 306  
 Black–Scholes PDE 204 144  
 Blended implicit methods 205 777  
 Block Arnoldi process 205 343  
 Block ILU 202 248  
 Block splitting 202 540  
 Block tridiagonal matrices 202 248  
 Blow-up 202 237, 414; 205 736, 744; 209 167  
 Blow-up rate 202 237  
 Boat-sail distance 202 377  
 Bookkeeping parameter method 207 148  
 Born approximation 203 145  
 Boundary and inner layers 206 440  
 Boundary conditions 206 55; 210 71  
 Boundary element method 203 103; 209 66  
 Boundary integral equations 204 463; 210 22  
 Boundary integral representations 201 128  
 Boundary perturbations 204 493  
 Boundary value 210 116  
 Boundary value methods 210 2  
 Boundary value problems 201 128, 348; 202 402; 205 751; 206 17, 99, 567, 888; 207 92, 301; 210 136  
 Bounded obstacle scattering 204 493  
 Boussinesq equation 203 32  
 Box integrals 206 196  
 Bratu equation 201 284  
 Brownian motion 205 936  
 Broyden family 205 617  
*B*-series 203 6  
 Burgers' equation 205 296; 206 927; 207 18, 137; 208 391  
 Burgers' equation 201 284  
 BVPs 205 901  
 Cahn–Hilliard equation in a disc 202 105  
 Caputo derivative 206 174  
 Caputo fractional derivative 207 96  
 Case studies 204 38  
 Cauchy 202 217  
 Cauchy–Navier equations 206 774  
 Caustic 207 192  
 Celestial mechanics 204 77  
 Cellular neural networks 205 161  
 Central finite difference 204 209  
 CFD 203 487  
 CFIE 204 440  
 Chaos search 206 1070  
 Characteristic interval 205 497  
 Characterization theorems 201 48  
 Chebyshev methods 204 102  
 Chebyshev polynomials 201 348; 205 281; 206 278  
 Chebyshev–Frobenius companion matrix 205 281  
 Chebyshev–Halley iteration family 203 279  
 Chebyshev-type polynomials 202 88  
 Chemical Langevin equation 205 696  
 Chiral Potts  $\mathbb{Z}_N$ -spin chain 202 88  
 Christoffel transformation 205 567  
 Circulant 202 217  
 Circulant matrices 206 774  
 Classical orthogonal polynomials 201 48; 205 314; 207 166, 214  
 Closed form solution 207 121  
 Cluster analysis 204 137  
 Clusters of saddles 207 273  
 CMV matrix 208 120  
 Coercivity 206 843  
 Cohesive interface 210 22  
 Cohomology of compact group 202 56  
 Coincidence degree 206 1127  
 Collapse 204 48  
 Collocation 206 99  
 Collocation method 204 334; 206 801  
 Combination of finite difference schemes 203 15  
 Communication network 204 10  
 Commutation errors 206 1027  
 Commutativity condition 203 57  
 Comonotonicity 203 169  
 Compact finite difference method 206 306  
 Comparison table 203 412  
 Competition 206 733  
 Competition model 201 317  
 Completely continuous operators 206 967  
 Complex whisker 207 192  
 Componentwise 202 217  
 Composition 205 791  
 Compressible Stokes system 201 128  
 Computational fluid dynamics 204 187  
 Computational methods for stochastic equations 205 923  
 Computations 205 1002  
 Computer-aided management 204 159  
 Concavity 208 341

- Condition number 202 217  
 Cone 206 888  
 Conic section 203 190  
 Conjugacy condition 202 523  
 Conjugate gradient methods 202 523; 205 364; 206 603  
 Conjugate relation 203 6  
 Connection factors 207 291  
 Conpacton 205 174  
 Conservation 203 32  
 Conservation laws 203 310, 437; 204 209  
 Conservative methods 210 232  
 Consumer–resource models 201 381  
 Contact nonlinearity 204 292  
 Contact problems 203 533  
 Contingency table 202 315  
 Continuity 206 843  
 Continuous interpolants 205 764  
 Continuous methods 206 341  
 Continuous model 204 159, 172  
 Continuous phase 203 444  
 Continuously distributed delays 203 159  
 Control selection 202 186  
 Control systems 205 633  
 Convection–diffusion 203 177; 204 95  
 Convection–diffusion problems 206 1082  
 Convergence 201 208; 202 414, 540; 205 207, 430; 206 726  
 Convergence in distribution 205 871  
 Convergence sequence 207 121  
 Convex scattering support 204 387  
 Convex-concave type fluxes 203 310  
 Convolution 204 477  
 Convolutions of Rayleigh functions 202 105  
 Copy lattice 205 394  
 Copyright protection 210 13  
 Corner singularities 206 27  
 Corrected phi-divergence test statistic 202 315  
 Correction 204 56  
 Correlation functions 202 26  
 Coupled Gross–Pitaevskii equations 205 88  
 Coupled oscillators 201 374  
 Coupled system 206 1  
 Couple-stress fluid 203 237  
 Coupling BEM-FEM 204 282  
 Covariance analysis 201 275  
 Covering degree 209 246  
 Crank–Nicolson scheme 204 144  
 Credibility measure 208 303  
 Critical and subcritical nonlinearity 204 477  
 Critical point 206 688  
 Crowding 209 1  
 Cubature 205 394  
 Cubature formula 202 511  
 Cubic Boussinesq equation 207 18  
 Cubic convergence 206 873  
 Cubic nonlinear Schrödinger equation 207 155  
 Cumulative backward differentiation formulas 203 87  
 Current dipoles 201 164  
 Curvature 209 246  
 CUSPINT 207 192  
 Cuspoid integrals 207 192  
  
 $C(x)$ -quasi-convexity 208 341  
 Cylindrical coordinates 201 175  
 Cylindrical shell 205 251  
 Cylindrical symmetry 204 477  
  
 $D_\omega$ -Orthogonal polynomials 205 314  
 DAEs 204 56; 205 901  
 Damping effect 204 526  
 Data envelopment analysis (DEA) 206 209  
 Data extrapolating 206 146  
 DDEs 205 901  
 DE formula 206 17  
 Debreu-type equilibrium problems 208 341  
 Decay estimation 209 167  
 Decomposition 205 791; 206 136  
 Decreasing ratio 205 116  
 Deflation 206 603  
 Degenerate reaction–diffusion system 202 237  
 Degree-reducible 203 190  
 Delay 205 479  
 Delay differential equation 201 55, 348  
 Delay partial differential equations 205 552  
 Delay-dependence 206 366  
 Delays 206 293  
 Derivative approximation 205 239  
 Derivative-free 203 57; 206 158  
 Design specifications 204 38  
 Determinant 201 182  
 Deviating argument 206 1127  
 Difference equations 202 339; 205 458, 640, 923; 208 425  
 Difference kernels 205 736  
 Difference operators 208 82  
 Difference schemes 205 871  
 Differential algebraic equations 202 186; 205 777  
 Differential and difference equations of hypergeometric type 205 314  
 Differential boundary value problem 210 116  
 Differential equation 205 479  
 Differential quadrature 203 219  
 Differential quadrature method 205 239  
 Differentiation equation 205 239  
 Diffraction 204 477  
 Diffusion 206 409  
 Digamma function 201 1  
 Digital watermark 210 13  
 Dilogarithm 202 450  
 Dirac delta function 209 234  
 Dirac operators 208 155  
 Direct transcription 202 186  
 Dirichlet boundary-value problem 206 473  
 Discontinuity 208 373  
 Discontinuity detector 204 452  
 Discontinuous coefficients 204 317  
 Discontinuous Galerkin 206 392  
 Discontinuous Galerkin finite element methods 204 452  
 Discontinuous Galerkin methods 204 317, 375, 515; 206 27  
 Discontinuous source term 202 203  
 Discrepancy principle 209 66

- Discrete data inversion 210 149  
 Discrete diffusion 201 367  
 Discrete dynamical systems 206 832  
 Discrete global optimization 202 280  
 Discrete gradient methods 205 814  
 Discrete Hamiltonian systems 208 82  
 Discrete ill-posed problem 206 86  
 Discrete inequalities 205 640; 208 425  
 Discrete maximum principle 209 54  
 Discrete model 204 18, 172  
 Discrete orthogonal polynomials 201 48  
 Discrete Painlevé equation 202 48  
 Discrete shock 201 8  
 Discrete singular convolution 205 251  
 Discrete system 210 210  
 Discrete time approximation 205 982  
 Discrete variational method 210 183  
 Dispersed phase 203 444  
 Displacement rank structure 202 548  
 Dissipative system 205 791  
 Dissipativity 206 898  
 Distributed delays 202 266; 205 161  
 Distributed deviating arguments 202 460; 206 567  
 Distribution centers location problem 208 303  
 Disturbing function 204 77  
 Domain decomposition 201 88; 203 461; 206 549  
 Domain decomposition method 204 282  
 Domain of validity 202 440  
 Domain relocation 204 18  
 Double exponential transformation 206 17  
 Double negative metamaterials 209 81  
 Double turning point 202 177  
 Dual least squares method 201 198  
 Dual synchronization 206 1046  
 Duality 206 122  
 Dyadic wavelets 210 222  
 Dynamic system 204 268  
 Dynamical boundary conditions 202 414  
 Dynamical systems 205 296, 687; 210 232  
 Dynamics 206 599  
 Dynamics of host pathogen interaction with HIV1 204 172  
  
 $\varepsilon$ -uniform convergence 205 552  
 $E_6$  206 498  
 $E_7$  206 498  
 Eccentricity 204 526  
 Ecological system 204 187  
 Effectiveness 206 688  
 Efficiency 201 275  
 Eigenfunction approach 208 354  
 Eigenvalue asymptotics 208 102  
 Eigenvalues 206 615  
 Elastic waves 204 292  
 Electromagnetic inverse scattering 204 242  
 Electromagnetic scattering 210 175  
 Electromagnetic transients 210 34  
 Electromagnetic waves 204 256  
 Electromagnetics 204 306, 493  
 Electrostatic model 207 258  
 Elliptic coordinates 204 231  
 Elliptic cylinders 204 231  
 Elliptic equations 202 414; 204 3; 206 136; 207 301  
 Elliptic partial differential equations 206 1082  
 Elliptic problems 202 230; 206 843  
 Elliptic systems 206 774  
 Emden–Fowler 206 1116  
 Energy conservation 205 430  
 ENO method 201 8  
 Entropy conditions 203 437  
 Environmental disrupter 204 187  
 Environmental fluid 204 187  
 Equilibria 205 161  
 Error 205 608  
 Error analysis 205 487  
 Error bound 207 186  
 Error estimates 202 230  
 Error estimation 205 651  
 Escaping sequence 208 341  
 Estimator 205 72  
 Euler system 204 537  
 Euler–Maruyama method 205 936, 949  
 Evenoid integrals 207 192  
 Ewens sampling formulae 206 755  
 Exact controllability 204 344  
 Exact solution 205 6  
 Existence 201 55; 206 1127  
 Existence of solutions 202 392  
 Existence problem 201 230  
 Explicit 201 258  
 Explicit method 209 208  
 Explicit scheme 203 57; 206 158  
 Explosion 205 736  
 Exponential convergence 206 986  
 Exponential integral function 202 435  
 Exponential integrators 210 56  
 Exponential stability 203 159; 205 161; 206 293  
 Exponential-fitting 205 149  
 Extended  $F$ -expansion 203 249  
 Extended system 202 177  
 Extension 206 1007  
 Extinction 206 733  
 (Extrapolated) Alternating direction implicit methods 205 364  
 Extrapolation 201 300  
 Extrapolation parameter 205 364  
 Extremal element 205 105  
 Extremal solutions 209 176  
  
 Factored approximate inverses 202 248  
 Factorization 201 182  
 Farmer–Loizou’s method 205 116  
 Fast algorithms 206 774  
 Fast Fourier transform 201 175; 206 774  
 Fast multipole method 204 400  
 Fault tolerance 204 38  
 Feasible SQP algorithm 205 406  
 FEM 204 428  
 Fictitious boundary method 203 561  
 Fiedler vector 204 25  
 Filled function method 202 280; 205 16  
 Filon method 208 434

- Filtering 201 153  
 Finite Chevalley groups 202 56  
 Finite difference discretisation 205 552  
 Finite difference inequality 202 339  
 Finite difference schemes 202 203; 203 177; 204 292;  
 205 430; 210 71  
 Finite element methods 203 516; 205 453; 206 374; 209  
 187  
 Finite elements 204 95, 493; 208 373; 210 64  
 Finite volume schemes 209 109  
 Finite-difference approximation 205 969  
 Finite-difference methods 203 32; 205 469; 206 251, 520  
 Finite-difference time-domain 205 207  
 Finite-volume methods 203 387; 205 651  
 First integrals 203 209  
 First Szegő limit theorem 205 129  
 Fixed point index 205 751  
 Fixed point theorems 202 177; 206 713, 888; 207 352  
 Fixed point theorem in cones 205 458  
 Fixed point theory 202 352  
 Fixed points 206 967  
 Fixed-point problem 206 814  
 Flow field 202 377  
 Fluid-dynamic models 210 71  
 Flux limiter method 201 8  
 Formal methods 204 38  
 Forward stability 205 567  
 Forward–backward error estimation 206 631  
 Forward–backward heat equation 208 380  
 Fourth-order approximation 204 477  
 Fox–Wright functions 207 245  
 Fractals 206 1070  
 Fractional derivatives 205 725, 871; 207 245  
 Fractional differential equations 206 174; 207 53, 96  
 Fractional diffusion 205 871  
 Fractional integral 207 53  
 Fractional maximal operator 208 280  
 Fredholm formulation 204 428  
 Fredholm integral equation 210 175  
 Free boundary value 206 306  
 Free surface modelling 203 487  
 Free vibration 205 251  
 Free-surface flows 209 109  
 Frequencies 205 251  
 Frequency locking 201 374  
 Friedrichs extension 208 3  
 Function approximation 205 239  
 Functionally graded plates 210 106  
 Fundamental solutions 201 128; 203 125  
 Fuzzy clustering 204 137  
 Fuzzy logic 204 137  
 Fuzzy-soft-set 203 412  
  
 Galerkin matrix elements 210 244  
 Galerkin method 205 272; 206 278  
 Galerkin/Runge–Kutta methods 205 882  
 Gamma functions 201 1; 202 435; 206 1007; 207 291  
 Gas network 203 345  
 Gauss map 209 246  
 Gauss methods 204 56  
 Gauss quadrature 205 325  
  
 Gaussian and box filter 206 1027  
 Gaussian elimination 202 292  
 Gaussian quadrature 209 234  
 GDP equation 205 174  
 Gene expression 204 25  
 Gene regulatory networks 205 708  
 General convergence 206 832  
 General weighting matrices 202 540  
 Generalised trigonometric function 208 102  
 Generalization 206 1007  
 Generalized abstract economy 208 341  
 Generalized convexity 206 122  
 Generalized entropy solutions 203 310  
 Generalized Fibonacci and Pell number 209 133  
 Generalized finite differences 209 208  
 Generalized inner products 202 155  
 Generalized inverses 206 1051  
 Generalized  $K$ -centrohermitian matrix 206 578  
 Generalized monotone line search 205 406  
 Generalized Newton method 205 305  
 Generalized polynomial helices 206 116  
 Generalized Rankine–Hugoniot condition 203 310  
 Generating function 209 133  
 Generating function method 209 234  
 Genetic algorithm 208 303  
 Genetic regulatory networks 205 696  
 Geometric mesh 210 200  
 Geometrical convolutions 209 246  
 Gibbs–Dirichlet partition 206 755  
 Glass cooling simulations 203 498  
 Global asymptotic stability 201 339  
 Global attractivity 201 55; 206 733  
 Global convergence 202 523; 205 406; 209 97; 210 167  
 Global existence 202 237  
 Global exponential stability 202 266  
 Global optimization 205 16; 206 1015; 210 167  
 Global optimum 209 160  
 Global robust stability 206 679  
 Global stability 201 356  
 GMRES 210 84  
 Gnomon 210 167  
 Godunov type finite difference scheme 203 310  
 Gradient methods 206 1015  
 Gram–Schmidt orthogonalization 205 545  
 Graph Laplacian 204 25  
 Green’s function 204 477; 206 73; 208 194  
 Groups of matrices 210 232  
 Growth envelope functions 208 235  
 Growth envelopes 208 235  
 Growth factor 202 292  
 Guaranteed convergence 205 32  
  
 $H$ -accretive operator mapping 203 80  
 Hadamard expansions 206 454; 207 273  
 Hadamard’s variational formula 208 194  
 Hamiltonian 204 56  
 Hamiltonian matrix 202 258  
 Hamiltonian systems 205 814, 826  
 Hamilton–Jacobi 204 537  
 Hankel 202 217  
 Hankel matrix 202 304

- Hankel transform 208 3  
 Hansen–Patrick family 205 116  
 Hardy operator on the cone of monotonic functions  
 208 280  
 Hardy operators 208 270  
 Harmonic Arnoldi method 205 343  
 Harmonic Ritz vectors 205 343  
 Harvesting problem 204 114  
 Head-on-collision 206 826  
 Heat and mass transfer 203 362  
 Heat equation 208 391; 210 183  
 Heat radiation 203 362  
 Heat source 209 66  
 Heat transfer 207 24  
 Helmholtz decomposition 204 440  
 Helmholtz equation 203 15; 204 282, 344  
 Helmholtz problems 204 515  
 Hermite functions 206 986  
 Hermite transform 203 249  
 Hermite–Birkhoff interpolation 206 99  
 Hermite–Padé approximation 207 227  
 Hermitian linear functionals 202 155  
 Hertz contact problem 206 322  
 Heteroclinic cycle 201 374  
 Heun equations 207 291  
 Hexahedral finite elements 205 325  
 High frequency methods 204 463  
 High frequency scattering 204 363  
 High order compact scheme 208 391  
 High order compact solvers 203 15  
 High resolution central scheme 201 8  
 Higher-order elements 209 54  
 High-frequency scattering 204 334  
 Highly oscillatory integral 206 688  
 High-order multidomain 206 392  
 High-precision quadrature 206 196  
 HIV infection process 204 159, 172  
 Hölder condition 203 279  
 Holonomic constraints 204 56  
 Homoclinic orbits 206 986  
 Homogenization 204 3  
 Homotopy analysis method 202 402  
 Homotopy perturbation method 207 59  
 Homotopy-perturbation method (HPM) 207 24  
*hp*-FEM 209 54  
 Huygens’ principle 206 146  
 Hybrid 204 209  
 Hydrodynamic potentials 201 128  
 Hyperasymptotics 206 454; 207 273  
 Hyperbolic conservation law 201 8  
 Hyperbolic equations 209 208  
 Hyperbolic singular perturbations 203 437  
 Hypergeometric function 201 1  
 Hypergeometric inequality 205 186  
 Hypergeometric series 202 450  
 Hypergeometric-type functions 207 166  
 Hyperinterpolation 210 78  
 Hypersingular integrals 210 244  
  
 Ill posed problem 210 84  
 Ill-conditioned matrix 205 533  
 Ill-posed problems 201 198; 206 341  
 Image denoising 210 47, 222  
 Image processing 210 13  
 Image processing on surfaces 206 146  
 Image restoration 206 86  
 Immune system 204 159, 172  
 Immunology 205 669  
 Implicit 205 949  
 Implicit Runge–Kutta method 204 124  
 Implicit scheme 208 391  
 Improperly parameterized 203 190  
 Improved multi-step methods 205 912  
 Impulse 206 699  
 Impulsive 201 55  
 Impulsive differential equation 202 498  
 Impulsive integro-differential equations 202 392; 209  
 176  
 Inclusion methods 208 316  
 Incomplete elliptic integral 205 186; 207 331  
 Incompressible Navier–Stokes equations 203 376  
 Indefinite integral 205 487  
 Indefinite systems 205 453  
 Independent component analysis 205 594  
 Independent tracing 202 377  
 Index of merit 205 394  
 Industrial application 203 397  
 Inequality constraints 205 406  
 Infection 210 210  
 Infinite delay 208 362  
 Infinite linear systems 210 191  
 Infinite series 201 1  
 Infinity norm of the inverse 206 666  
 Initial boundary value problem 204 268  
 Initial conditions 205 32  
 Initial value problems 201 146; 205 777; 206 699  
 Input-to-state stability 205 633  
 Instability region 205 835  
 Integrable systems 202 3  
 Integral averaging techniques 202 460  
 Integral boundary equations 206 473  
 Integral equations 204 440; 205 479, 849  
 Integral inequality 205 479  
 Integral iterative method 209 167  
 Integral representation 204 400  
 Integral transforms 207 245  
 Integrated Chebyshev polynomials 201 30  
 Integro-differential equation 206 189  
 Intentional attack 204 10  
 Interface method 204 292  
 Interior eigenproblems 205 343  
 Interlacing property 207 180  
 Internal structure 201 8  
 Interpolation 206 392, 898; 210 56, 99  
 Interpolation rule 205 149  
 Interval arithmetic 201 317  
 Interval criteria 205 231  
 Invariant measures 205 826  
 Inverse eigenpairs problem 206 645  
 Inverse eigenvalue problem 206 578  
 Inverse groundwater estimation 208 72  
 Inverse problems 205 53; 209 66

- Inverse scattering 204 387  
 Inverse scattering problems 203 145; 204 242, 256, 418  
 Inverse source problem 201 164  
 Inverse vibration problem 206 645  
 Irregular grids 209 208  
 Irreversible quantum graphs 208 57  
 Iteration functions 206 832  
 Iterative algorithms 203 80, 145  
 Iterative methods 204 440; 205 1; 206 814, 1051; 209 146, 153; 210 64, 191  
 Iterative regularization 209 66  
 Iterative root 205 497  
 Iterative solution 201 3; 204 477  
 Iterative solution of algebraic systems 205 777  
 Iterative solution of linear systems 210 175  
 Itô Lemma 205 949
- Jacobi algorithms 206 358  
 Jacobi matrix 206 645  
 Jacobi polynomials 208 29  
 Jacobi–Stirling numbers 208 29  
 Jaulent–Miodek equation 207 35  
 J.G. Wendel’s inequality 206 1007  
 Julia set 206 1070  
 Jump conditions 204 292  
 Jump-diffusion processes 205 982
- K*(2,2) equation 207 18  
 KdV equation 207 18, 137  
 Kepler’s equation 205 281  
 Kerr media 204 477  
 (*k*, *l*) algebraically stable 205 633  
 Klein–Gordon–Zakharov equation 205 430  
*K*(*p*, *q*) equation 207 46  
 Kriging 204 84  
 Kronecker products 202 217; 206 1051  
 Krylov subspace methods 202 248; 210 159, 191  
 Krylov subspaces 206 86
- L*<sub>2</sub>-, star, extreme- and isotropic discrepancy 206 977  
 Ladder operators 207 166  
 Ladyzhenskaya model 206 374  
 Lagrange multipliers 204 515; 207 96, 111  
 Lagrangian 204 56  
 Lagrangian particle model 206 534  
 Lagrangian simulation 203 444  
 Lagrangian symmetric 208 29  
 Laguerre family 205 116  
 Laminated conical shells 205 251  
 Langevin equation 206 534  
 Laplace transform inversion 210 84, 149  
 Laplace-type integrals 206 454; 207 273  
 Large and sparse linear systems 210 159  
 Lattice Boltzmann method 206 432  
 Laurent polynomials 202 155  
 Layer-resolving transformation 203 177  
 Least-squares 202 230  
 Least-squares approximation 203 376  
 Least-squares method 201 247; 203 461  
 Lebesgue constant 210 78  
 Left-definite self-adjoint operator 208 29
- Left-definite Sobolev space 208 29  
 Leja points 210 56  
 Level set methods 206 146  
 Level surfaces 208 176  
 Levenberg–Marquardt 208 331  
 Levin method 208 434  
 Lévy–Feller diffusion 206 1098  
 Lie algebras 202 3  
 Lie-group methods 205 802  
 Liénard equation 206 1127  
 Linear  $\theta$ -method 206 898  
 Linear complementarity problem 206 322  
 Linear matrix inequality 202 478; 206 366  
 Linear multistep methods 203 6; 208 404; 210 2  
 Linear partial differential equations 208 164  
 Linear sampling method 204 242  
 Linear systems 205 608; 206 656  
 Linearization 205 72  
 Literature review 205 736  
*L*-matrix 206 656  
 Local absorbing boundary conditions 204 526  
 Local and global Morrey-type spaces 208 280  
 Local and *q*-superlinear convergence 205 617  
 Local minimizer 205 16  
 Local model 204 56  
 Local spline interpolation 203 289  
 Localization of zeros 205 32; 208 316  
 Logarithmic derivative 204 306  
 Logarithmic Lipschitz constants 205 882  
 Logarithmic potential 207 258  
 Logarithmically completely monotonic function 206 1007  
 Long-time integration 205 826  
 Lorentz–Karamata spaces 208 235  
 Lotka–Volterra systems 201 367  
 Lower and upper method 209 176  
 Lower and upper solutions 205 751  
 Lowering and raising relations 207 214  
 Low-frequency asymptotics 204 219  
 Low-frequency regime 204 526  
 LR algorithm 205 567  
 LU factorization 202 155  
 Lyapunov functionals 201 356; 202 266; 205 161; 206 679, 733  
 Lyapunov stabilization theory 206 1046  
 Lyapunov stable 206 796
- Magnetic resonance spectroscopy data quantification 203 264  
 Manifolds 210 232  
 Markov chain 205 936  
 Markovian random walk 206 1098  
 Mass lumping 204 344  
 Mass-spring system 206 645  
 Master equations 205 708  
 Mathematica 207 73  
 Mathematical model 204 159, 172  
 Mathematics 205 669  
 Mathieu functions 204 526  
 MATLAB 205 1002  
 Matrix inequality 206 679

- Matrix inversion 205 533  
 Matrix least-squares problems 206 1051  
 Matrix methods 209 133  
 Matrix norms 206 1051  
 Maximal operator 208 280  
 Maximum likelihood 204 25  
 Maximum principle 206 432  
 Maxwell equations 204 375, 440  
 Maxwell's equations 204 317; 205 207; 206 27; 209 81; 210 34  
 McMahon approximation 207 186  
 Measure of orthogonality 207 180  
 Mellin–Barnes integrals 207 245  
 Mesh generation 203 177  
 Mesh refinement 206 27  
 Meshfree method 203 376  
 Meshless particle method 210 34  
 Metaheuristics 209 160  
 Metastability 206 986  
 Method 201 208  
 Method of fundamental solutions 206 774  
 Method of lines 206 251, 927  
 Method of stationary phase 204 363  
 Meyer wavelets 201 198  
 MHD flow 203 125  
 Michaelis–Menten model 201 230  
 Microarray 204 25  
 Microreactor 203 487  
 Minimal cubature formulas 210 78  
 Minimax problems 205 406  
 Minimum gap between two subspaces 206 625  
 Minimum norm 206 288  
 Minkowski sums 209 246  
 Mittag–Leffler functions 205 725; 207 245  
 Mixed 202 217  
 Mixed and hybrid FEM 204 515  
 Mixed boundary value problems 204 242, 256; 209 22  
 Mixed classical-stochastic integrals 205 912  
 Mixed finite element method 209 81  
 Mixed finite elements 206 420  
 $M$ -matrix 202 266  
 Model evaluation 206 534  
 Model fitting 203 87  
 Model selection 205 669  
 Modified harmonic Ritz vectors 205 343  
 Modified likelihood 201 275  
 Modified Lindstedt–Poincaré method 207 148  
 Modified secant condition 205 617  
 Molčanov potential 208 226  
 Moment matrix 207 352  
 Monotone iterative technique 202 392, 498  
 Mortality projection 203 169  
 Moving boundary 206 409  
 Multi-colored rooted tree 206 158  
 Multi-dimensional integrals 206 196  
 Multi-dimensional Wiener process 203 57; 206 158  
 Multidisciplinary 203 548  
 Multigrid algorithm 203 498  
 Multigrid FEM 203 561  
 Multigrid method 203 237  
 Multigrid refinement 205 325  
 Multiphase flow 201 247  
 Multiple boundary conditions 201 30  
 Multiple scattering 204 231  
 Multiple zero 205 116  
 Multiplicative noise 203 57; 206 158  
 Multiplicity 206 713  
 Multiply connected regions 209 1  
 Multi-resolution 204 209  
 Multiscale 201 258  
 Multi-scale analysis 206 432  
 Multistability 204 18  
 Multistep method 205 891  
 Multi-valued inclusions 206 358  
 Multivariate approximation 210 116  
 Multivariate Padé approximants 202 548  
 Multiwavelets thresholding 210 47  
 Mutation 204 172  
 Natural convection 203 219  
 Navier–Stokes 206 392  
 Navier–Stokes equations 203 444; 205 453  
 Nearly singular integrals 203 103  
 Necessary and sufficient conditions 201 381  
 Nested refinement 205 325  
 Network design 204 166  
 Network efficiency 204 10, 166  
 Network models 203 419  
 Network topology 204 166  
 Network vulnerability 204 10, 166  
 Neumann boundary-value problem 206 473  
 Neumann–Neumann methods 201 88  
 Neutral delay 202 478  
 Neutral delay differential equation 202 460; 206 1116  
 Neutral functional difference system 206 713  
 Neutral system 202 478  
 Newton–Kantorovich method/theorem 205 584  
 Newton–Krylov method 203 498  
 Newton-like method 206 873  
 Newton–Raphson method 206 1070  
 Newton's method 205 1, 584; 206 832; 209 146  
 Nodal splines 203 289  
 Non-autonomous general model 204 114  
 Non-conforming finite element methods 210 106  
 Non-deterministic and probabilistic aspects 204 38  
 Nondifferentiable minimax fractional programming problems 206 122  
 Nonlinear 202 339; 205 479  
 Nonlinear approximation 209 234  
 Nonlinear boundary 202 392  
 Nonlinear coordinate transformation 203 103  
 Nonlinear coupled thermoelasticity 207 64  
 Nonlinear differential equations 202 352; 205 231, 272  
 Nonlinear elasticity 205 72  
 Non-linear equations 201 208; 205 1; 207 3, 24; 209 146, 153; 210 116  
 Nonlinear integer programming 202 280  
 Nonlinear integral equations 205 736, 744  
 Nonlinear least squares 203 264; 208 331  
 Nonlinear operator equations 203 279; 206 873  
 Nonlinear optimization 206 1070  
 Nonlinear oscillator 207 148



- Non-linear parabolic equations 205 882; 208 391  
 Nonlinear partial differential equations 207 73, 111, 137  
 Nonlinear programming 205 16  
 Nonlinear self-focusing 204 477  
 Nonlinear system of equations 207 35  
 Nonlinear systems 201 153, 284; 205 957  
 Nonlinear wave equation 203 32  
 Non-Lipschitz condition 205 936  
 Nonlocal artificial boundary conditions (ABCs) 204 477  
 Nonlocal problems 204 3  
 Nonmonotone line search 209 97  
 Nonmonotone trust region method 209 97  
 Non-normality 201 275  
 Nonoscillation 205 923  
 Nonparaxiality 204 477  
 Non-self-adjoint eigenvalue problems 206 229  
 Non-self-adjoint operators 208 82  
 Nonself-mapping 206 814  
 Non-singularity results 206 666  
 Non-smooth boundary 204 549  
 Nonsmooth equations 205 305  
 Non-smooth functions 206 1027  
 Nonsymmetric systems 205 453  
 Non-uniform grid 205 891  
 Non-uniform mesh 205 469  
 Nordsieck representation 205 764  
 Normal derivatives 208 391  
 $n$ -species ecological system 208 362  
 $n$ -sphere 202 511  
 $n$ -th eigenvalue 208 176  
 Numerical algorithms 202 186  
 Numerical analysis 201 146  
 Numerical approach 205 251  
 Numerical approximation 206 1098  
 Numerical computation with guaranteed accuracy 202 177  
 Numerical conformal mapping 209 1  
 Numerical differentiation 210 116  
 Numerical dissipation 204 452  
 Numerical eigenvalue determination 208 404  
 Numerical Hamiltonian 204 537  
 Numerical integration 203 103; 210 116  
 Numerical map 204 187  
 Numerical methods 201 164; 205 957, 777, 849  
 Numerical model 204 159  
 Numerical simulation of delay differential equations 205 835  
 Numerical simulations 204 18, 187  
 Numerical solution 205 1002; 206 174  
 Numerical weather prediction 210 99  
 Nusselt numbers 203 219  
  
 Object recognition 203 412  
 Observation weighting scheme 204 137  
 Oddenoid integrals 207 192  
 Oddoid integrals 207 192  
 ODE 206 17  
 ODEs 205 901  
 Oldroyd 6-constant fluid 202 402  
  
 On surface radiation condition 204 306  
 One parameter family 205 116  
 One-dimensional Helmholtz equation 206 586  
 One-leg  $\theta$ -method 206 898  
 One-shot method 203 397  
 One-sided Lipschitz condition 205 949  
 One-step methods 205 791  
 Onsager's algebra 202 88  
 On-surface radiating condition (OSRC) 204 526  
 Open problem 206 1007  
 Operative planning 203 345  
 Opposite sign dielectric constants 204 408  
 Optimal control 202 186; 209 187  
 Optimal exercise boundary 206 306  
 Optimal shape 203 209  
 Optimization 203 548  
 Optimum parameter 205 116  
 Orbital mechanics 204 77  
 Ordinary and delay differential equations 205 764  
 Ordinary differential equations 205 777  
 Orthogonal expansions 202 548  
 Orthogonal Laurent polynomials 206 950  
 Orthogonal polynomials 202 155, 440, 511, 548; 207 258, 338, 352  
 Orthogonal polynomials in two variables 207 323  
 Orthogonal projections 205 545  
 Oscillated polynomials 204 515  
 Oscillating integrals 207 192  
 Oscillating solutions 209 33  
 Oscillation 202 460; 205 231, 923; 206 567, 1116  
 Oscillatory integrals 204 334, 363; 208 434  
 Ostrowski's method 209 153  
 Othmer–Stevens model 204 48  
 Overlapping Schwarz waveform relaxation method 208 380  
  
 Padé approximants 206 927  
 Padé approximation 203 15  
 Padé schemes 204 144  
 Padé technique 207 73  
 Painlevé divisor 202 56  
 Pair of spirals 201 112  
 Parabolic 201 258  
 Parabolic boundary layers 205 552  
 Parabolic equations 206 549; 208 380; 209 208  
 Parabolic heat equation 209 66  
 Parabolic optimal control problems 201 88  
 Parabolic–ODE system 204 48  
 Parallel computing 203 387; 206 549  
 Parallel implementation 208 316  
 Parallel preconditioners 203 461  
 Parallel preconditioning 210 64  
 Parameter range reduction 203 87  
 Parameter-dependence 206 366  
 Parametric curve 208 373  
 Parametric sensitivity analysis 206 908  
 Parametric surface 208 373  
 Parametrization of Newton method 205 305  
 Para-orthogonality 206 950  
 Partial fraction decomposition 207 331  
 Partial functional differential equations 206 567

- Particle tracking 206 392  
 Partitioning 204 25  
 Path 205 105  
 Path-following 203 533  
 Patterned conditioning 206 615  
 Patterned matrices 206 615  
 PBA approximation for a nonsmooth operator 205 584  
 PDE-constrained optimization 203 345; 206 908  
 Peakon 205 174  
 Perfect matched layered boundary 206 586  
 Perfectly conducting 205 207  
 Perfectly matched layer 205 207  
 Performance analysis 204 38  
 Periodic and almost periodic solutions 205 859  
 Periodic boundary value problem 202 498; 209 176  
 Periodic cusp wave 205 174  
 Periodic eigenvalues 208 111  
 Periodic solution 203 1; 206 1127  
 Periodic-like solution 203 249  
 Permanence 201 381, 389; 206 733  
 Permanent 201 182  
 Perturbation method 207 148  
 Perturbed Gelfand equation 202 177  
 Phase fitting 209 33  
 Phase portrait 205 174  
 Phase shift 206 826  
 Phase transformation 206 409  
 Phi-divergence test statistic 202 315  
 Physical optics 204 306  
 Picard's iteration method 206 534  
 Pivoting 202 292  
 Planar graph 209 246  
 Plane waves 204 515  
 Planetary theory 204 77  
 $p$ -Laplacian 206 967; 208 111  
 PM function 205 497  
 Point estimation theory 205 32  
 Poisson equation 201 175; 206 603; 209 54  
 Poisson process 205 725, 949  
 Poisson systems 205 814  
 Poisson–Dirichlet 206 755  
 Polar cylindrical coordinates 208 391  
 Pollution effect 204 515  
 Polygonal function 205 497  
 Polygonal region estimation 208 331  
 Polynomial 205 116  
 Polynomial approximation 210 116  
 Polynomial expansion 206 189  
 Polynomial recursion 202 450  
 Polynomial reproduction 203 289  
 Polynomial zeros 205 32; 208 316  
 Pontryagin's principle 203 209  
 Population balance equation 201 247  
 Population dynamics 210 210  
 Poroelastic bearings 203 237  
 Positive operator 206 625  
 Positive periodic solutions 201 55; 206 713; 208 362  
 Positive solutions 205 458; 206 699, 888, 967  
 Potential functions 206 473; 210 222  
 Potential well 205 871  
 Powell–Sabin splines 206 55  
 Power laws 205 725  
 Prandtl's integral equation 206 189  
 Precision orbit determination 204 137  
 Precondition 205 533; 206 726  
 Preconditioners 201 88; 204 440; 205 364; 206 656  
 Preconditioning 205 453; 206 603  
 Predator–prey system 201 356  
 Predictor–corrector method 206 174  
 Preference ranking 206 209  
 Pressurised flows 209 109  
 Primal–dual interior-point method 202 304  
 Primal–dual methods 203 533  
 Primitive equations 203 387  
 Priori bound 202 339  
 Priori estimate 203 1  
 Probability density function 206 534  
 Probe method 205 53  
 Process optimization 203 362  
 Product integration 210 200  
 Projection method 203 376; 206 238  
 Pruefer transform 208 102  
 Prüfer angle 208 226  
 Prüfer transformation 208 111  
 Pseudomonotone operators 206 238  
 Pseudo-spectral method 209 22  
 Pure jump processes 205 982  
 Pythagorean hodograph curves 206 116  
  
 $q$ -Hahn tableau 205 314  
 $q$ -Orthogonal polynomials 205 314  
 $q$ -polynomials 201 48  
 QR factorization 202 155  
 $q$ -Sturm–Liouville problems 206 73  
 Quadrature formulas 210 244  
 Quadrature method 201 300  
 Quadrature rules 201 208; 205 487  
 Quadratures 206 688, 950  
 Quadrilateral finite elements 205 325  
 Quadrilateral grid generation 210 183  
 Qualitative behavior 210 210  
 Qualitative behaviour 205 849  
 Quality 204 84  
 Quantum transport 204 18  
 Quartic convergence 205 116  
 Quasicommutator 205 129  
 Quasilinear boundary-value problem 203 177  
 Quasi-Newton equation 202 523  
 Quasi-Newton method 205 617  
 Quenching 205 736  
 $q$ -uniformly smooth space 203 80  
  
 Radiation condition 204 549  
 Radiative heat transfer 203 498  
 Random discrete distribution 206 755  
 Random graph 204 25  
 Random matrices 202 26  
 Random networks 204 166  
 Rank-1 simple lattice 205 394  
 Rate of convergence 208 354  
 Rational approximation 202 548

- Rational maps 206 599  
 Rational quartic Bézier curve 203 190  
 Rational spiral 201 112  
 Rayleigh equations 203 1  
 Rayleigh–Ritz Theorem 204 25  
 Reaction-diffusion 205 736  
 Reaction-diffusion problems 203 516; 206 1  
 Real flag manifold 202 56  
 Real root isolation 201 367  
 Real-time requirements 204 38  
 Recovery 209 187  
 Recurrence formulas 207 166  
 Recurrence relations 206 873  
 Recurrent neural networks 206 293  
 Reduction theorems 208 270  
 Refinement 206 1007  
 Regular boundary layers 206 136  
 Regularization 201 198; 203 145; 206 86; 210 84  
 Regularized sampling method 206 229  
 Reissner–Mindlin plates 210 106  
 Relativistic Hamiltonians 208 155  
 Relaxation schemes 203 437  
 Renewal theory 205 725  
 Re-orthogonalization 205 545  
 Representation 202 105  
 Reproducing kernel 205 6  
 Resolvent kernels 205 849  
 Resolvent operator technique 203 80  
 Restriction matrices 210 22  
 Resultant-fuzzy-soft-set 203 412  
 Retraction 206 814  
 Riccati equation 207 59  
 Ridge function 205 105  
 Riemann–Hilbert problems 202 26; 207 227  
 Riemann–Liouville’s fractional derivative 207 53  
 Riesz–Feller potential 206 1098  
 Risk measure 203 169  
 R-K type Landweber method 206 341  
 Robust stability 206 366  
 Roe scheme 209 109  
 Root systems 206 498  
 Rooted tree analysis 205 957  
 Root-finding 205 1, 281; 206 832; 209 146, 153  
 Rotating two-component BECs 205 88  
 Rotation number 208 111  
 Roundoff error analysis 205 567  
 Routh–Hurwitz theorem 201 367  
 RQI 205 509  
 Runge–Kutta methods 204 56; 205 633, 957, 814; 206 631  
 Saint-Venant problem 206 473  
 Sampling method 205 53  
 Sampling theory 206 73  
 Scalar conservation laws 210 71  
 Scalar scattering problems 204 231  
 Scaled Bernstein polynomials 206 216  
 Scaling 204 25; 206 666  
 Scattering 205 207  
 Scattering and diffraction 202 435  
 Scattering coefficients 208 207  
 Scattering theory 205 53  
 Schrödinger eigenvalue problem 205 509  
 Schrödinger equation 207 291  
 Schrödinger–Poisson system 205 509  
 Schur polynomials 202 56  
 Search engines 210 159  
 Secant methods 210 167  
 Second order 202 460; 206 1116  
 Second order ordinary differential equation 202 203  
 Second-order differential equations 207 166, 258  
 Second-order initial-value problems 209 33  
 Second-order linear recurrences 201 182  
 Second-order ordinary differential equations 204 102  
 Second-order problems 205 777  
 Secure communication 206 1046  
 Seepage 209 22  
 Selection 206 755  
 Self-adaptive rules 206 238  
 Self-adjoint partial differential equations 208 164  
 Self-similar measures 207 352  
 Semiclassical orthogonal polynomials 207 323  
 Semidefinite programming 202 304  
 Semidiscretization in space 202 414  
 Semi-implicit product formula 204 159, 172  
 Semilinear parabolic PDEs system 209 167  
 Semilocal/local convergence 205 584  
 Semismooth Newton methods 203 533  
 Semismooth sparse systems 205 305  
 Separation of variables 204 477  
 Series expansion 205 186; 207 331  
 Series solution 207 301; 209 22  
 Shallow ocean 204 387  
 Shallow water equations 204 452  
 Shannon’s sampling theory 206 229  
 Shape optimization 203 397  
 Sharp embeddings 208 235  
 Shear flow 204 428  
 Shishkin mesh 202 203; 205 552; 206 1  
 Shock capturing 201 8  
 Shock profile 201 8  
 Shock-compacton 207 46  
 Shock-peakon 207 46  
 Shooting 208 404  
 Short memory principle 206 174  
 Shortest path 202 377  
 Short-tailed symmetric family 201 275  
 Shunting inhibitory cellular neural networks 203 159  
 Sideways parabolic equation 201 198  
 Simulated annealing (SA) 206 1015  
 Simulation 204 268; 205 982  
 Simultaneous methods 205 32  
 Sinc function 206 801  
 Sinc-collocation method 206 17  
 Sine–Gordon equation 206 251; 207 345  
 Singular 206 699  
 Singular BV problems 205 469  
 Singular integral equations 206 189  
 Singular perturbation problem 202 203  
 Singular perturbations 203 177; 206 1, 1082; 207 301; 208 194  
 Singular points 207 92; 209 246

- Singular Sturm–Liouville problems 206 229; 208 226  
 Singular symmetric positive semi-definite matrices 206 603  
 Singular two-point value boundary problem 205 6  
 Singular value decomposition 206 908  
 Singularity theory 207 192  
 Singularly perturbed 208 391  
 Sinh function 203 103  
*SIR* epidemic model 201 339, 389  
 Size-structured population 204 114  
 Skew-Hamiltonian matrix 202 258  
 Skew-Hermitian matrix 202 258  
 Slate 204 84  
 Slip condition 202 402  
 Slug flow 203 487  
 Small noise 205 912  
 Smoothed particle hydrodynamics 210 34  
 Smoothing 204 144; 208 373  
 Sobolev orthogonal polynomials 207 338  
 Sobolev spaces of different orders in space and time 203 461  
 Software 205 901, 1002  
 Solid–liquid two phase 203 561  
 Solitary waves 202 328; 206 826  
 Soliton solutions 202 133  
 Solitons 206 251; 207 73  
 Solution set of convex problems 206 288  
 Solvability 205 430  
 Sommerfeld radiation boundary conditions 204 477  
 SOR-type iterative method 206 726  
 Space averaged Navier–Stokes equations 206 1027  
 Space of self-adjoint boundary conditions 208 176  
 Space-time noise 208 354  
 Sparse direct KKT solver 203 345  
 Sparse grids 205 708  
 Spatial projection algorithm 203 345  
 Spatial statistics 204 84  
 Special functions 202 48; 207 166  
 Specific impedance 204 526  
 Spectral analysis 206 603  
 Spectral collocation methods 201 30  
 Spectral condition number 205 364  
 Spectral element method 201 217; 204 344  
 Spectral methods 205 296; 206 986  
 Spectral theorem 208 29  
 Spectral theory 208 164  
 Spectra 208 57, 120  
 Spectrum of Lamé equation 207 345  
 Spherical geodesic grids 210 99  
 Spline 208 373  
 Split procedure 202 230  
 Splitting 205 802  
 Splitting methods 201 146  
 Splitting scheme 205 207  
 $SP_N$  approximations 203 498  
 Square 210 78  
 Stabilised inverse diffusion 206 520  
 Stability 201 258, 367; 205 207, 430, 859; 206 908; 210 2  
 Stability and convergence 206 1098  
 Stability switch 205 835  
 Stabilized finite elements 205 651; 206 440  
 Stable distributions 205 725  
 Stable probability distributions 206 1098  
 Stable versus unstable interior penalty method 206 843  
 Stage structure 201 356, 381  
 Staggered grid 205 207  
 Stationary Navier–Stokes equations 205 651  
 Steady viscous flow 203 444  
 Steepest descent analysis 207 227  
 Stefan problems 206 409  
 Steklov spectral problem 202 414  
 Step density control 205 891  
 Step size selection 205 891  
 Step-and-project methods 205 826  
 Step-transition operator 203 6  
 Stiff 201 258  
 Stiff initial-value problems 204 124  
 Stiff problems 205 777  
 Stirling numbers of the second kind 208 29  
 Stochastic delay differential equations 205 696, 923, 969  
 Stochastic differential equations 205 949, 1002; 206 631  
 Stochastic linear multi-step methods 205 912  
 Stochastic optimal control 205 969  
 Stochastic partial differential equations 208 354  
 Stochastic process algebra 204 38  
 Stochastic processes 205 871  
 Stochastic simulation 203 516  
 Stochastic simulation algorithm 205 696  
 Stochastic systems 201 153  
 Stochastic Taylor expansion 205 982  
 Stochastic-numerical methods 208 354  
 Stokes equations 209 187  
 Stokes flow 201 217  
 Stop-loss order 203 169  
 Streamfunction formulation 206 374  
 Stretching function technique 206 1015  
 Strict diagonal dominance 206 666  
 Strong convergence 205 949, 982  
 Structure 203 548  
 Structure relations 205 314; 207 214, 323  
 Structured additive perturbations 202 258  
 Structured matrix 202 217  
 Structured multiplicative perturbations 202 258  
 Sturm–Liouville 208 102  
 Sturm–Liouville equations 208 207  
 Sturm–Liouville problems 206 229; 208 176  
 Sub-diffusion 207 245  
 Sufficient optimality conditions 206 122  
 Sum rules 207 166  
 Summation theorem 201 1  
 Sums 209 133  
 Superconvergence 209 187  
 Superlinear convergence 205 406; 209 97  
 Support vector machines 204 84  
 Supremum operators 208 270  
 Sylvester equation 206 86  
 Symmetric Galerkin Boundary Element Method (SGBEM) 210 22  
 Symmetric positive definite matrix 202 540  
 Symmetry 201 374; 202 315; 204 56  
 Symmetry constraint 201 175

- Symmetry group 206 498  
 Symplectic integrators 205 826  
 Symplecticity 203 6; 205 814  
 Symplecticness 204 56  
 Synovial joints 203 237  
 Systems biology 205 708  
 Systems of generalized vector quasi-equilibrium problems 208 341  
 Systems of mixed vector quasi-variational inequalities 208 341  
 Szegő polynomials 206 950  
 Szegő quadrature formulas 202 440
- Tabu search algorithm 208 303  
 Tangent condition 208 373  
 Taylor–Galerkin 204 95  
 Tchebyshev series 202 548  
 Technical failure 204 10  
 Teleprojective integration 201 258  
 Temporal integration 206 392  
 Terminating well-posed series 207 360  
 The average-shadowing property 206 796  
 The first Kershaw's double inequality 206 1007  
 The first kind Abel integral equation 201 300  
 The least relative efficiency 206 209  
 The minimum norm for quadratic programs 206 288  
 The weighted Chebyshev norm 206 278  
 Theorem of Lancet 206 116  
 Theoretical computer science 204 38  
 Thermo-elastostatics 206 774  
 Third order iterative method 206 599  
 Third-order convergence 205 1  
 Three dimensional visualization 204 187  
 Thresholding estimators 210 222  
 Time delay 201 153, 339, 381, 389  
 Time scales 206 888, 967  
 Time varying delay 206 679  
 Time-delay systems 206 366  
 Time-dependent evolution equation 204 159, 172  
 Time-harmonic scattering problem 204 440  
 Time-splitting spectral method 205 88  
 Time-stepping schemes 204 95  
 Time-varying discrete delay 202 478  
 Titchmarsh–Weyl  $m$ -coefficient 208 3  
 $T$ -matrix 204 219  
 Toda lattice 202 56  
 Toda lattice with sources 202 133  
 Toeplitz 202 217  
 Toeplitz matrix 205 129  
 Topological configuration 209 246  
 Topologically ergodic 206 796  
 Total least squares 201 230  
 Total least squares estimate 201 230  
 Total stability 205 859  
 Toxicology 206 733  
 Traffic flow 203 419; 210 71  
 Transfer matrix 208 176  
 Transparent boundary conditions 204 493  
 Trapped waves 204 356  
 Trilogarithm 202 450  
 Truncated stochastic infinite-dimensional systems 208 354
- Tubes with stenosis 202 328  
 Tumour angiogenesis 204 48  
 Turbulence modeling 203 444  
 Two independent variables 202 339; 208 425  
 Two small parameters 206 1082  
 Two-dimensional Burgers' equation 206 432  
 Two-dimensional systems 204 231  
 Two-grid method 205 509  
 Two-parameter dependent nonlinear problem 202 177  
 Two-phase flows 203 376  
 Two-point  $G^2$  Hermite interpolation 201 112  
 Two-point Taylor series 210 136  
 Two-step hybrid methods 209 33  
 Two-step Runge–Kutta methods 205 764
- Ultra-weak variational formulation 204 400  
 Unbounded delay 205 859  
 Unconfined aquifer 208 72  
 Unconstrained minimization 205 617  
 Unconstrained optimization 202 523  
 Unconstrained optimization problems 209 97  
 Uniform approximation 205 487  
 Uniform asymptotic expansion 207 301  
 Uniform convergence 206 1  
 Uniqueness 206 1127  
 Upper and lower solution 202 392  
 Upper (lower) semicontinuity 208 341  
 USAOR method 205 608
- Value at risk 205 594  
 Vandermonde 202 217  
 Varah bound 206 666  
 Variable coefficient KdV equations 202 328  
 Variable coefficient NLS equation 203 249  
 Variable coefficients 209 33  
 Variable projection 203 264  
 Variable step size 204 102, 124  
 Variable step size method 205 891  
 Variation method 207 53  
 Variation of functional 207 121  
 Variational inequalities 206 238  
 Variational integrators 204 56  
 Variational iteration method 207 3, 24, 18, 35, 46, 59, 64, 73, 92, 96, 111, 121, 129, 137, 155  
 Vector-Padé approximation 201 284  
 Velocity–vorticity form 203 219  
 Vertex 205 497  
 Viscosity solution 204 537  
 Volterra 205 736, 744  
 Volterra delay-integro-differential equation 206 898  
 Volterra difference equations 205 859  
 Volterra integral equation 206 801  
 Volterra integral equations of the second kind 205 736  
 Volume of fluid (VOF) 203 487  
 Volume-preserving schemes 205 802  
 Voronoi diagram 202 377  
 Voting 206 209
- Waiting times 205 725  
 Water transients in pipes 209 109  
 Wave equation 204 505

- Wave functions 205 509  
Wave number 204 515  
Wave scattering 204 463  
Wave transmission problem 204 408  
Wavelet transform 210 13  
Wavelet-multigrid method 203 237  
Wavetrain solution 207 345  
Weak Morrey-type spaces 208 280  
Weakly coupled superlattices 204 18  
Weakly coupled system 202 203  
Weakly singular integral 210 200  
Wedge 204 505  
Weighted Hardy-type operators,  $pq$ -Laplacian 208 20  
Weighted inequalities 208 270  
Weighted space 204 549  
Weighted thresholding rule 210 47  
WENO 204 209  
Weyl-Titchmarsh  $M$ -function 208 82  
White noise 203 516  
Whittaker–Shannon–Kotel’nikov theorem 206 229  
Wick-stochastic partial differential equations 203 516  
Wick-type stochastic NLS equation 203 249  
Wing 203 548  
Wright function 205 725  
  
Xu points 210 78  
  
 $Z_2$ -symmetry 207 192  
Zeros 207 186, 258, 338  
Zeros of polynomials 206 216  
Zeros of special functions 201 3  
Zero-structured conditioning 206 615  
Zero-structured matrices 206 615  
Zeta value 202 450  
 $Z$ -mappings 206 358  
 $Z$ -matrix 206 726