

A Complete Bibliography of Publications in *Journal of Numerical Linear Algebra with Applications* and *Numerical Linear Algebra with Applications*

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**Title word cross-reference**

(1, 1) [Cao08, Krz11]. (2, 2) [Li00].  $(m, k)$  [MN00].  $(q)$  [Jia96].  $+$  [LJM14].  $-\Delta u = \lambda u$  [EFG<sup>+</sup>18]. 0.822 [Ano09]. 16 [KM09]. 2 [AM96, BF19, BV13, Mar94, NBKS99, QB15, ZVO14, vKVV00].  $2 \times 2$  [AB10, AB13, Cao13, Kol05]. 3 [GKY97, KK16, LPW06, NBKS99, PM97, PR96, SY18b, mMP99, vKVV00]. 4 [MR14, SY18b].  $A$  [CC07].  $A - BX \pm X * B*$  [LT08].  $A - XB$  [Den09].  $\alpha$  [Tre13, XCG16].  $AXA^* = B$  [Tia13].  $AXB + CYD = E$  [yPxP06, WTZD10].  $AXB = C$  [fLyHZ11, Miy15].  $\mathcal{H}$  [Gra08, LOY08].  $\mathcal{H}^2$  [Bör17].  $\mathcal{K}$  [Mar95].  $D$  [BLLA11]. GMRES( $k$ ) [KY95].  $H$  [AMM04, BCGM09, Chu04, KPV08, KC17, Leb02, LP16, Sun06, ZSCX10, DMM<sup>+</sup>08, Pul09].  $H(\text{div})$  [BO18].  $H^1$  [AMM04].  $H_1$  [LPW06].  $H_\infty$  [Özb13].  $hp$  [DMM<sup>+</sup>08]. IDR( $s$ ) [CvG11].  $ILU$  [CGK94, KOV17].  $k$  [BO08, VVM05a].  $L$  [Aih20].  $\lambda$  [FLPW01].  $LDL^T$  [LSS18].  $l_p$  [Dax94].  $LU$  [KNY00, KOV17, DHS95, Saa94].  $M$  [BNT94, Sau95, Bea94, BCC98, HLLL16, IP13, JZ11, Kra02, LSL01, WQZ09, XZS10, ZJ06, vN00].  $\mathbf{R}$  [DN12].  $\mathcal{H}$  [HK02].  $O(N)$  [Sac05].  $\Omega$  [CGS20].  $P$  [LHL07a, Peñ09, AEHV15, Beu03, BB06, GKY97, LZ09, LO13, LH17, Pul09].

$p \times p \times 2 (p \geq 2)$  [KJ12].  $Q$  [Cha12, DBLP16].  $Q_2 - Q_1$  [PT17].  $QMR$  [FH94].  $QR$  [ADP96, Cha12, FG02, AG95, CH94].  $R$  [DW15, BKM<sup>+</sup>12].  $s$  [CK10].  $S/P$  [Bea94, BNT94].  $S_n$  [Lee12].  $SSOR$  [JO94].  $t$  [Lun20, ZSKA18].  $\text{tr}(f(A))$  [CS18].  $U^T U + U^T R + R^T U$  [Kap98].  $uT(A)v$  [GR04].  $V$  [BLZ08, Lai97, NN10, Not98].  $\varphi$  [MPR20].  $X$  [fLyHZ11].  $Z$  [HCD15, HHQ13, LQY13, XC13, ZZLX20].

**-circulants** [Tre13, XCG16]. **-conforming** [AMM04, LPW06]. **-cycle** [BLZ08, Lai97, NN10, Not98]. **-decomposition** [Kap98]. **-dominated** [AMM04]. **-eigenpairs** [LP16, ZZLX20]. **-eigenvalue** [WQZ09]. **-eigenvalues** [HCD15, HHQ13, LQY13, XC13]. **-elliptic** [ZSCX10]. **-factor** [Cha12]. **-factorization** [KNY00]. **-factors** [Bea94]. **-FEM** [BB06]. **-form** [BO08]. **-function** [Lun20, XZS10]. **-hierarchical** [LO13, Pul09]. **-linear** [DN12]. **-matrices** [BNT94, BCC98, BCGM09, KC17, Kra02, LSL01, LHL07a, Peñ09, Sun06, vN00]. **-matrix** [FLPW01, Sau95, Bör17, Gra08, HK02, HHLL16, IP13, JZ11, LOY08, ZJ06]. **-monotonicity** [Mar95]. **-multisplittings** [BCC98]. **-optimization** [Chu04]. **-partitionings** [GKY97]. **-policy** [BLLA11]. **-product** [ZSKA18]. **-refinement** [DMM<sup>+</sup>08]. **-self-adjoint** [Leb02]. **-stable** [CGS20]. **-step** [CK10, Li00]. **-th** [AEHV15]. **-Toeplitz** [BF19]. **-transformed** [MPR20]. **-version** [Beu03]. **-weighted** [DBLP16].

**0-521-48296-8** [Nab97].

**14** [SB12]. **1st** [NL09].

**2010** [NL09]. **2017** [Den18]. **2D** [BCV03]. **2nd** [Kap02].

**3-D** [BG02]. **3D** [MM02, NH98].

**4th** [Web10a]. **4th-order** [Web10a].

**60th** [Vas03].

**70th** [CLR13, Vas05]. **7th** [BFG<sup>+</sup>18].

**80th** [SGP14].

**\*97** [Axe98]. **98** [Axe99].

**abs** [Bos19, SCD94]. **abs-normal** [Bos19]. **ABS-type** [SCD94]. **absorbing** [Cas11, RV12]. **abstract** [NV08a]. **accelerated** [BEH<sup>+</sup>17, Ema12, HW18, PRPI09, Wan18b, YYN12]. **Accelerating** [PH19, KKPS18]. **Acceleration** [DE06, BGN07, DH18, rFS09, Pas19, Ris19, WM12]. **Accuracy** [LL97, BS01, SWKW98]. **Accurate** [BP13, DPP16, DOP19, MP18a, MPR20, KR06, LVW01, Van00]. **achieving** [SWKW98]. **acoustic** [GM17, mM04]. **acoustics** [CCvG06]. **activity** [MC04].

**Adaptive** [MMM06, MM11, RR12, BLE97, BGM<sup>+</sup>12, BE98, DV19, DHR<sup>+</sup>04, Fer96, GKL18, JYH17, LM06, MMC12, MWZ06, Mit10, RSR10, SWKW98, SY18b, Ver00, ZSCX10]. **adaptively** [YYN12]. **addition** [BH07]. **additive** [BK11, CL96, CZ02, DS08, KV92, KLM15, NV08a, NWZ17, VY14, XZS10]. **ADI** [Dam08, MP16]. **ADI-preconditioned** [Dam08]. **adjoint** [Leb02, MM11]. **adjustments** [FLR03]. **admissible** [VL11]. **ADN** [Lee19]. **Advanced** [VZ08]. **Advances** [MM18]. **advection** [BCV03, CCK06]. **advection-diffusion** [BCV03]. **advection-dominated** [CCK06]. **aerodynamic** [LW04]. **affine** [DGC19]. **agglomeration** [IV04, KV06, LV08, LV12]. **aggregation** [BMM<sup>+</sup>08, BVV12, BDM<sup>+</sup>14, CG15, DV19].

GHT09, GHJV16, KWS<sup>+</sup>18, MM98, NN11, NY03, OS10, Pul08, PM11, Sch12].

**aggregation-based** [CG15, DV19, NN11].

**aggregation/disaggregation** [MM98].

**aggressive** [Yan10]. **AILU** [GN00]. **AINV** [KKNY01]. **AINV-type** [KKNY01].

**Algebra**  
[NLA94, Ano09, SB12, JNL92, BDRS12, BNR18, BM05a, CSCTP05, Dat01, GGV13, GY08, Mar00, MV05, Özb13, PDV05].

**Algebraic** [Ada04, AN94, BBS12, BO08, FM18, GL95a, Kra06, LOS04, NN11, NFD10, Not05b, Not10, Pfl99, RBV08, Sim03, Web10b, Web10a, XM17, AB12, BGX06, BKY10, BF11a, BDV06, BCZ12, BVV12, BKM<sup>+</sup>12, BDM<sup>+</sup>14, CG15, DFNY08, Don10, Ema12, GB11, GHJV16, GMOS06, Het07, HM14, HLL16, IP13, Kra02, Kuz92, KP10, LSS03, LB08, LS15, LCHH18, Liv04b, Lu05, LJM14, MMC12, MO14, MMR10, MM95, MBW97, MC08, Miy17, NL16, Not98, Not02b, OST10a, PM97, PT17, RS02, SS02, Sei10, Sha99, SH19, SY18b, TC10, VY14, XSZ09, XZS15, ZCW11, vN00]. **algorithm** [ARSO14, Amb15, AB12, AMMR17, AG95, BCK05, BPS95, BCB14, BFdP13, BD15, BLP01, CD11, CC03, CP12, DW15, DGC19, ER96, FG02, FO95, Gan99, GM17, GP18, HNR<sup>+</sup>18, Het07, HLL16, JR94, JZ11, Jou94, Kap99, Kau07, KNY00, KMC16, Liv04b, LYL15, MPV06, MCV01, MLV05, MVV08, MP13, MP16, MCLM20, MM18, MC04, MR14, NG15, NLZ11, OC04, PR16, RK18, RY08, RSR10, Roh92, SW96, ST17a, Shi04, SS97, SWKW98, Sto92, SHT11, TGKR10, VJM16, VVM05b, Van00, Vla00, WDS09, WM12, WL08, WW07, WtFW15, YCY17, ZQ12, ZZ15, ZZLX20, ZWQA18].

**algorithmic** [DIPR19]. **Algorithms** [BVD<sup>+</sup>18, GL96, AH02, AMP99, BH04, BT15, Bun92, CL96, CS96, Cao04, CQ10, CJT03, DMY03, DFZ05, DKVB15, Du19, FLM09, FP95a, FH94, HJR97, HR05, HM16, KN14, KR14, Kub92, Lai97, LW98, LLLJ16, Mar98, Mat96, MP18b, MK20, Pfl99, RS07, Sac05, SLK16, Sha98, SX15, SCD94, SST18, SSB15, US19, VP95, WWX10, XCGL10, XXW19, XZS10, YZ13, ZJ06, vGSZ15].

**aligned** [YXZ13]. **alignment** [YZ13].

**Almost** [ACR<sup>+</sup>00, Bos19, AW11, AMP99, BL20, EFG<sup>+</sup>18]. **almost-isotropic** [BL20].

**along** [MM95]. **Alternately** [BGX06].

**alternating** [AG19, Bai12, DH18, Wan18a, XJ12, ZN18, ZS08]. **Alternative** [GS99].

**Alternatives** [Sid97]. **AMG** [LOS04, BBM<sup>+</sup>06, DV19, GX14, HVX16, KV06, MMM06, TT15, Vas02, Web18, XM17].

**AMG-shifted** [TT15]. **AMGe** [LV08].

**AMLI** [Beu03, Mar98]. **among** [Par92].

**amplitude** [TH19]. **analyse** [AN13, HS13].

**analyses** [PM97]. **Analysis** [BEH<sup>+</sup>17, BLP01, CCvG06, CG15, MSS07, Mat96, SPD05, SP06, Sha98, YZ13, YXZ13, Zhu14, Axe15, BPS15, BSC20, Bat95, BW17b, BBG13, BVV12, Cas11, CDDSC12, CTP09, CLC11, CL13, CMSW19, CLTW11, CV13, CDW06, DFHM20, Don10, DFF<sup>+</sup>18, EFG<sup>+</sup>18, EM11, FM15, GZ16, GCLG18, GX14, HJR97, HM18, HM20, HHvR04, KO18, Lee10, LV04, LT09, LB08, LH17, MO11, MO14, MM98, MM02, NN11, NLZ11, Not10, PV99, Pas19, Pfl99, RR12, Saa00b, ST17a, Sha99, The98, WCZ15, WW08b, WW11, WF15, ZY19, mMvdV02, vRH05].

**analytic** [GN00, IT05]. **analytical** [SSB04].

**Analyzing** [RV12]. **Anderson** [Pas19].

**Anderson-type** [Pas19]. **angle** [DMY03, Lee12]. **angles** [GH06].

**anisotropic** [BCZ12, CG15, GHT09, Höm06, KW99, KT08, KLM14, KNP03, Sch12, XZS15, YXZ13]. **anti** [MMMM09, Per06, XHZ03].

**anti-persymmetric** [XHZ03].

**anti-reflective** [Per06]. **anti-triangular** [MMMM09]. **antibandwidth** [SH14]. **Any** [VL11]. **Appl** [SB12]. **applicability** [DOR19]. **Application** [CC03, Ibr02, LD08, MBW97, AM96, ABK15, BGW05, BCC98,

Car97, CD11, DH18, DQW15, DCT18, EAA19, GKK04, GMTV16, KMM18, Lam12, LY15, LQY13, NR11, SLK16, Vas02, Wan18b, BG02, CPSM06, Leb02].

**Applications** [NLA94, LX08, Ada04, ACR<sup>+</sup>00, AHJ20, JNL92, ABNP15, BNR18, BKP02, BSC20, BF96, BVD<sup>+</sup>18, BFM12, CC07, CCS10, CEQN07, CNP96, CCLN05, CCLQ18, CNY05, DHW16, DKVB15, FJ05, FH94, GCLG18, HPS15, Hua12, JNS19, KCC16, Kub92, LB17, LHW11, LNQ13, LT08, LWW09, LT11, LT13, LPS15, MV05, NPR13, NR14a, PN18, PRR<sup>+</sup>16, SKR08, WWC<sup>+</sup>15, XM17, ZZ15, NL09, Ano09].

**applied** [BCK05, CH05, GORR16, LMM00, LD07, MO11, Mit10, ZCW11]. **approach** [AMM04, AN13, CCLQ18, CJL08, DY04, DIPR19, DGRR11, DS02, FLPW01, GHW06, HKKP07, HG00, KV92, KNX01, KBF15, Laz16, LVD02, MZHB17, MM97, MC08, NWZ17, RT02, SP18, Sir19, Ste99].

**approaches** [KKPS18, KNY99, MMC12, MFFJ18, Mav01, NH98]. **appropriate** [KV96]. **approximants** [BLW08].

**Approximate** [AHJ20, Bea94, BPS00, HDIS18, LPSV18, MGF<sup>+</sup>02, PPv95, ZS08, AW11, AK16, BPSH13, BSI17, Doh07, DS10, Gus03, Huc98, ISZ09, JZ09, JK17, KKNY01, KNY99, KM92, LS04, LB17, LPS15, NY03, SSB19, Sol14, VW97]. **Approximated** [NR17]. **Approximating** [DE98, VS17, AFSCSU14, CGS20, SS97].

**Approximation** [AEHV14, Vab20, AH02, BSC20, BE09, BF11a, BCV03, BMS17, BMS18, CCE<sup>+</sup>18, DW15, DK15, DK95, EFG<sup>+</sup>18, FMPS13, HK02, HPS15, ITS07, KKS19, KJ12, KT08, KLM15, KV15, LPS16, LV12, LZQ12, MO16, OST10b, PN18, PW12, SLV04, SLV06, WN18, XG10, XHZ03].

**approximations** [CYZ99, DLVZ06, FY01, HJR97, KN07, LO15, Mor07, Mor09, Per06, RSC15, US19]. **arbitrary** [BW17a, HR05]. **arbitrary-degree** [BW17a]. **architectures** [FO95]. **arising** [AN03b, BGM09, BFPS10, BMP11, BRT07, CZ15, FP15, Gem00, HKKP07, HM14, LLV19, MZHB17, Mar16, MSV13, Miy17, MST16, PM97, Sei10, SMSW00, TC10, ZN18].

**arithmetic** [DK95, GKV12]. **arithmetics** [BB16]. **ARMS** [SS02]. **Arnoldi** [BHHJ13, GGV13, HLLL13, KR14, MP15, PRR<sup>+</sup>16, VJM16, WW07, WtFW15, YYN12].

**arrow** [BFG95, GNQ15]. **Arrowhead** [Zha92]. **assignment** [CQX11, LC13, LW04, LW05]. **assimilation** [TDH<sup>+</sup>18]. **associated** [CCG00, IP13, MO94]. **Asymptotic** [BGP97, BMS18, CGK05, Tre05, Lam12].

**Asymptotical** [DS02]. **asynchronous** [EGMS20, Sch99]. **atmospheric** [BNP15]. **atomic** [LO15]. **Augmentation** [Cao08].

**Augmented** [BR07, TT15, CS97, EG16, HW18, LD07, MG08, Szu14, Zít05]. **Austin** [Lee10]. **Automated** [SV11]. **Auxiliary** [KLM15, BC12, KPV08]. **aware** [DHR<sup>+</sup>04].

**away** [IV04]. **Axelsson** [Cao13, Vas05]. **axisymmetric** [CP06].

**B** [Nab97, EFG<sup>+</sup>18]. **B-spline** [EFG<sup>+</sup>18]. **background** [LNY15]. **Backward** [CTP09, CMSW19, GL95a, DO18, EM11, LC07, LZ12, Peñ03, Sun05, WKS95, YDH11].

**balance** [GSS01]. **balanced** [Lot07]. **Balancing** [PY03, BPS13, LT09, MD03, NV08a, WLBH12]. **BAMG** [BKM<sup>+</sup>12].

**Banach** [LZY11]. **band** [ESC20, VP95, dF20]. **banded** [BCR11, CSCTP05, CGK05, ESC18, FLM09, GSS01, Kau07, Lot07, MS14]. **Barrier** [Gar01, Mar95]. **Barzilai** [HD07]. **basal** [AMR18]. **based** [AMR18, AB12, AMMR17, AMMP06, Bai10, BZ13, BZ17, BMAA16, BG05a, BBM<sup>+</sup>06, BCZ12, BC12, BMM<sup>+</sup>08, BLW08, CW97, CG15, CLNY15, Cho03, DV19, DMM<sup>+</sup>08, Don10, DKVB15, FP05, Fer96, GKL18, GN00, GB11, GZ16, GNQ15, GHW06, GKY97, HJ18, HM03, Het07, HL16, HKLP19,

HM16, IV04, JK17, Kap98, KY95, KXZ03, KN14, KNY00, KWS<sup>+</sup>18, KRW08, KLM15, Lam12, LO13, LJ04, LNY15, LXS16, LM06, MMM06, MMPR10, MP18b, MCLM20, NN11, Naz95, NA97, NV08b, Reu96, RR12, SW96, SPD05, SH14, TW20, TH19, UMO09, WH94, WTWG14, XSZ09, Xie11, XXCB20, wX15, XM17, ZSKA18, ZMO10]. **bases** [CV03, MP18a, MYZ16]. **basic** [BR99, BB96, MLV05]. **basis** [BGW05, BCHT04, CDDSC12, Gan05, KR14, LO13, Sid97, Sir19, VW97, Ver00]. **BCCB** [LJ04]. **BDDC** [Doh07, ŠBS15]. **be** [Ano09, PM97]. **BE-FE** [PM97]. **becomes** [NL09]. **been** [Ano09]. **behavior** [Jou94, Kem12, VL11]. **behaviour** [NSCTP05]. **BEM** [FS09, HPPS03, HMS99]. **Bénard** [KABH17]. **Beresford** [Bun95]. **Bernoulli** [AB12]. **Bernstein** [BGW05]. **Besov** [Dah02]. **best** [BDK<sup>+</sup>15, FMPS13, KJ12]. **better** [Alb06, BG05b]. **between** [Li00, MC09, Tre05]. **Beyond** [ZN20]. **BFGS** [BDdSM18, DH18]. **BFGS-like** [BDdSM18]. **Bi** [Aih20, pLL07, LZQ12]. **Bi-CGstab** [Aih20]. **bi-quadratic** [LZQ12]. **bi-symmetric** [pLL07]. **bidagonal** [BP13, MPR20]. **bidagonalization** [HDA19]. **bidomain** [MNCT07]. **biharmonic** [AY11, LLW09, Osw95]. **bilinear** [ABBP10, EAA19, GA18, JL09, STZ12]. **Binary** [BMP11]. **Bingham** [HG00]. **biomechanical** [LV99]. **biomechanics** [Axe99, NBKS99]. **Biomedical** [LD08, NL09]. **Biot** [HKLP19]. **birthday** [CLR13, LPQ06, SGP14, Vas03, Vas05]. **Biswa** [CLR13]. **bisymmetric** [yPyHZ04]. **black** [NA97, DM10, YW12]. **Blaheta** [AB13, Cao13]. **BLAS** [OOO11]. **Blended** [HK02, BM05a]. **Block** [Bai12, CNZ17, CK10, FP15, FGNW14, GKY97, HK12, KABH17, MPS96, PS00, RS10, SLV06, ACR<sup>+</sup>00, AB10, AN13, AB13, BPS15, BCR14, Bas00, Bot13, BHHJ13, CCS19, Cao08, Cao13, CNY05, CV03, DHS95, DGM<sup>+</sup>16, ES07, FJP12, FJP16, FS09, Gro00, HM18, Hem96, HS05, HDH19, ISZ09, KK02, KN07, KP00, KNY00, Kol05, KC17, Krz11, Lam12, LO13, LPS15, MSS07, MR14, NZ14, Poi00, ST19, Ste95, SHJC18, Tre13, VVM05a, Van00, WCZ15, Wan18b, Wan18a, WH94, XCG16, YNP04, Zho18, SP18]. **Block-diagonal** [PS00, BCR14, FS09]. **block-Lanczos** [Zho18]. **block-preconditioner** [ES07]. **Block-row** [SLV06]. **block-semiseparable** [VVM05a]. **block-structured** [HM18]. **block-Toeplitz** [CNY05]. **Block-triangular** [RS10]. **blocking** [NO04]. **blocks** [Cao08, JS96, KKMM12]. **blur** [NWZ17]. **Boltzmann** [Lee12]. **Book** [Nab97]. **Boolean** [WWC<sup>+</sup>15]. **bootstrap** [BKM<sup>+</sup>12, MMPR10]. **bordered** [HS05, VP95]. **bordering** [KNY00]. **Borwein** [HD07]. **Bott** [LWV09]. **bound** [DD07, GX14, HVX16, LCN13, Mar94, SB03, YDH11]. **bound-constrained** [DD07]. **boundary** [BBP03, BWN05, Che15, HW19, IV04, MSB18, Per06, PR95, RR12, Rja98, RT99, ZYL13]. **boundary-value** [MSB18]. **bounded** [DGC19, EGMS20, LY15]. **Bounding** [AW11, Buc11, DHSW11, IK00]. **Bounds** [FSS18, Kol05, BC10, BF11b, CGM11, CSYS14, DS08, Du19, LS05, LW15, MO14, PPv95, Peñ09, WKS95, WL03, YL08, YLH11, Zik08]. **Box** [DM10, GH11, YW12]. **box-shaped** [GH11]. **break** [HM96]. **Broadband** [RSR10]. **Broyden** [DEM18]. **Brualdi** [Nab97]. **BSSOR** [GKY97]. **Buckley** [IK00]. **building** [PGT14]. **Bunyakowski** [AALS01]. **BVM** [LJ04]. **BVM-based** [LJ04]. **C.B.S** [Bla03]. **C.B.S.** [AM96, Mar94]. **Cache** [DHR<sup>+</sup>04, MWZ06]. **cache-oblivious** [MWZ06]. **CAGD** [BGW05]. **Calculating** [RMM19].

**calculation** [AFS14, MK94, vKVW00]. **calculations** [LPW06]. **Call** [Ano08, LD08]. **Cambridge** [Nab97]. **canonical** [BVD<sup>+</sup>18, DW15]. **Carlo** [AK16, BEH<sup>+</sup>17]. **carry** [NN10]. **Cartesian** [KVC12]. **cartoon** [WSN19]. **case** [EZ96, Not10, PDV05, Sha99]. **Cauchy** [AALS01, FG02, FSS18, SB03]. **Cauchy-Bunyakowski-Schwarz** [AALS01]. **cavities** [AG99]. **cavity** [WDS09]. **Cayley** [HSY18]. **cell** [ELV94, SRGL13, RSR10]. **cell-centered** [ELV94, SRGL13]. **centered** [ELV94, SRGL13]. **centroidal** [DE06]. **centrosymmetric** [HM03, fLyHZ11]. **certain** [BDS94, EG16, FSS18]. **CFD** [Tur00]. **CG** [Aih20, Bla02, KPT14]. **CGNE** [Egg07]. **CGstab** [Aih20]. **chain** [BH16, BF11b, FH94, NW15]. **Chains** [Ben11, BK11, BDS94, BCC98, Cas11, DMTY11, KNX01, LLV19, MPS96, NX03, Sid11]. **Change** [Gan05]. **Changing** [Mee01]. **channel** [PDV05]. **chaos** [Lee16]. **chaotic** [BW17b]. **Characteristic** [CCK06, HC20, ZYFG11]. **Characteristic-mixed** [CCK06]. **characterizations** [ES09b]. **Chasing** [Zha92]. **ChebFilterCG** [ST17a, ST19]. **ChebStaBlkCG** [ST19]. **Chebyshev** [KR14, Li00, PRPI09, PSK08, Wan18b]. **Chebyshev-like** [PRPI09]. **chemical** [DO18, DK15]. **Cholesky** [EM95, FP95a, JO94, Kap02, RTN03, Sau95, ZHJL12]. **choosing** [GNR14]. **circuit** [BvdV00]. **Circulant** [CC92, JLW05, CNY05, HN05, NR12, SPD05, WRW18, YNP04]. **circulant-plus-diagonal** [HN05]. **circulants** [GGV13, Tre13, XCG16]. **class** [CNT07, CCLQ18, CDDZ19, DEM18, DN12, HES15, HL16, HM16, HXM19, HDH19, IK00, LT09, MP18a, Pul08, SPD05, SP06, SCD94, Wu15, YLH11]. **classes** [BSI17, rFS09, Peñ09]. **classic** [MM97]. **classification** [GMOS06, NLZ11]. **CLC** [Web18]. **climbing** [SH14]. **CLJP** [Alb06]. **closed** [EFG<sup>+</sup>18]. **closure** [EJK01]. **clustered** [CP12]. **clustering** [CNZ17]. **clusters** [KBF15]. **CNM** [LD08, WW08a]. **Coarse** [GMOS06, AO07, AG19, CRV14, KV96, LV12, NV08a, VSG09]. **coarse-fine-mesh** [AG19]. **coarse-grid** [AO07]. **Coarsening** [Liv04a, BBM<sup>+</sup>06, DM10, GMOS06, IV04, Mar98, US19, Wan00, XM17, Yan10, YW12, ZMO10]. **code** [Bra02]. **coefficient** [DHR<sup>+</sup>04, GVT03, Sau95]. **coefficients** [BKP02, BMMR18, CC20, RBV08, Wan00, Zhu08, Zhu14]. **Coffey** [DPP16]. **Collapsible** [LD08]. **collapsing** [BB01]. **collisions** [LO15]. **collocation** [CDDSC12, FP15, MP18a, MPR20, PSK08]. **column** [KV15]. **columns** [How18]. **Combination** [Not02a, PW13, Shi02]. **combined** [KRW08, SLV13, ŠBS15]. **Comment** [Cao13, ESC20, dF20, AB13]. **Comments** [WTZD10, NT04]. **Communication** [Lai97, Yon96, AMMR17, VY14]. **Communications** [LD08, NL09]. **Commuting** [VZ14, JMPR18]. **Compact** [DEM18, DO18, DGP19]. **compactly** [FP15]. **comparative** [LR08, RS18]. **comparing** [MMC12]. **Comparison** [CGK94, Li00, PGT14, SY18b, SSB15, AG99, BB96, CP99, FLR03, FP95b, GLOW04, GLJ19, KP00, MC09, NV08a, Not05b]. **comparisons** [BT15]. **compatible** [CBE18, Liv04a]. **compensated** [AK94]. **complement** [BCGM09, HKKP07, KW99, KNX01, KLM15, LXS16, LW03, NG15, PW12, Rak99, SGP14, WW08b]. **complement-based** [LXS16]. **complementarity** [AS19, AW11, Bai10, BZ13, BZ17, CK14, DJ09, HL16, HM16, XZS10, wX15]. **Complementary** [ZM08]. **complements** [BG05a, Kra06, MW16, NX03, WTWG14]. **complete** [JL09]. **Completely** [GL95b]. **completion**

[EHM95, HS18, JNS19, Laz16, SNZ20]. **complex** [AK00, CV13, GH06, HES15, HKH<sup>+</sup>06, IK00, KR11, KH07, MZHB17, Not05a, SS97, Wan18a, Wu15, XQ09]. **complexities** [Alb06]. **complexity** [DFZ05, GHJV16]. **Compliant** [LD08]. **component** [BF11b, MM02, NH06]. **component-wise** [BF11b]. **components** [BDGL09, LB17]. **componentwise** [Dia09, DXW12, Lam12]. **Composite** [ALM18, Fer96, RSR10, RR12]. **Composite-based** [RR12]. **Composite-grid** [ALM18]. **compressed** [BT15]. **compression** [Bör17, Ibr02]. **compressive** [ZZ15]. **Computation** [EJK01, Mai06, Özb13, AT00, BB16, BV00, BEG18, Chu04, Huc98, MVK04, MM11, Miy17, MGF<sup>+</sup>02, NX03, Sid97, Sir19, WLBH12, XM17]. **Computational** [BGM11, HJ18, CCvG06, DFF<sup>+</sup>18, Ema12, GS97, Ian16, Mar00, SS07]. **Computations** [MPV06, Axe98, AC11, BP13, CRZT20, DPP16, DOP19, Kho96, MP18a, OST10b]. **Computed** [GL95a]. **computer** [CZ15, DK95, GL02]. **computers** [JO94, MM97, TSPSO06]. **Computing** [BDGL09, Dax04, GMS18, LCHH18, Lor14, MRT98, NW15, vNR07, BGW05, CS18, CCLQ18, CJL08, Cfx05, CC20, DE06, FM99, KNX01, KBF15, KMC16, KR06, LH17, LZY11, LP16, MM98, MVV08, MP16, MK20, Pul16, RT02, SLK16, SST18, SHT11, TS12, WQZ09, WW07, Yan18, YYN12, ZQ12, ZZLX20, MMMM09]. **concept** [Mey94]. **concerning** [BM05a]. **Condition** [BC10, CLTW11, YDH11, ADT19, BB06, BT92, BG05b, CCG00, CDW06, DW07, Dia09, DXW12, DWWQ13, EHM95, EG16, LX08, LH08, LLW09, Pul08]. **condition-number** [ADT19]. **conditioned** [MM09, NCV05]. **conditioning** [BDGL09, LHW11, TDH<sup>+</sup>18]. **conditions** [Per06, Szy94, XHZ03, Zít00, Zít05]. **conduction** [AJ94]. **conforming** [AMM04, BMN05, KM99, LPW06]. **conic** [Naz95]. **conjugate** [AM95, BGP97, BMSS09, BB96, CNT07, Cha07, DMY03, DW15, DR03, Hac92, Kap94, Kap02, MO94, Mey94, Not02a, PR95, WD08, Wei94, YBZ19]. **Connection** [MC09]. **conquer** [KNX01, LLLJ16]. **Conservative** [AIT05a, HKLP19]. **conserving** [ABM17]. **Consistency** [FLR03]. **Consistent** [Rie09, DBG06]. **consistently** [Bea94]. **constant** [AM96, Liv14, Mar94]. **constrained** [Ada04, AN03b, BVD<sup>+</sup>18, DD07, DR03, ER96, GW00, HHM10, KV06, Lin12, LWC16, LV98, NBKS99, PW12, PSW14, Pen08, RS10, SY18a, Sto92, SW12, Vla00, XJ12, PPS20]. **Constraint** [SL10, Ber12, BDdSM18, Cao09, DGC19, fLyHZ11, pLL07, LW07, MRT02, yPyHZ04, WBL14]. **constraint-preconditioned** [Ber12, WBL14]. **constraints** [BPS13, Dob99, Lay05, LZQ12, MD03, MS07, dCSRS19, SW12, VFdV13]. **constructing** [BFdP13, KKNY01, NY03]. **construction** [BC09, WWC<sup>+</sup>15]. **constructions** [YNP04]. **constructive** [BW17a]. **contact** [Ada04, Hla99, IV04, NO04, ZVO14]. **Continuation** [DF01, CWS97, CC03]. **continuous** [Cas11, SSB15]. **continuous-time** [Cas11]. **continuously** [Vos09]. **contour** [KKPS18]. **contrast** [AY11, GKK19]. **contribution** [WF15]. **control** [BLP08, BFPS10, BO13, DMS17, Dat01, GTZ18, HW19, KK13, LC13, LW05, MSS07, MP13, PSW14, ROA13, SY18a, SW12, VFdV13, ZHJL12]. **controlled** [FJP16]. **controllers** [Özb13]. **convection** [BR99, FY01, HP97, HK12, KABH17, KXZ03, PH19, RSCTP15, XG10, ZYFG11, vRH05]. **convection-diffusion** [BR99, FY01, KXZ03, PH19, ZYFG11, vRH05]. **Convergence** [BBG13, BH16, CL96, CP99, DFHM20, HNR<sup>+</sup>18, KKO20, KO18, LT09, LB08, MD03, MM98, NH98, Pas19, Pul16, ST17a,

Sch99, WCZ15, ZSCX10, Zho18, Zit05, AJ94, BPS15, BS01, BGP97, BR99, BMS18, BMSS09, BLZ08, BVV12, CZ02, Che02, CJT03, CK14, DS08, Du19, EN17, FVZ05, GR99, GD11, GX14, HVX16, HW18, JK09, Jou94, Kap94, Kap05, KPV06, Li00, Lin12, LW16, MRT96, MC08, PS95, PRPI09, Pul08, RV12, SLV13, Szy94, VL11, ZW10, ZQ12, Zik08, Zit00, vdE02]. **convergent** [BSI17, CQ10, GT09, Sol14, ZZLX20]. **convex** [Car97, Laz16, LMV04, Shi02, Shi04]. **coordinate** [BW19]. **copositivity** [CCLQ18]. **core** [BH04, JYZ17, Mor07]. **core-functions** [Mor07]. **corner** [BLZ08]. **corrected** [BKM<sup>+</sup>12, MZ15]. **correction** [CS02, CRV14, GS99, NV08a, NFD10]. **corrections** [LXS16, QXB09]. **corrector** [HM14]. **corrector-type** [HM14]. **correlated** [OZB<sup>+</sup>18]. **correlation** [DBLP16, LW16]. **corresponding** [AT00]. **Corrigendum** [HS14]. **corrupted** [NWZ17]. **cosine** [ROA13]. **counts** [DPS16]. **Coupled** [LNP12, GLOW04, HMS99, KWS<sup>+</sup>18, LPV01, TSPSO06, WRW18]. **coupling** [FS09, HPPS03]. **couplings** [Yot01]. **covolume** [CCK06]. **CP** [KKS19]. **crack** [CKW02, LLW09]. **criteria** [Bir15, Peñ07, Sot13]. **critically** [HHLL16]. **Cross** [OST10b, MO16]. **Crout** [May05, May07]. **Crouzeix** [KMS08, SSB04, Zhu14]. **Crouzeix-Velte** [SSB04]. **cubic** [HLLW05]. **cubically** [ZZLX20]. **curl** [CP06, KPV08, ZSCX10]. **current** [Bai12]. **curvature** [KRW08]. **curvature-based** [KRW08]. **curvilinear** [PSK08]. **cycle** [BLZ08, GT09, Lai97, NN10, Not98, VL11]. **cycle-convergence** [VL11]. **cycles** [NV08b, TGKR10, VL11, ZM08]. **cyclic** [MR14, NG15]. **cyclically** [GH11]. **cylindrical** [HG00]. **Czech** [FM99]. **Czech-US** [FM99]. **D** [GKY97, AM96, BV13, BG02, KK16, LPW06, Mar94, NBKS99, PM97, PR96, QB15, SY18b, ZVO14, mMP99, vKVVW00]. **DAE** [ABK15]. **damped** [BC09, CMSW19]. **damping** [BTT13]. **Data** [GA18, Bau08, BF11a, BFdP13, BH04, CLNY15, DQW15, KKS19, NLZ11, PDV05, Rie09, TDH<sup>+</sup>18]. **Data-driven** [GA18]. **data-sparse** [Bau08, BF11a]. **Datta** [CLR13]. **Davidson** [FJP16, GS99, HLLW05, MSV13, Not02a, Zho06, vNR07, vdE02]. **DCT** [CSCTP05]. **DD** [AB13, Cao13, AB10]. **deblurring** [CFAM16, Don05, LNP12]. **decay** [FSS18]. **decision** [Buc11, CEQN07]. **Decomposition** [CGK94, AN03a, AN07, AMMR17, AFK02, AG19, BP13, BW17a, Bla94, Bla02, BVD<sup>+</sup>18, BPS13, BO18, BIA18, CS96, Car97, CGM01, CL13, CLNY15, CJT03, DH18, EM95, FLP00, FRR16, FGNW14, GVT03, GB15, GTI16, Gus03, HLM92, HDIS18, HC05, Ibr02, JK18, JM10, KV92, KKPS18, Kap98, Kap02, Kem12, KMMR10, Kho96, KN14, KNP03, LR95, LV99, LT09, LHW11, LXS16, LT11, LT13, LMM00, MPR20, MD03, MK20, MM02, MM18, NR14b, PY03, PH19, Sau95, SNZ20, TSPSO06, WQ07, WSN19, YL08, ZSKA18, Zhu08]. **Decompositions** [ZN20, BF96, BLW08, LS06, SSB04]. **deconvolution** [MLV05]. **Decoupling** [LVW01, HDIS18]. **Dedicated** [Bun95, SGP14, CLR13]. **Dedication** [NN15]. **defect** [NFD10]. **defective** [AFS14]. **defects** [KK16]. **deficient** [DE98, GS97]. **definite** [ARMW14, AIT05a, AV94, Bai16, Bai18a, BMAA16, BT03, DJ09, Ema12, Kap98, KH07, Kol05, LHL07b, MVV08, yPES07, SB12, WW08b]. **definiteness** [PW13]. **definition** [Lun20, VVM05c]. **Deflated** [CS97, MYZ16, SHJC18, MN00]. **DEFLATED-GMRES** [MN00]. **deflation** [NV08a, SLV13]. **degenerate** [BMM06, Sto92]. **degree**



[BW17a, DS10, Gus04b, HVX16]. **delay** [DOR19, DGRR11, JLW05, LC13, MSV13]. **delay-differential** [MSV13]. **denoising** [LNP12, ZZ15]. **denoising/deblurring** [LNP12]. **dense** [CDGmM04, DS10, GTY97, How18, KN07, KBF15, Ver00]. **density** [NY03, OST10b]. **dependency** [RV12]. **dependent** [BEG18, CNT07, CRV14, GS05, HG00, KPT14, Mai06, MV13, RBV08, Sha98, ZYFG11, vKVW00]. **depending** [Vos09]. **derivative** [LY15]. **derivatives** [AT00, Xie11]. **derived** [BDV06]. **deriving** [Mey94]. **descent** [BW19, De 13, NZ14, Shi02, Shi04]. **design** [AG99, BCK05, MC08, SMSW00]. **designing** [RS07]. **designs** [LW05]. **determinantal** [CC07]. **determinants** [MP15]. **developments** [SS07]. **deviation** [CCvG06]. **device** [GMR05]. **DFT** [Not05a]. **Diagonal** [BLP17, SZ99, ACR<sup>+</sup>00, BCR14, EW13, EM11, Fas05, FS09, HN05, HS05, KKMM12, MCV01, Par03, PS00, TS12, ZZ15]. **diagonal-plus-semiseparable** [Fas05]. **diagonal-plus-Toeplitz** [BLP17]. **diagonalization** [CCS19, MCLM20, WZZ18]. **Diagonally** [AK94, Yon96, MRT98, RT02]. **diameter** [Par03]. **difference** [AJ94, FY01, Fer96, Gem00, PR11, SCD94, Web10a]. **different** [DOR19, Tre05]. **differentiable** [Est09]. **differential** [AHJ20, BCR11, BCR14, BSC20, Bot13, DOR19, HJ18, JLW05, KKO20, LH08, LHW11, LW03, MW11, MSV13, MM11, PSK08, Rak99, RBV08, SW12, TC10, ZCW11, Zhu14]. **differential-algebraic** [ZCW11]. **differentiation** [DO18]. **diffusion** [ALM18, BLP17, Bai18b, BL20, BCv03, BR99, CCK06, CG15, FY01, Gan99, GKK19, KXZ03, KWS<sup>+</sup>18, KRW08, KP10, Lee16, LCHH18, LPS15, Mav01, OC04, PH19, RSCTP15, Sch12, WBWM04, WZZ18, XG10, YXZ13, ZYFG11, vRH05]. **diffusion-** [KRW08]. **digraphs** [THC09]. **dimension** [BTT13, CLNY15, KCS11, VS17, vGSZ15]. **dimensional** [AALS01, CGPV13, CLNY15, DY04, KT08, NLZ11, Özb13, Rja98, XSZ09]. **dimensionality** [YZ13]. **dimensions** [BO18, DHNR18, ŠBS15, XZS15, YZ13]. **Direct** [Dam08, GT19, JZ11, SH19, ZJ06, BLP01, CNY05, CS95, ES09a, GMR05, HS05, MRT02, SW96, SST18, TW20, TSPSO06]. **directed** [FM18]. **direction** [BB96, DBG06, XJ12, ZN18]. **Directional** [Bör17]. **directions** [DS13b, ZS08]. **Dirichlet** [Rja98]. **disaggregation** [MM98, Pul08, PM11]. **discontinuous** [ABM17, BKP02, BBS12, DLVZ06, DFF<sup>+</sup>18, EWY03, HHvR04, KT08, Wan00, WBWM04, vRH05]. **discrepancy** [BC02]. **discrete** [BCV03, CLTW11, DGB<sup>+</sup>13, DNR12, DHNR18, GORR16, Han13, HDA19, JK18, KM92, NR14b, PSK08, SSB04, Web10a]. **discrete-difference** [Web10a]. **discretization** [ABM17, BCR11, BS01, CGM11, DP03, GTZ18, HHvR04, HK12, Lay05, LPV01, LOY08, SY18b, UMO09, Zhu14]. **discretizations** [AT15, BCR14, BBS12, CBE18, EGF11, GHO15, HM20, HKLP19, KOV17, Lee12, Lee16, LOS04, MW11, Osw95, PT17, RS02, SRGL13, SSB15, XS11, XZS15]. **discretized** [Bai18b, BL20, GS07, KS04, MNCT07, vRH05]. **discriminant** [NLZ11, WF15]. **disks** [Peñ07]. **disordered** [Sac05]. **Displacement** [Bla94, WN05, Bla02, HC20, KM99]. **displaying** [EJK01]. **Distance** [DFNY08, AFS14, LCHH18, NR11]. **Distance-two** [DFNY08]. **Distortion** [BG02]. **Distributed** [GL18, FO95, JO94, MW16]. **distribution** [AFSCSU14, Ber12, BF11b, Cao09, DHSW11, GR05, MV19, SJBH14, WBL14]. **Distributive** [GGLO08, GLOW04]. **div**

[AMM04, CP06, GGLO08]. **divergence** [MRT02]. **divide** [KNX01, LLLJ16]. **divide-and-conquer** [LLLJ16]. **division** [Kub92]. **does** [NN10]. **Domain** [BIA18, CGK94, Car97, HLM92, KKPS18, KNP03, RVW98, Zhu08, AFK02, AG19, BPS13, BO18, CS96, CGM01, FLP00, GVT03, Gus03, HKKP07, JM10, Kho96, LR95, LV99, LT09, LXS16, LMM00, MD03, MZHB17, PY03, PR11, RT99]. **domains** [Dah02, DS02, EGMS20, HKH<sup>+</sup>06, KM92]. **Dominant** [Yon96, MRT98, RT02, ZQLX13]. **dominated** [AMM04, CCK06, HP97, RSCTP15]. **dominating** [GGLO08]. **double** [QB15]. **double-layer** [QB15]. **doubling** [GB11, HHLL16, LYL15, MP13, PR16]. **doubly** [GHR98]. **Downwind** [HP97]. **DQGMRES** [SW96]. **Dr** [KVV10]. **Drazin** [WL03]. **DRIC** [Not94]. **driven** [GA18]. **drivings** [PM97]. **dual** [DH04, FLP00, GH01, HP04, Saa94, Sto92, WSN19]. **dual-dual** [GH01]. **dual-primal** [FLP00]. **Duffin** [LWW09]. **Dijkstra** [ER96]. **dynamic** [Not94]. **Dynamical** [Bat95, BBJ17, BW17b]. **dynamically** [MN00]. **dynamics** [Ema12, HW19].

**ECLES** [dCSRS19]. **eddy** [Bai12]. **edge** [Dah02, RS02, ZSCX10]. **editing** [dCSRS19]. **Editorial** [Axe96, Axe99, Axe03, Axe04, BNR18, Bun95, Lan97, NT03, Saa00a, Yav04, Mar00, NT04]. **effect** [BS01, LW04]. **Effective** [LH08, LLW09]. **Effectiveness** [XXCB20]. **Effects** [CJT03]. **Efficiency** [DMM<sup>+</sup>08, CNT07, KNY99, LH17, Tur00]. **Efficiency-based** [DMM<sup>+</sup>08]. **Efficient** [BV00, BCV03, BEG18, DPS16, FJP12, Gem00, HPS15, Huc98, LV99, Poi00, VP95, WWX10, mMP99, BDS94, CP12, DGC19, EGF11, GM17, HS13, KBF15, KR14, LR08, OOO11, yPxP06, RGG07, TSPSO06, WTZD10, XZS15, Zha18]. **eigCG** [ARSO14]. **eigendata** [BC09, YBZ19]. **eigenfrequencies** [BTT13]. **eigenpair** [MPV06]. **Eigenpairs** [ESC20, dF20, DK95, LP16, Xie11, ZZLX20]. **eigenparameter** [Vos09]. **eigenproblem** [BGP97, FT98, Not02a, XHZ03]. **eigenproblems** [Bas00, BPS00, BFG95, DS13b, FLPW01, FJP12, KCS11, Ney02, SGSM15, TY10, Vos09, XCG16, vde02]. **eigenresolution** [Mar16]. **eigensolver** [BMM<sup>+</sup>08]. **eigensolvers** [BM17, GKL18]. **eigenspaces** [Zit05]. **Eigenvalue** [AN06, AB13, Cao13, KY95, LV04, Peñ09, AS19, AFSCSU14, AG99, AB10, Bai95, Ber12, CQX11, CR16, CCvG06, CS02, CCLQ18, CWwS18, CMSW19, DL97, DPS16, Dia09, DGP19, EKS02, GP18, HKST12, HS08, HMMP19, HLLL13, HLLW05, Jia17, KKPS18, LLL97, LLK14, LLLJ16, Liv04b, LYL15, MMMM09, MVV08, Mee01, MSV13, MP15, MZ98, PPv95, RMM19, SLK16, SJBH14, Sim03, Sot13, VJM16, WQZ09, WBL14, YBZ19, YCY17, YLH11, ZQ12, ZQLX13, ZQW13]. **Eigenvalues** [ESC18, AT00, BB16, BWN05, CSYS14, EFG<sup>+</sup>18, HCD15, HHQ13, Kol05, KCV09, KVC12, LS05, LQY13, Mai06, MM11, MV19, SHT11, XC13]. **Eigenvector** [NR19, LW98]. **eigenvectors** [AT00, CCS19, ESC18, Mai06, Pul16]. **Einstein** [HXM19]. **elastic** [GT19, Höm06]. **elasticity** [AM96, AALS01, Axe99, BKY10, BLE97, Bla94, BC12, BIA18, GLGR10, GL98, GL02, GL13, HNR<sup>+</sup>18, KK02, KS04, KMM19, Mar94, Mar98, Pad99, Rja98, XSZ09, XS11, XZS15]. **elastoplastic** [MBW97]. **elastoplasticity** [MM97]. **electrical** [MC04]. **electrodynamics** [KMMR10]. **electromagnetic** [WDS09]. **electromagnetism** [CDG00, CDGmM04]. **electron** [OST10b]. **Element** [LV12, AK99, AMM04, BBP03, BMN05, BC12, CYZ99, CKW02, CGL05, DMM<sup>+</sup>08, Dob99, EGF11, EWY03, GLGR10, GTZ18,

HH06, HM20, HS13, HK12, HC20, IV04, KMM18, KMMR10, KR11, KS04, KV06, Kra06, KLM14, Lai97, LV08, LR95, LMM00, LPW06, MW16, MSB18, PY03, PS00, PR95, RS02, Rja98, RSCTP15, SGP14, SY18b, SSB15, The98, Vas92, VL96, Vas02, WBWM04, XSZ09, XS11, ZYFG11, ZSCX10]. **elements** [BB00, GL13, HHvR04, KKO20, Lee10, Osw95, Pul09, RS02, ZHJL12]. **elimination** [GIK02, Gro00, IK00, Peñ03, Reu96]. **Elliptic** [CGK94, AV94, BBP03, BBS12, BCZ12, CC92, CW97, CS02, CGL05, CEL<sup>+</sup>96, DLVZ06, Dob99, DHR<sup>+</sup>04, DP03, ELV94, EWY03, GN00, GTZ18, HKST12, KKO20, KW99, KR06, KT08, KMS08, KLM14, KM92, LPV01, Lee19, LW03, MRT02, MSS07, MM11, Ney02, Rak99, RT99, SY18a, Sta96, Vab20, VL96, Wan00, ZSCX10, Zhu08, Zhu14]. **Embedded** [GNR14]. **embedding** [FLPW01, RVW98]. **EMC** [Ver00]. **enables** [MC08]. **enclosure** [Miy15, OOO11]. **encountered** [BMMR18]. **energetic** [Lee12]. **Energy** [VSG09, BBM<sup>+</sup>06, KV06, Lee12, MD03, SWY07]. **energy-based** [BBM<sup>+</sup>06]. **Energy-minimizing** [VSG09]. **Engine** [RSR10]. **Engineering** [LD08, NL09, WW08a, CEQN07, Mar16, Ano08]. **enriched** [HDA19]. **entries** [EW13, FSS18, Par03]. **envelope** [BPS95]. **Environment** [ADP96, CEQN07, TT10]. **environmental** [MS07]. **epidemic** [GCLG18]. **equalities** [CPSM06]. **equality** [DR03, LV98]. **equation** [AY11, AB12, AJ94, BMP11, Bot13, CKW02, CD11, Cha07, CGM11, Dah02, DO18, DK15, FZwCW17, KP10, Lee12, Lee16, LB08, LS15, LLV19, Lu05, Miy15, Osw95, yPxP06, yPES07, RV12, SY18b, SW12, Tia13, TH19, WTZD10, Zhu14, vRH05]. **Equations** [BFG<sup>+</sup>18, GL95a, ARMW14, ABM17, AB12, Axe99, AC11, BPS15, BGX06, BCR11, BCR14, BLP17, Bai18b, BL20, BKP02, BSC20, Bau08, BMAA16, Ben08, BLP08, BES14, BR99, BG05a, BMMR18, BG00, BHHJ13, BCZ12, BFM12, CLR01, Che02, CH03, CQ10, Cor04, Dam08, DSV18, DIPR19, DOR19, DBG06, DXW12, DLVZ06, DFF<sup>+</sup>18, Gan99, GB11, Gem00, GS99, Gra08, GS07, GD11, HM18, HFW01, HNR<sup>+</sup>18, HES15, HM14, HHLL16, HXM19, IP13, JMPR18, JLW05, JL09, JO94, KKO20, KW99, KXZ03, KLM<sup>+</sup>06, KS04, KWS<sup>+</sup>18, KOV17, KPT14, KS15, LR08, Lee10, LH08, LLW09, LHW11, LGS12, LXX17, Liv14, LW03, LPS15, LPSV18, LMM00, LRGO17, MV13, MNCT07, MW11, Mar94, MZHB17, MM09, MCV01, MSV13, MM11, Miy17, NFD10, NQ96, Ols99, PM97, PR95, PR16, PT17, Rak99]. **equations** [RBV08, RSCTP15, SL19, Śmi19, SCD94, Ste99, Szy94, TC10, TSPSO06, Tyr05, Var08, WRW18, Web10a, WZZ18, XSZ09, YDH11, YXZ13, ZCW11, ZZ15, ZN18, ZSWX13, Zhu08]. **equidistantly** [Rie09]. **equilateral** [RSCTP15]. **equilibrium** [DHSW11, GT19]. **equispaced** [FP05]. **Equivalence** [Szy94]. **equivalent** [MZHB17]. **Errata** [SB12]. **Erratum** [BN12]. **Error** [GL95a, OOO16, AM96, AW11, CGM11, CS18, CMSW19, HJR97, LO13, MMN<sup>+</sup>10, Ney02, Pul09, WW11]. **Error-free** [OOO16]. **errors** [LC07, LZ12, Sun05]. **essentially** [ZQLX13]. **Estimate** [AM96, CS18, ES05]. **estimates** [AN06, AB10, AB13, BB06, CL96, Cao13, FVZ05, LZ12, MST16, Pul09, Zho18]. **Estimating** [LW98]. **Estimation** [BNP15, GR04, ADT19, Baz08, BT92, DPS16, DXW12, LX08, NG15, Ney02, SZ11]. **estimations** [CD11]. **estimator** [MVK04]. **estimators** [AM96, MMN<sup>+</sup>10]. **Euler** [Cor04, LH17, NFD10]. **European** [Rag14]. **Evaluating** [BB01]. **evaluations** [KS10]. **even** [Not05a, XC13]. **evolution** [BBG13]. **Ewing** [LPQ06]. **Exact** [KV15, Bot13, DK95, Pul16]. **expanded**

[HC20]. **expansion**  
 [DS02, GTI16, MS07, RR12, ROA13, SLK16].  
**expansions** [Tre05]. **experience** [BGM11].  
**Experimental** [RR12]. **experiments**  
 [ABK97, GL02]. **Explicit** [Lam12].  
**exploiting** [VJM16]. **exploits** [NL16].  
**Exploring** [AMR18]. **Exponential**  
 [PDV05, BV00, BCV03, DQW15, LLS12,  
 Mor07, PS11, Rag14, Šmi19, VS17, WtFW15].  
**expressions** [LT08, Not05a]. **extended**  
 [DPP16, Du19, KS10, ZHZ10]. **Extending**  
 [ARSO14]. **Extension** [BKP02, BCB14].  
**extensions** [Sun06]. **exterior** [GH01].  
**extracted** [SPD05, SP06]. **extraction**  
 [LNY15]. **Extrapolation** [CRZT20].  
**Extremal** [Jia17, LT08, Vla00, Zho16].  
**extreme** [HCD15, HHQ13].

**F.E.M.** [AM96]. **Faber** [Nov03]. **factor**  
 [Ano09, Cha12, DM10, GIK02, HW18, IK00,  
 KM09]. **factored** [KKNY01]. **factoring**  
 [BG05a, Kau07]. **Factorization** [ADP96,  
 BT03, Bla94, CCG00, CGK05, Cha12,  
 DHS95, DCT18, FG02, GN00, KNY00,  
 KM92, LSS18, MW16, OS01, RTN03, Saa94,  
 SK01, ST17b, XXCB20, XQ09, ZHJL12].  
**factorizations** [AMMP06, Bea94, CCS10,  
 CH94, CV03, GNQ15, KOV17, LW15, MS14,  
 RS18, mMvdV02, mM04]. **Factorized**  
 [KNY99, NY03]. **factors**  
 [Bea94, BF11a, WL08]. **families**  
 [AABHV18]. **family**  
 [AEHV14, AEHV15, GGZ12, LZ09, LWC16,  
 LPW06, MG08, Sot13, vV94]. **Fast**  
 [BO13, Cao04, DMTY11, DQW15, FGT11,  
 FP05, FS09, KK16, LLS12, LO15, LPS15,  
 MS14, MCV01, MLV05, Miy15, Miy17,  
 RS07, STZ12, SSB19, XCGL10, vKVV00,  
 BB16, DPP16, DS10, Fer96, JR94, Kho96,  
 Lee10, LLLJ16, MRT02, MVV08, Rak99,  
 RSR10, Sol14, SKR08, US19, WF15,  
 ZWQA18, RR12, TW20]. **fast-adaptive**  
 [RSR10]. **faster** [Kap99]. **fault** [NO04].  
**fault-zone** [NO04]. **FFFD** [PR11]. **FE**  
 [GKY97, PM97]. **feasible** [AW11]. **FEAST**  
 [GP18, YCY17]. **feedback**  
 [DGRR11, LW05]. **FEM**  
 [AB10, AB13, Beu03, BB06, Cao13, FS09,  
 GM17, HPPS03, HMS99, KM99, Mar94].  
**FEM-BEM** [HPPS03]. **FEM/BEM**  
 [HMS99]. **FETI** [DH04, DKVB15]. **FFT**  
 [ZVO14]. **fictitious** [HKKP07, RT99]. **field**  
 [KMMR10]. **fields** [HPS15, OZB<sup>+</sup>18]. **filter**  
 [RGG07]. **filtering**  
 [AN03a, AN07, BPSH13, FGNW14, LNY15].  
**filtering-based** [LNY15]. **filters** [RS07].  
**Finding** [EW13, HHQ13, PRPI09, Roh92].  
**fine** [AG19]. **finer** [Vöm12]. **finer-grain**  
 [Vöm12]. **finger** [ISZ09]. **Finite**  
 [Dob99, KMMR10, AK99, AMM04, BBP03,  
 BB00, BMN05, BC12, CYZ99, CKW02,  
 CGL05, DMS17, DMM<sup>+</sup>08, EGF11, EWY03,  
 FY01, Fer96, GLGR10, GCLG18, GTZ18,  
 GL13, HH06, HM20, HK12, HC20, KMM18,  
 KR11, Kra06, KLM14, Lai97, LR95, Lee10,  
 LMM00, LPW06, MW16, MSB18, Osw95,  
 PY03, PS00, PR11, Pul09, RS02, RSCTP15,  
 SGP14, SY18b, SSB15, The98, Vas92, VL96,  
 WBWM04, XSZ09, XS11, ZYFG11, ZSCX10].  
**finite-difference** [PR11]. **finite-element**  
 [HM20, SY18b]. **FIR** [RS07]. **First**  
 [KLM<sup>+</sup>06, BBJ17, BGM<sup>+</sup>12, GHR98,  
 Hem96, KNX01, LY15, MMN<sup>+</sup>10]. **first-**  
 [BBJ17]. **First-order**  
 [KLM<sup>+</sup>06, BGM<sup>+</sup>12, Hem96, MMN<sup>+</sup>10].  
**FISTA** [CNXY20]. **fit** [BDK<sup>+</sup>15]. **fitting**  
 [DQW15, PDV05]. **fixed**  
 [BG05a, Bir15, CRZT20, KO18].  
**fixed-point** [Bir15, CRZT20, KO18].  
**Fletcher** [YBZ19]. **Flexible**  
 [ZHJL12, vGSZ15]. **flow**  
 [BLLA11, HG00, HK12, KR11, KRW08,  
 Lay05, LV04, Mar00, MRT96, ŠBS15, Tur00,  
 Web10b, Web10a, Yot01, vKVV00, LD08].  
**fluid** [BLLA11, Ema12, HG00, HW19,  
 Mar00, MRT96, SV11, Web10b, Web10a].  
**fluid-solid** [SV11]. **fluidity** [AMR18].  
**fluidity-based** [AMR18]. **flux** [HKLP19].

**flux-based** [HKLP19]. **FOM** [GR99]. **Form** [Zha92, AB10, AB13, BCB14, BO08, BWN05, BBG13, Bos19, Cao13, EFG<sup>+</sup>18, GS07, GNQ15, Han13, KKNY01, LGS12, MMMM09, vNR07]. **formal** [Tre05]. **format** [BG13, BMAA16, Gra08, GL18]. **formats** [DO18, DK15, HKST12]. **forms** [Bra02, HS05, LPS16]. **formula** [MS14]. **formulas** [BWN05]. **formulation** [CQX11, GH01, ŠBS15, Ypm95]. **formulations** [MZHB17, PS00, Sim03]. **FOSLS** [MMN<sup>+</sup>10, AMR18]. **Fourier** [TW20, CV13, Don10, HM18, HM20, HHvR04, MO11, ROA13, TSPSO06]. **fourth** [UMO09, WQZ09]. **fourth-order** [UMO09, WQZ09]. **Foz2006** [GY08]. **FP** [BCB14]. **fractional** [BLP17, Bai18b, BL20, DOR19, HLM<sup>+</sup>18, LPS15, LPSV18, Vab20, WRW18, WZZ18]. **fractional-order** [DOR19]. **framework** [BD15]. **Fredholm** [MM09]. **free** [ABBP10, AD11, Bos19, GTY97, MP16, Not02b, OOO16, RSR10, Sim03, TT10, YNP04, ZYL13]. **free-space** [RSR10]. **frequency** [AN07, Bör17, EKS02, MZHB17, MC09, MN00, PR11]. **frequency-domain** [PR11]. **friction** [Hla99]. **frictional** [ZVO14]. **Frobenius** [CDG00, DW07, ES09b, MGF<sup>+</sup>02]. **Frobenius-norm** [CDG00]. **frontal** [RS01, Sco99]. **frozen** [AABHV18]. **FSAI** [FJP12, FJP16, MFFJ18]. **full** [BMS17, BMS18, DEM18, MWZ06, SKR08, TGKR10]. **fully** [KWS<sup>+</sup>18, MC04]. **function** [CDDSC12, GGZ12, KKS19, KS10, LZ09, Lun20, Par03, PSW14, SP18, SST18, Tre05, XZS10]. **function-generated** [KKS19]. **functional** [KN14]. **functionals** [AMM04]. **functions** [BEG18, Bos19, CKW02, CLC11, CJL08, DK95, Est09, FSS18, Lun20, MN05, Mor07, Mor09, MP14, Naz95, Xie11]. **fundamental** [ZYL13]. **Further** [MMN<sup>+</sup>10, Saa00b]. **fuzzy** [CEQN07]. **Galerkin** [ABM17, BBS12, CGM11, DLVZ06, DFF<sup>+</sup>18, HHvR04, KT08, LPV01, NSCTP05, SGP14, WTWG14, vRH05]. **games** [AD12]. **gauge** [KMMR10]. **Gauss** [Du19, HP97, KLN99, LO13, Peñ03, Sun06]. **Gaussian** [GIK02, IK00, Reu96]. **Gay** [Adi08]. **GCV** [FRR16]. **General** [JK09, AN13, BCB14, BCGM09, BDR17, CS96, CCS19, Kap98, KS15, Lor14, MP18a, NR19, dCSRS19, SZ99, SS02, ZW10]. **general-form** [BCB14]. **Generalization** [CNP96, Zit00, Don10, LWW09]. **Generalizations** [SSB04]. **Generalized** [Amb15, Che15, KKR14, NR12, AM95, Bla02, BC12, BMM<sup>+</sup>08, CC07, Cao09, CD11, CL13, CV03, CBE18, DL97, Dam08, DIPR19, FT98, FM15, GIK02, GW00, HLLL13, JMPR18, KV92, KCV09, KVC12, LR08, LZY11, LT13, Mai06, MP15, MP13, MSB18, RY08, SLK16, SX15, WW08b, Wei94, YCY17, Zha18, Zho06, vNR07]. **Generalizing** [BT92]. **generated** [KKS19, Tre05]. **Generating** [Ste99, Est09, OZB<sup>+</sup>18, SP18, Vöm12]. **generation** [BG02, Gar01, Gar04, LM06, MS07]. **Genocchi** [DOR19]. **geometric** [BS10, Cho03, CBE18, Gar04, HS11, HS14, Ian16, LJM14, XSZ09, ZMO10]. **geometric-based** [XSZ09]. **geometries** [HKH<sup>+</sup>06, PSK08]. **Gerschgorin** [LHLS07, Peñ07]. **Gerschgorin-type** [LHLS07]. **Gersgorin** [KCV09, KMC16]. **Gersgorin-type** [KCV09]. **GES** [BMM<sup>+</sup>08]. **GES-SA** [BMM<sup>+</sup>08]. **gigaflops** [Tur00]. **given** [BFdP13, CC20]. **Givens** [MCLM20]. **Givens-like** [MCLM20]. **GKB** [BCB14]. **Global** [CGM11, BS10, FRR16, GD11, LSJ18]. **Globalization** [NQ96]. **Globally** [CQ10]. **GMRES** [BR07, BE98, CZ02, De 13, DS08, DN12, GR99, JYH17, Jou94, LSJ18, MYZ16, MN00, Sid11, Sim99, SWKW98, SHJC18, VL11, WZ94, ZM08, Zit00, Zit05, vV94].

**GMRES-type** [BR07]. **GMRESR** [vV94]. **Golub** [FRR16, GORR16]. **GPBi** [Aih20]. **GPBi-CG** [Aih20]. **GPBi-CGstab** [Aih20]. **GPCG** [Bla02]. **GPCG-generalized** [Bla02]. **grad** [GGLO08]. **grade** [IT05]. **graded** [BLZ08, BCS09]. **gradient** [AM95, BGP97, BMSS09, CNT07, Cha07, DMY03, DW15, DR03, Hac92, Kap94, Kap02, MO94, Mey94, PR95, SZ11, WD08, Wei94, YBZ19]. **gradient-like** [Mey94]. **gradients** [Not02a]. **grain** [Vöm12]. **Gram** [Dax04, LBG13, LL97, Van00, WL08]. **graph** [FM18, KXZ03]. **graphs** [CNZ17, EJK01, LCHH18, VZ14]. **greedy** [BW19, BT15]. **Grid** [GVT03, ALM18, Alb06, AO07, BG02, CGPV13, CSC09, CG15, CRV14, Don10, ELV94, FVZ05, Fer96, GKK04, Gar04, GMOS06, GHO15, HVX16, HC20, KV96, Lee18, MC08, NV08a, NN10, NH98, Not10, RSR10, RR12, ZSWX13]. **grids** [BH04, Bla03, ELV94, Gar01, GLGR10, LPW06, Mit10, OCYM08, YXZ13, ZMO10]. **group** [WN05]. **growth** [GIK02, IK00, KM09, WL08]. **GSOR** [HES15]. **Guest** [Mar00].

**h** [Cha07, HMS99]. **h-optimally** [Cha07]. **h-p** [HMS99]. **Hadamard** [KM09]. **Hamiltonian** [AIT05a, AIT05b]. **Hammerstein** [EAA19]. **hand** [ARSO14, ARMW14, SHJC18]. **handy** [Adi08]. **Hankel** [BB16, DQW15, KN07, OS01, SLV06, SB03]. **Hankel-like** [OS01]. **hardback** [Nab97]. **Harmonic** [HS08, MZ98, Bai12, GR99, GS07, Kho96, LGS12, Vöm10, ZSWX13]. **heart** [MC04]. **heat** [AJ94, SY18b]. **heavily** [CMSW19]. **Helmholtz** [CGPV13, CV13, CRV14, KMMR10, Liv04b, Liv14, OS10, RV12, TW20, TH19, TT15, UMO09]. **help** [GKV12]. **Hermitian** [LT13, SB12, BGN07, Bai16, Bai18a, BL20, BSC20, CPS01, CSYS14, DPRV19, DBG06, Fas05, HM03, HSCTP05, Kol05, KKR14, LHL07b, LC05, Mee01, NCV05, SLK16, WD08, Wu15, ZW10, vdE02].

**Hermitian-type** [LT13]. **Hessenberg** [CGK05, Gem00, Ste95]. **heterogeneous** [BBS12, CGPV13, GM17, KP10, KNP03, NH06]. **heuristics** [SH14]. **Hierarchical** [BH04, SGP14, BH07, BM13, CV03, EGF11, GL18, LO13, OZB<sup>+</sup>18, Pul09, VW97, GL18]. **hierarchically** [XCGL10, Xia12]. **hierarchies** [Alb06, DHR<sup>+</sup>04, EJK01]. **hierarchy** [CCE<sup>+</sup>18]. **High** [Kap98, SST18, AY11, AEHV14, AEHV15, AABHV18, ABK15, Bör17, BSI17, GM17, GKK19, GKY97, Lam12, NLZ11, NY03, SWKW98, SSB15, TSPSO06]. **high-contrast** [AY11, GKK19]. **high-dimensional** [NLZ11]. **high-frequency** [Bör17]. **high-order** [AEHV14, AEHV15, AABHV18, ABK15, BSI17, GM17, GKY97, Lam12, SSB15, TSPSO06]. **High-performance** [SST18]. **high-quality** [NY03]. **Higham** [GIK02]. **higher** [BH16, GHW06, GL13, HM20, LLV19, MCLM20, WQ07, XSZ09, XS11]. **higher-order** [BH16, GHW06, HM20, LLV19, MCLM20, WQ07, XSZ09]. **highly** [BKP02, GVT03, MYZ16, Wan00]. **hill** [SH14]. **homogenization** [KKO20]. **homotopic** [CCvG06]. **horizon** [DMS17]. **HOSVD** [ZN20]. **Householder** [Dax04, LL97]. **hp** [Mit10]. **hp-adaptive** [Mit10]. **hp-multigrid** [Mit10]. **HSS** [Bai09, Bai18a, Bai18b, DGM<sup>+</sup>16, GD11, Yan18, Zha18]. **HSS-like** [Bai09]. **Hurwitz** [KSB13]. **Hybrid** [HDA19, BH04, CNY05, Lai97, LJM14, RTN03, RK18, ŠBS15, Yan04]. **hybridized** [GT09]. **hydrodynamics** [XM17]. **hyper** [CH05]. **hyper-power** [CH05]. **hyperbolic** [BBG13, DFHM20, JO01, KMM18]. **hyperelastic** [RGM17]. **hyperellipsoids** [BDK<sup>+</sup>15]. **hypergraph** [LQY13, XC13]. **hypergraphs** [CCLQ18]. **hyperspectral**

[BNP15, LNP12].

**IBLU** [BLW08]. **ice** [AMR18]. **ice-sheet** [AMR18]. **identification** [EAA19, LNP12, ZYL13]. **identify** [GB15]. **II** [ELV94, GL02]. **III** [CSCTP05, GKY97, GL13]. **IJNMBE** [NL09]. **ILDLT** [Bas00]. **III** [LHW11, CLTW11, DNR12, DHNR18, Est09, GORR16, HDA19, NR14b, NCV05]. **ill-conditioned** [NCV05]. **Ill-conditioning** [LHW11]. **ill-posed** [CLTW11, DNR12, DHNR18, Est09, GORR16, HDA19, NR14b]. **ILU** [AMMP06, May05, May07, SZ99]. **ILUCP** [May05]. **ILUT** [Bas00, Saa94]. **ILUT/ILDLT** [Bas00]. **image** [BC02, CFAM16, CNXY20, CNSY05, Don05, GHW06, HHM10, Höm06, JNS19, PN18, Per06, RGM17, SKR08]. **images** [BNT94, NWZ17]. **imaging** [BNP15]. **IMMB** [Axe99]. **impact** [Ano09]. **Implementation** [AK99, BISC14, BM05a, DMY03, MM18, WF15]. **Implicit** [FP95a, BGX06, Bai12, BM05a, BD15, Che15, HL16, ISZ09, LVW01, MC04, PBN05, VVM05b, Wan18a, ZS08, mMvdV02]. **Imposing** [Szu14]. **Improved** [ARMW14, Cor04, JO94, LW15, BVV12, CGPV13, LV12, Sun06]. **improvement** [WCZ15, WL03]. **Improvements** [BB06]. **improves** [HVX16]. **Improving** [BKY10, DV19, GKL18, GKV12, ST17b]. **including** [CDDZ19]. **inclusion** [LHLS07, LLK14, THC09]. **inclusions** [GKK19]. **Incomplete** [Jia96, BT03, Bla94, CCS10, GNQ15, Gro00, JO94, Kap02, KNY00, RTN03, Reu96, Saa94, SW96, Sau95, ST17b, VS17, XXCB20, ZHJL12, mMvdV02, mM04, GKY97]. **incompressible** [BKP02, DFF<sup>+</sup>18, HW19, HK12, KOV17, LV04, Ols99, Tur00, Web10b, Web10a, vKVW00]. **increasing** [DMY03, HVX16]. **increasing-angle** [DMY03]. **Incremental** [CCS10, BT92].

**indefinite** [BRT07, CL96, CK01, CS95, CRV14, GM17, GMTV16, Krz11, LT09, Liv14, PS00, ST17b, SL10, TT15, Vas92]. **Indefinitely** [DR03, LV98]. **independence** [DS08]. **independent** [CCS19, CJL08, KPV06]. **indirect** [BLP01]. **induced** [Lay05, vGSZ15]. **industry** [mM04]. **inequalities** [AM96, CPSM06, DKVB15]. **inequality** [AALS01, Bla03, DGRR11, DH04, DR03, EM95, Mar94]. **inertia** [DCT18, KC17]. **inertia-revealing** [DCT18]. **Inexact** [ABK97, HD07, Sid11, Bir15, CQ10, Dax19, FK15, GB11, GP18, HLM92, HW18, KK02, KPV06, LLL97, LV98, Sim03, WtFW15]. **infimum** [Chu04]. **infinite** [BMMR18, Özb13, VJM16]. **Information** [Ano12a, Ano12b, Ano12c, Ano12e, Ano12f, Ano13a, Ano13b, Ano13c, Ano13d, Ano14b, Ano14f, Ano15f, Ano15a, Ano15b, Ano15c, Ano15e, Ano16a, Ano16b, Ano16c, Ano16d, Ano16e, Ano17a, Ano17b, Ano17c, Ano17d, Ano17e, Ano17f, Ano18f, Ano18a, Ano18b, Ano18c, Ano18d, Ano18e, Ano19a, Ano19b, Ano19c, Ano19d, Ano19e, Ano19f, Ano20a, Ano20b, Ano20c, Ano14a, Ano14c, Ano14d, BF96, FJ05, Ano14e, Ano15d, Ano16f]. **initial** [Nov03, PBN05, VL11]. **initializing** [BMM<sup>+</sup>08]. **inner** [FJP16, Gus04a, Mey94, MGF<sup>+</sup>02, Xia12]. **Innovative** [BDRS12]. **inpainting** [JNS19]. **integer** [CP12]. **integrable** [SHT11]. **integral** [AFSCSU14, HSY18, MM09]. **integrals** [LO15]. **integration** [ABK15, KKPS18, LLS12, MC09]. **integrator** [SL19]. **integrators** [Ber01, LJ04, Mor07, Rag14]. **intensity** [GKV12]. **inter** [MC08]. **inter-grid** [MC08]. **interaction** [SV11]. **interchanges** [EM11]. **interdisciplinary** [BNR18]. **Interface** [Wan00, JM10, XM17, Yot01, ZYL13]. **interface-based** [XM17]. **Interior** [LMV04, PPS20, BMM06, BCS09, BPS13, HP04, MST16]. **Interior-point**

[LMV04, PPS20]. **internal** [HKH<sup>+</sup>06]. **International** [NL09]. **Interpolating** [MN05]. **interpolation** [BKY10, DFNY08, Gan05, HM03, KKS19, KV06, KV15, LY15, MMPR10, Pul16, Rie09, Vla00, Web10b, Yan10]. **Interpreting** [CPSM06]. **interval** [DPS16, Jia17, KSB13, Roh92, SH19, YLH11]. **intervals** [Jia17, LHLS07, THC09]. **Introducing** [MS07]. **invariance** [JYZ17]. **invariant** [AG95, DF01, MK94, MP16, YL08]. **Inverse** [LC05, NR14a, SP18, Tre13, AS19, AEHV14, BF11a, BM13, BPS00, BFG95, BFM12, BSI17, CC07, CWwS18, DL97, DW07, DWWQ13, EW13, EKS02, Egg07, EHM95, FGT11, FK15, Han13, ISZ09, JZ09, JK17, JK18, KKNY01, Kho96, KNY99, KKMM12, LLL97, pLL07, LWW09, LZY11, MV13, MP16, MGF<sup>+</sup>02, NY03, yPyHZ04, Sol14, Sot13, TS12, WL03, XHZ03, XCG16, YBZ19, ZN18, Zho06, Ney05]. **inverse-free** [MP16]. **inverses** [Cor04, FSS18, Gus03, Huc98, LXW13, WN05]. **inversion** [BO13, KK02, LPS15, LPSV18]. **inversions** [Dax19]. **invert** [MP14, PS11, WtFW15, Sim03]. **invertibility** [Den09]. **investigation** [KS10]. **involving** [DWWQ13, PPS20]. **IOM** [Jia96]. **ion** [LO15, TC10]. **ion-atomic** [LO15]. **IPARS** [LVW01]. **IRAM** [Xie11]. **IRAM-based** [Xie11]. **Irreversible** [BL03]. **ISBN** [Nab97]. **isogeometric** [CBE18, EFG<sup>+</sup>18]. **isolation** [EKS02]. **isometric** [Gar01, Gar02]. **isospectrally** [VW15]. **isotropic** [BL20]. **Issue** [Ano08, Ano12a, Ano12b, Ano12c, Ano12d, Ano12e, Ano12f, Ano13a, Ano13b, Ano13c, Ano13d, Ano14a, Ano14b, Ano14c, Ano14d, Ano14e, Ano14f, Ano15f, Ano15a, Ano15b, Ano15c, Ano15d, Ano15e, Ano16f, Ano16a, Ano16b, Ano16c, Ano16d, Ano16e, Ano17a, Ano17b, Ano17c, Ano17d, Ano17e, Ano17f, Ano18f, Ano18a, Ano18b, Ano18c, Ano18d, Ano18e, Ano19a, Ano19b, Ano19c, Ano19d, Ano19e, Ano19f, Ano20a, Ano20b, Ano20c, LD08, CLR13, Dat01, Fal06, VW01, Vas05, Axe99]. **issues** [BM05a]. **Iterated** [BDR17, AN03a]. **iterates** [DS13b]. **iteration** [AS19, AT15, AN94, BGX06, Bai10, Bai12, BZ13, BLP17, Bai18a, Bai18b, BL20, BM13, CH05, Che15, Egg07, FK15, GB11, GH01, HMS99, HL16, KO18, Kra02, KKR14, LLL97, Lam12, LS15, MM18, PS95, Pas19, Wan18b, Wan18a, wX15, YHS18, Zho06, ZS08, Ney05]. **iterations** [BGN07, BG05a, FJP16, GGZ12, HN05, Kap05, KLN99, LZ09, Lin12, Lu05, NZ14, Saa00b, Sch99, vdE02]. **Iterative** [AT00, BF11b, CGK94, DBG06, GMR05, LPV01, MO16, MSB18, NZ14, PM97, AEHV14, AEHV15, AK00, ABNP15, BEH<sup>+</sup>17, BM17, Ber01, BR99, CR16, CH05, CK01, CK10, ELV94, FM99, GKK19, GTY97, Gus97, HG00, HES15, HM14, LR08, Lee10, LSL01, LZY11, LW16, LJM14, MM98, NO04, Ols99, yPxP06, PR96, PR11, PH19, Pul08, PM11, SH19, Šmi19, Sol14, Sun06, Szy94, WDS09, WTZD10, WW11, ZW10, Axe99]. **IV** [KNY99]. **Ivo** [SGP14].

**J** [NN15]. **Jacobi** [BFdP13, BFG95, FJP16, GS99, HLLW05, MSV13, Not02a, Sch99, Zho06, vNR07, vdE02]. **Jacobi-Newton-iterations** [Sch99]. **Jacobian** [BS01]. **January** [NL09]. **joint** [CCS19, MCLM20]. **Jordan** [EJK01, GH06, Peñ03]. **Journal** [JNL92, NL09]. **Jr.** [KVW10]. **jump** [DSV18, VFdV13, Zhu08, Zhu14]. **jumps** [LLS12]. **justifications** [Gar04].

**Kaczmarz** [Du19]. **Kahan** [Bun95, FRR16, GORR16]. **Kalman** [BPSH13]. **Karhunen** [SLK16]. **kernel** [HK02, MN05]. **kernels** [NWZ17]. **kind** [AK19, MM09]. **kinds** [DOR19]. **KKT** [BGM09, BDdSM18, MST16]. **known**



[CC20, EFG<sup>+</sup>18]. **Kronecker** [BW17a, Che15, DWWQ13, EJK01, KN07, LPS16, LS04, Per06, XG10]. **Krukier** [JK09]. **Krylov** [HS14, OC04, AGG<sup>+</sup>16, AFSCSU14, BPSH13, BMAA16, Bot13, BD15, CS97, CQ10, CK10, Dam08, Dax19, DGP19, DK95, Ema12, EN17, Fas05, GP18, GLJ19, HJ18, HS11, HXM19, IT05, JMPR18, KS10, Mor07, MP14, NV08b, PPv95, Rag14, RLG12, RV12, Sid97, SS07, VS17, Yot01]. **Krylov-accelerated** [Ema12]. **Krylov-based** [HJ18, NV08b]. **Kutta** [Che15].

**L** [Nab97, CZ02, DH18, ZMO10]. **L-BFGS** [DH18]. **L-shaped** [ZMO10]. **L**. [JK09]. **Lagrangian** [Cor04]. **Lagrangian** [EG16, MG08, MP16]. **Lagrangian-type** [EG16]. **Lagrangians** [LD07]. **Laguerre** [DOP19]. **Lamé** [BKP02]. **LAMG** [FM18]. **Lanczos** [ARSO14, Aih20, BB16, BBJ17, CS18, CWS97, CC03, FG02, FJ05, GORR16, Lam12, LW98, Mee01, Mor09, PV99, PS11, Par92, Sim03, Zho18]. **Lanczos-type** [Aih20, CWS97, FG02]. **Laplace** [QB15, SLV13]. **Laplacian** [CV13, FM18, HM20, TT15, UMO09, XC13]. **Laplacians** [BO08]. **Large** [Ben08, Jia96, VW01, AHJ20, AG99, ADT19, Axe98, BW19, BBJ17, Bar02, BCB14, BLP08, BES14, BV00, BG00, BG05b, BHHJ13, CLR01, CRS05, DMY03, Dax94, DNR12, DGM<sup>+</sup>16, DGP19, DR03, EW13, FJP12, GLJ19, GTY97, Gra08, GR04, HJ18, JZ09, JK17, KBF15, LLL97, Lee16, LV98, Mar16, MZ98, RK18, Sid11, Sir19, VS17, WDS09, Xie11, vGSZ15]. **Large-Scale** [VW01, Ben08, BBJ17, Bar02, BCB14, BLP08, BES14, DMY03, DGP19, GLJ19, Gra08, GR04, HJ18, Sir19]. **large-size** [FJP12]. **largest** [LW98, WQZ09, ZQ12, ZQW13]. **latency** [RTN03]. **lattices** [KK16]. **layer** [QB15, RV12]. **layered** [BDM<sup>+</sup>14]. **Lazarov** [Vas03]. **LD** [GCLG18]. **LD-QBD** [GCLG18]. **LDL** [mM04]. **leading** [CC20]. **learning** [SZ11]. **Least** [CYZ99, pLL07, Tia13, AB00, AK99, BDGL09, BW19, Bar02, BMM06, BGM09, BGM11, BGM<sup>+</sup>12, CNP96, CTP09, CP12, CP06, Dax94, DE98, DH18, DW07, DWWQ13, EAA19, ES07, ES09a, ER96, FB95, GW00, GR05, KMM18, KLM<sup>+</sup>06, LVD02, LZ12, LW17, LL97, MMN<sup>+</sup>10, MVK04, MLV05, Miy15, Pen08, Ren98, RLG12, Sto92, TDH<sup>+</sup>18, WKS95, WWC<sup>+</sup>15, XXW19, ZHZ10, ZY19]. **least-rank** [Tia13]. **Least-squares** [CYZ99, pLL07, Tia13, AK99, BDGL09, BW19, Bar02, BMM06, BGM09, BGM11, CTP09, CP06, DW07, ES07, ES09a, ER96, KMM18, LVD02, Pen08, TDH<sup>+</sup>18, ZHZ10]. **Left** [WD08]. **lemma** [Gus04a, Mar95]. **length** [BDK<sup>+</sup>15]. **Level** [SH14, CGM01, CS02, CRV14, DLVZ06, EN17, GVT03, HH06, HM20, HHvR04, KM99, KWS<sup>+</sup>18, KV96, NCV05, OC04, SZ99, SP06, SV11, VSG09, XZS10, YXZ13, Zik08, vRH05]. **Level-based** [SH14]. **level-dependent** [CRV14]. **Levinson** [Bun92]. **life** [KVVW10]. **like** [Bai09, Bai16, BMM06, BDdSM18, Lee10, Mey94, MCLM20, OS01, PRPI09, mMP99]. **likelihood** [ES05, NG15]. **limit** [LY15]. **Limited** [GMTV16]. **limiting** [DS13b]. **line** [BDK<sup>+</sup>15, DMY03, MM95]. **Linear** [NLA94, Ano09, BVD<sup>+</sup>18, ITS07, Jia96, Nab97, ZQ12, ARSO14, ARMW14, Ada04, AGG<sup>+</sup>16, AW11, ACR<sup>+</sup>00, AIT05b, JNL92, AMP99, AK00, AN03b, BDGL09, BPS15, Bai10, BCR11, BZ13, BCR14, BLP17, BZ17, Bai18a, BW19, BKY10, BG13, Bas00, BLE97, BLP08, BFPS10, BEH<sup>+</sup>17, BDdSM18, Ber01, BWN05, Bla02, BMS18, BvdV00, Bos19, Bot13, BC12, BFM12, BM05a, BIA18, BSI17, CS09, CS11, CDGmM04, CPSM06, CSCTP05, CGL05, CC03, CK01, CK14, DGB<sup>+</sup>13, DMS17, DSV18, Dat01, DDG99, DGRR11, DW07, DWWQ13, DNR12,

DGM<sup>+</sup>16, DJ09, DN12, FZwCW17, FGT11, FP15, FM18, FS09, Gem00, GLJ19, GM11, GSS01, GY08, GTY97, GS05, GW00, GL98, GL02, GL13, HLM<sup>+</sup>18, HHvR04, HNR<sup>+</sup>18, HES15, HSCTP05, JZ09, JK17, JYH17, Jou94, JO94, KMM18, KK02, KPV06, KS04].

**linear**  
[KBF15, Kra02, KS15, KKR14, KMM19, LX08, LHL07b, LT09, LC13, LL97, LV98, LMV04, Mar00, MCV01, MV05, Mav01, MP13, Mey94, MV19, MC04, Naz95, NQ96, NLZ11, Nov03, OC04, Özb13, Pad99, PBN05, PM97, PGT14, RK18, RGG07, dCSRS19, RT99, SZ99, SS02, SB12, SS07, SMSW00, Sto92, Sun05, SL10, SHJC18, Szu14, TT10, VfV13, VW01, WKS95, WD08, WM12, Wan18b, Wu15, WF15, XSZ09, XS11, XJ12, XZS15, wX15, YDH11, ZW10, vGSZ15].

**linear-constrained** [XJ12].

**linear-quadratic** [BLP08]. **Linearization** [LZ12, KABH17]. **linearizations** [CMSW19, KR14]. **linearized** [BGX06, NFD10, SL19]. **linearly** [Bla94, CCS19, LVD02, Sto92].

**Lipschitzian** [DS02]. **load** [WLBH12].

**Local** [CGM01, CV13, ELV94, HM18, MO11, BS01, Don10, Kra06, MMN<sup>+</sup>10, MM95, Pul08, dCSRS19]. **Localization** [KVC12]. **localizations** [KCV09, KCC16].

**locally** [BB00, KR11, ZZLX20]. **locations** [BB97]. **Loève** [SLK16]. **logarithm** [Lor14].

**logarithmic** [DHW16]. **Long** [Kem12, KK16, Yan10]. **long-range** [KK16, Yan10]. **Long-time** [Kem12]. **look** [LYL15]. **loosely** [TSPSO06]. **Low** [AN07, Bau08, BF96, CH94, DFZ05, WN18, AT15, AMMR17, BE09, DPRV19, DBLP16, Gra08, HS18, HC05, JMPR18, KO18, KPT14, KS15, Laz16, LXS16, LO15, NL16, NY03, QXB09, SLV04, SLV06, Tyr92].

**low-communication** [AMMR17].

**Low-complexity** [DFZ05]. **low-density** [NY03]. **Low-rank** [BF96, CH94, WN18, AT15, BE09, Gra08, HS18, HC05, JMPR18, KO18, KPT14, KS15, Laz16, LXS16, LO15, NL16, QXB09]. **lower** [Alb06, SPD05, SP06]. **LQ** [BG00]. **LQ-Schur** [BG00]. **LSQR** [RY08]. **LTI** [ZS08]. **LU** [CCS10, LW15]. **Luré** [PR16].

**Lyapunov**  
[BLP08, Dam08, DSV18, KPT14].

**M** [KVW10]. **maintaining** [Par92].

**Making** [LSJ18, CEQN07]. **manifold** [KO18]. **manifolds** [MK94, SZ11].

**Manteuffel** [Lee10]. **manufacturing** [CNY05]. **mapping** [BG02]. **mappings** [Gar02]. **maps** [MK94]. **Marek** [SGP14].

**Markov**  
[AD11, BLLA11, Ben11, BK11, BL03, BDS94, BH16, BCC98, Buc11, BF11b, Cas11, DSV18, DHSW11, DMTY11, FH94, KNX01, LLV19, MPS96, NX03, NW15, Sid11, VfV13].

**Markov-modulated** [BLLA11].

**Markovian** [BMP11]. **mass** [ABM17, EKS02]. **mass-conserving** [ABM17]. **master** [DO18, DK15]. **matching** [BCZ12, DGC19, KXZ03]. **matchings** [HS15]. **material** [LNP12]. **materials** [BDM<sup>+</sup>14, PR11]. **Mathematical** [SWY07]. **mathematician** [Voe92]. **Matlab** [Bra02].

**Matrices**  
[Yon96, AFSCSU14, AIT05a, ADT19, AN94, AN06, AB10, AN13, AB13, Axe15, Bai16, BB16, BPS95, BP13, BNT94, BH07, BF11a, BF19, BM13, BT03, BV00, Ber12, BWN05, BG05a, BFG95, BG05b, BFM12, BCC98, BCGM09, BM05b, BM06, CS96, Cao08, Cao09, Cao13, CDDSC12, CCLN05, CGK05, Cfx05, CDDZ19, DPP16, DOP19, Dia09, DS10, Don10, DNR12, DS13a, Dos99, DCT18, DHNR18, ESC18, ESC20, ES09b, Est09, EG16, FLR03, FG02, Fas05, FP95a, FSS18, GIK02, GS97, GR04, HH06, HLM<sup>+</sup>18, HR05, HS15, How18, Hua12, HC05, Ian16, IK00, JR94, Jia17, Kau07, KN07, Kol05, KC17, Kra02, Kra06, Leb02, LVD02, LSL01, LS05, LS06, LHL07a, pLL07, Mai06, MP18a,

MPR20, MM98, Mar16, MM09, Mat96, MW16, MCC<sup>+</sup>12, MN05, MYZ16, NR11].

**matrices** [NPR13, NR19, OS01, Peñ09, yPyHZ04, Poi00, RMM19, Sei10, SJBH14, SS97, SB03, Sol14, SST18, Sun06, Tre05, VVM05a, VP95, VVM05b, VVM05c, VW15, Vas92, WBL14, XCGL10, XHZ03, XM17, YLH11, ZHZ10, Zho16, dF20, vN00, Nab97].

**Matrix** [AB00, AG95, AC11, BFG<sup>+</sup>18, Bun92, GTY97, Not05a, YNP04, Zha92, AFS14, AH02, AEHV15, AD11, Bai10, BSC20, BBJ17, BE09, BfP13, BB01, Ben08, BGW05, BG05a, BMMR18, BEG18, BG00, Bör17, Bos19, BHHJ13, CCE<sup>+</sup>18, CCS19, CCG00, CH03, CLC11, CSYS14, CGS20, DPRV19, DBG06, DGRR11, DGM<sup>+</sup>16, DK95, DBLP16, EW13, EM95, EHM95, ER96, FLPW01, GMS18, GHR98, GGZ12, Gra08, HJ18, HK02, HM03, HL16, HM16, HLL16, IP13, Ibr02, JNS19, JZ11, KV92, Kap98, Kap99, KNX01, KH07, KS10, KO18, KM09, KR14, KPT14, KS15, LZ09, Laz16, LOY08, fLyHZ11, pLL07, LH17, LT08, LT11, Lor14, LPS15, MVV08, MSS07, MRT98, Miy15, Mor09, MP14, OOO11, OOO16, PS11, yPxP06, yPES07, Rja98, Roh92, Sau95, Sha98, Ste99, SHT11, TS12].

**matrix** [TT10, THC09, Tia13, TY10, US19, Vas02, VS17, WW08b, WTZD10, WtFW15, WF15, XJ12, Xie11, XQ09, wX15, YDH11, ZJ06, ZN18].

**matrix-dependent** [Sha98].

**Matrix-free** [GTY97, YNP04, AD11, Bos19, TT10].

**matrix-sequences** [BSC20].

**matrix-valued** [DGM<sup>+</sup>16, Xie11].

**max** [BDK<sup>+</sup>15].

**max-length-vector** [BDK<sup>+</sup>15].

**maximal** [LW16, RMM19].

**maximization** [SH14].

**Maximum** [BCHT04, Gar02, CCLQ18, ES05, NG15].

**Maximum-weight-basis** [BCHT04].

**Maxwell** [GS07, LGS12, MV13, MZHB17, ZSWX13].

**McCormick** [Lee10].

**mean** [Ian16, KNX01].

**means** [MS14].

**measure** [BG02].

**measures** [Buc11, OST10a].

**mechanical** [LV99].

**mechanics** [Ada04, Axe99, GMTV16].

**mechanism** [DH18].

**Medal** [Ano08].

**media** [BKP02, CGPV13, GM17, KP10, NH06, ŠBS15, WWX10, Yot01].

**Median** [LNY15].

**Memory** [KR14, FO95, GMTV16, JO94].

**Memory-efficient** [KR14].

**meromorphic** [BEG18].

**Mesh** [KPV06, AG19, BC10, BGM<sup>+</sup>12, DHR<sup>+</sup>04, DS08, KPV08, ŠBS15].

**Mesh-independent** [KPV06].

**meshes** [BB00, BLZ08, BCS09, HMS99, KR11, KV96, Mav01, OZB<sup>+</sup>18, RSCTP15, SRGL13, XZS15].

**meshfree** [LOY08, LOS04].

**Meshing** [HKH<sup>+</sup>06].

**Method** [Jia96, Aih20, ABBP10, AK99, AN94, AM95, AFK02, AG19, BC09, BG13, BB16, BBJ17, BMM06, BES14, BS01, Bla02, Bot13, BHHJ13, BMSS09, BCZ12, BC12, BCS09, BPS13, CKW02, CZ02, CNT07, CQX11, Cha07, CGL05, CH05, CG15, CS18, CNY05, Cho03, CK01, CBE18, CP06, CK14, DL97, DMY03, Dax94, Dax19, DOR19, DGM<sup>+</sup>16, DJ09, DGP19, DS13b, DR03, EKS02, ES09a, EWY03, FLP00, Fer96, GHT09, GS99, GT09, GT19, GD11, Hac92, HCD15, HKKP07, HS18, HES15, Höm06, HD07, HHQ13, HC20, HLLL13, HW18, HSY18, JM10, Kap94, Kem12, KY95, KKNY01, KK16, KW99, KXZ03, KPV06, KR11, KS10, Kra02, KT08, KLM15, KPT14, KM92, LV08, LPV01, Li00, LT09, LB08, LS15, LH17, LW17, Liv14, LJM14, LP16, LPSV18, LMM00, LV98, LMV04].

**method** [MZ15, MO94, MM98, MRT96, Mee01, MSV13, MP15, MWZ06, MBW97, Mit10, MP14, MN00, NQ96, NR14b, Not94, PS11, PS95, yPxP06, PR95, PR96, PR11, PT17, Rak99, RS01, RS02, RV12, Reu96, dCSRS19, RT99, ROA13, Sha99, Sim03, Šmi19, Sun06, SHJC18, TS12, WD08, WQZ09, WCZ15, Wan18b, Wan18a, WBWM04, WSN19, WTZD10, Wu15, XSZ09, XJ12, XZS15, Xie11, XQ09, YHS18, Yan18, YBZ19,

YYN12, YXZ13, ZYFG11, ZN18, ZYL13, Zit05, ZMO10, vNR07, vRH05]. **Methods** [Ano08, CGK94, Den18, LD08, NL09, QACT18, VW01, WW08a, ARMW14, AM96, Ada04, AD12, AEHV14, AEHV15, AABHV18, AMMP06, AK94, AV94, Axe98, Axe99, AK00, AN03b, ABNP15, ABK15, Axe15, BR07, BGX06, Bai09, Bai10, Bai12, BDRS12, BZ13, BCR14, BLP17, BZ17, BNR18, Bai18a, Bai18b, BW19, BL20, BP13, BLE97, Baz08, BMAA16, BGM11, BK11, BEH<sup>+</sup>17, BGP97, BR99, BGW05, BDV06, BCS09, BO18, BB96, BM05a, BSI17, CEQN07, CS09, CS11, CGM01, CS02, CSCTP05, CEL<sup>+</sup>96, Che02, CCK06, Che15, CNZ17, CWwS18, CWS97, CK10, CRZT20, Dam08, DMM<sup>+</sup>08, DMTY11, Den12, Den14, DBG06, Dob99, DFF<sup>+</sup>18, EZ96, EGMS20, EN17, EM11, ELV94, Fal06, Fal10, rFS09, FM99, FM15, FP95b, GB11, GLGR10, GORR16, GLJ19, GZ16, GVT03, GMR05, GGV13, GKK19, GMOS06, Gus97, GL95b]. **methods** [HJ18, HS11, HS14, HMMP19, HL16, HP04, How18, HXM19, HDH19, HLLW05, IV04, JMPR18, JS96, KMM18, KMMR10, KP00, KCS11, KLM14, KS15, KKR14, Lee10, Lee12, Li00, LSL01, LHL07b, LLW09, LNY15, LXX17, LZYY11, LW16, LLV19, LMM00, MMC12, MMMM09, Mar00, MG08, MPS96, MZ98, MST16, NBKS99, NSCTP05, Not05b, Not10, PBN05, PPS20, PY03, PRPI09, Pul08, PM11, Rag14, SRGL13, SB12, SK01, SWY07, Sei10, Sid11, SS07, SH19, SGP14, Sta96, SY18b, Szy94, VSG09, VZ08, Wei94, Wie99, wX15, ZW10, ZSCX10, ZSWX13, Zho18, Zik08, vV94, Fal08, GL02]. **Meyer** [WSN19]. **MILU** [WH94]. **Mindlin** [CYZ99]. **minimal** [BGX06, Cfx05, JR94, KMC16, MRT96, RMM19, SW96, Sta96]. **minimal/maximal** [RMM19]. **Minimization** [EHM95, CDG00, Car97, DMY03, DFZ05, Het07, KV06, MD03, NZ14, XJ12, Yan18]. **Minimizing** [CvG11, AMM04, VSG09]. **Minimum** [GH01, DE98, DBG06, DS10, Gus03, HMS99, Kap05, Miy15, Saa00b]. **minimax** [Vos09]. **MINRES** [SHZ20, KK13]. **mirror** [BCK05]. **miscible** [HC20]. **Mixed** [DXW12, KMM18, AB10, AB13, BBG13, Cao13, CEL<sup>+</sup>96, CCK06, GH01, GTZ18, GT09, GS07, HC20, Lai97, LPV01, LGS12, LW17, PY03, PS00, PT17, RVW98, ŠBS15, VL96, WBWM04, Web10b, YZ13, ZY19]. **mixed-hybrid** [ŠBS15]. **mixed-order** [Web10b]. **mode** [STZ12]. **Model** [Lay05, Sha99, AMR18, BLLA11, BBJ17, FLPW01, GA18, Gus98, KNP03, Lee18, MV13, WSN19, XG10, ZS08]. **model-order** [MV13]. **modeling** [FH94, WWX10]. **modelling** [Gar04, GMR05, LO15, NH06, SWY07]. **Models** [CEQN07, Bai12, BL03, BV13, Buc11, DHSW11, GM17, GCLG18, GB15, HKLP19, LNP12, PGT14, QXB09, TC10]. **modern** [MM97]. **Modifiable** [BE09]. **modification** [CSYS14]. **Modified** [LHL07b, wX15, Bea94, CS95, DJ09, Kap02, KPV06, NR14b, Sun06, WL08, ZZ15, SB12]. **Modifying** [Alb06]. **Modular** [BC02]. **modulated** [BLLA11]. **Modulus** [Bai10, BZ13, BZ17, HL16, DJ09, HM16, wX15, YHS18]. **Modulus-based** [Bai10, BZ13, BZ17, HL16, HM16, wX15]. **moment** [AK16, GHR98, VfdV13]. **Moments** [BFM12]. **Monotone** [IV04, ZZ15]. **monotonic** [LD07]. **monotonicity** [Mar95]. **Monte** [AK16, BEH<sup>+</sup>17]. **Moore** [DW07, DWWQ13, KKMM12, LXW13]. **Moreau** [PSW14]. **mortar** [DP03, PY03]. **motivation** [MM18]. **MRRR** [MPV06]. **MSMAOR** [CK14]. **Multi** [NH06, BCK05, CS02, CLNY15, Lee12, PDV05, SZ99, SV11, TC10, XM17, ZHJL12, vGSZ15]. **multi-channel** [PDV05]. **multi-dimensional** [CLNY15].

**multi-energetic** [Lee12]. **multi-ion** [TC10]. **multi-level** [CS02, SZ99, SV11]. **multi-mirror** [BCK05]. **multi-parameters** [ZHJL12]. **Multi-scale** [NH06, XM17]. **multi-shift** [vGSZ15]. **multidimensional** [BBKY06, LO15]. **Multifrontal** [ADP96, NL16]. **Multigrid** [AD12, BB00, BW17b, BCS09, BO18, BBKY06, Den12, Den14, Fal08, Fal10, GLGR10, KRW08, Lee18, Lee19, Mav01, SRGL13, Wie99, WTWG14, ZVO14, Ada04, ALM18, AY11, AK19, BZ17, BKY10, BLE97, BBS12, BO08, BH04, BISC14, BMS17, BDV06, BLZ08, BMM<sup>+</sup>08, BVV12, BKM<sup>+</sup>12, BDM<sup>+</sup>14, BS10, Cho03, CBE18, DY04, DFNY08, Don05, Don10, DHR<sup>+</sup>04, EZ96, Ema12, Fal06, FM18, FM15, GM17, GLOW04, GGLO08, GHT09, GKV12, GT09, Gra08, GHJV16, GMOS06, HBH10, HM18, HM20, HNR<sup>+</sup>18, Het07, Höm06, IV04, KXZ03, KR11, KR06, KLM15, Lee12, Lee16, LOS04, LCHH18, Liv04b, Liv14, LJM14, LD07, LRGO17, MO11, MMC12, MO14, MMPR10, MWZ06, MBW97, MC08, Mit10, NN11, NFD10, NSCTP05, Not05b, NV08b, OST10a, Pfl99, PT17, RS02, RV12, Reu96, RBV08]. **multigrid** [RGM17, Sei10, Sha98, SY18b, SKR08, SSB15, TGKR10, TC10, TY10, TH19, UMO09, VZ08, VY14, Wan00, Web10b, Web10a, WZZ18, XSZ09, XZS15, YW12, Zhu14, ZMO10, vRH05, DM10, Den18]. **multigrid-based** [UMO09]. **Multigrid-in-time** [BW17b]. **multigroup** [KWS<sup>+</sup>18]. **Multilevel** [AT15, CEL<sup>+</sup>96, CV03, MFFJ18, Osw95, Sta96, AM96, AMM04, AN94, AV94, BMN05, BCZ12, CL96, DMTY11, DGM<sup>+</sup>16, Kra02, Kra06, KT08, KMS08, KLM14, KP10, Lai97, LSS03, LM06, MM95, May07, Not98, Not02b, Not05b, Pad99, SS02, Sha99, SLV13, The98, US19, XCG16, Yot01, vN00]. **multilinear** [CRZT20, LPS16, LLNV17, MP18b, PDV05]. **multiphysics** [Yot01]. **multiple** [ARSO14, ARMW14, CNZ17, HKLP19, Mai06, SHJC18]. **multiple-network** [HKLP19]. **multiplication** [Kap99, OOO11, OOO16, WF15]. **multiplicative** [CL96]. **multiplicity** [CC20]. **multipliers** [ZN18]. **multiprecision** [BB16]. **Multiprocessor** [ADP96]. **Multiscale** [HPPS03, BIA18, FP15, VSG09, WWX10]. **multisecant** [rFS09]. **multisensors** [CNSY05]. **Multisplitting** [RLG12, AMP99, BZ13, CS09, CS11, JS96, LSL01, Ren98]. **multisplittings** [BCC98, CP99, FP95b]. **multistep** [BWN05]. **multivariate** [HDIS18, LZQ12, MVK04]. **Nath** [CLR13]. **Navier** [AB12, CA99, DFF<sup>+</sup>18, HFW01, KOV17, LMM00, Ols99, PT17]. **near** [CNY05, Ver00]. **near-circulant-block** [CNY05]. **near-singularity** [Ver00]. **nearby** [AFS14]. **nearest** [CGS20, DBLP16, GMS18, GHR98, MRT98, NW15]. **nearily** [BKP02, HFW01, NA97, RSCTP15]. **Nearness** [BF19]. **Necessary** [Pul08]. **negative** [BMM06, Cfx05, PR11]. **Nested** [Bla03, GNQ15, MO16, MM18, vV94]. **network** [HKLP19]. **networks** [GB15, Lee18, WWC<sup>+</sup>15]. **Neumann** [KMM19, RT99]. **neutral** [ZCW11]. **neutron** [Cha07, CGM11, KWS<sup>+</sup>18]. **Newton** [ABBP10, AABHV18, AMMP06, ABK97, AFK02, BC09, BMM06, CQ10, CWwS18, DL97, DEM18, DS13b, GB11, GKK04, GD11, HP04, KPV06, LB08, Lu05, LV98, NQ96, OC04, Sch99, Vla00, Yot01, ZZ15, Zho06]. **Newton-like** [BMM06]. **Newton-type** [ABBP10, AABHV18, CWwS18, Vla00]. **NLA** [Axe10, Vas05]. **nodal** [BDV06]. **nodes** [FP05]. **noise** [NWZ17]. **noisy** [BC09, NWZ17]. **Non** [AMP99, BSC20, VW01, Bai16, BMM06,

Bla02, BMN05, CL96, Cao04, Car97, CGM01, CPS01, CGL05, CK01, Cfx05, DS02, EZ96, FP05, GB11, GM11, GVT03, HKKP07, HSCTP05, KPV06, KM99, Kra02, LVD02, LHL07b, Lu05, LMM00, LV98, LMV04, Mav01, MZ98, MC04, NQ96, OC04, RT99, SB12, Sei10, WD08, vN00, Bai18a]. **non-conforming** [BMN05, KM99]. **non-convex** [LMV04]. **non-equispaced** [FP05]. **Non-Hermitian** [BSC20, SB12, Bai16, CPS01, HSCTP05, LHL07b, WD08, Bai18a]. **Non-linear** [VW01, Bla02, CGL05, KPV06, Kra02, LV98, LMV04, Mav01, MC04, NQ96, OC04, RT99]. **non-linearly** [LVD02]. **non-Lipschitzian** [DS02]. **non-negative** [BMM06, Cfx05]. **non-overlapping** [CGM01, GVT03, LMM00]. **non-smooth** [Car97]. **Non-stationary** [AMP99, LMM00]. **non-symmetric** [Bla02, CL96, Cao04, CK01, EZ96, GB11, GM11, HKKP07, Lu05, MZ98, Sei10, vN00]. **nonaligned** [YXZ13]. **nonconvex** [Laz16]. **Nonequivalence** [FLPW01]. **Nonlinear** [Gra08, AMMP06, AC11, BRT07, De 13, DGRR11, rFS09, GD11, HM16, MV13, MSV13, Naz95, yPES07, SGSM15, SCD94, VJM16, Vos09, WRW18, XZS10, ZZ15]. **Nonlinearly** [DH18, DW15]. **nonmatching** [OZB<sup>+</sup>18]. **nonnegative** [BGX06, BGM09, BGM11, CQZ13, Sot13, WWC<sup>+</sup>15, ZQ12, ZQLX13, ZQW13, ZWQA18]. **nonnormal** [MYZ16]. **Nonnormality** [Baz08]. **nonoverlapping** [BO18]. **nonpositive** [Hua12]. **nonrestarted** [Zho18]. **Nonsingular** [DIPR19]. **nonsingularity** [Peñ07]. **nonsmooth** [Che02, CQ10, Šmi19]. **Nonsymmetric** [CGK94, YW12, ARSO14, AHJ20, Bai95, BGX06, Ema12, GLJ19, HM14, IP13, Jou94, LW07, LB08, Mey94, MCLM20, Not10, SJBH14, SX15, Sta96, SL10, Vas92, WTWG14]. **nonzero** [ZHJL12]. **norm** [CDG00, Dax94, DE98, DBG06, DHW16, EM95, EHM95, Gar02, Miy15, XJ12, YL08, Yan18]. **Normal** [Gus04b, SZ11, Bos19, FSS18, LS05]. **normality** [NR11]. **norms** [GZ16, SB03]. **normwise** [DW07, FT98]. **notch** [RS07]. **Note** [LZY11, CNT07, Cao09, CK14, DS10, DS08, DN12, FT98, GM11, GX14, JO01, KH07, Lai97, LXW13, LW07, LC07, Lot07, Ney05, SB03, Sun05, SHT11, VVM05c, Vöm10, Vöm12, Wan18a, WBL14]. **notion** [DGM<sup>+</sup>16]. **novel** [NPR13, SP06, BNR18]. **NS** [FM18]. **NS-LAMG** [FM18]. **nuclear** [XJ12]. **null** [How18, ITS07, RS18, WF15]. **null-space** [ITS07, RS18]. **nullspace** [Sim03]. **nullspace-free** [Sim03]. **number** [ADT19, BB06, BC10, EHM95, EG16, LH08, LLW09, RV12, TGKR10, ZHJL12]. **numbers** [BG05b, CCG00, CLTW11, CDW06, DW07, Dia09, DXW12, DWWQ13, Liv14, YDH11]. **Numer** [SB12]. **Numerical** [AGG<sup>+</sup>16, NLA94, Ano08, Ano09, BLP08, Ben11, CH03, CA99, DMS17, DSV18, FZwCW17, GS05, HHM10, HJR97, KKO20, fLyHZ11, LD08, MK94, MMMM09, MV05, NBKS99, NSCTP05, NL09, WW08a, JNL92, Bai95, BDRS12, BNR18, BKP02, BSC20, Bat95, BGM11, Ber01, BDS94, CQX11, CJW06, Cor04, CJT03, Dat01, DS02, GY08, HPS15, LJ04, LH08, LHW11, LGS12, Lin12, MM09, MP13, MM18, OCYM08, Ols99, Özb13, SHT11, Tur00, Mar00]. **Objective** [Ris19]. **Oblique** [Han13, YCY17]. **oblivious** [MWZ06]. **observations** [CZ02]. **observer** [CLR01, CD11]. **obstacle** [JZ11, ZJ06]. **occasion** [CLR13, LPQ06, SGP14, Vas03, Vas05]. **occur** [CC03]. **occurring** [AG99]. **oceanography** [Rak99]. **odd** [Not05a]. **Odir** [CK01]. **off** [EW13]. **off-diagonal** [EW13]. **One** [OC04, CSYS14, EGMS20, FMPS13, O'H14, Pul08]. **One-level** [OC04]. **one-way** [EGMS20]. **open** [Gar04, RR12].

**OpenMG** [BISC14]. **operations** [STZ12]. **Operator** [Gus97, Gus98, Gus03, MMPR10, Alb06, BV00, BCV03, BFM12, Den09, GN00, GH11, Liv04b, MP15, Tyr05, Vab20]. **Operator-based** [MMPR10]. **operators** [AFSCSU14, ABBP10, AEHV14, BKY10, Don10, GGLO08, GVT03, Kho96, MC08, PSK08, Yan10]. **optical** [BCK05, KRW08]. **Optimal** [Bai09, BTT13, ELV94, GHO15, HLM<sup>+</sup>18, LHLS07, LD07, MM95, Not98, WKS95, BLP08, BFPS10, BMN05, CDDZ19, DH04, EG16, GTZ18, HFW01, HW18, KK13, Lai97, MNCT07, MSS07, MP13, NA97, PSW14, RGG07, RSCPT15, SY18a]. **optimality** [NN10]. **optimally** [Cha07]. **optimization** [AN03b, BDK<sup>+</sup>15, Chu04, De 13, DD07, Gar02, GY08, HHM10, HP04, KCS11, Laz16, LZQ12, Lin12, LMV04, MV13, NBKS99, PW12, PPS20, RS10, Ris19, SW12, WCZ15, WN18]. **optimize** [MC08]. **optimized** [EGMS20, OOO11]. **Optimizing** [TGKR10]. **option** [LLS12, Rag14]. **order** [ABBP10, AEHV14, AEHV15, AABHV18, ABK15, BCR11, BCR14, BBJ17, BH16, BGM<sup>+</sup>12, BSI17, CEL<sup>+</sup>96, DOR19, DLVZ06, ELV94, GM17, GA18, GTI16, GHW06, GKY97, GL13, HM20, Hem96, JM10, Kap02, KLM<sup>+</sup>06, KPV06, KM09, Lam12, Lee19, LY15, LLV19, Lun20, MV13, MMN<sup>+</sup>10, MNCT07, MCLM20, RS01, SSB15, TSPSO06, UMO09, WQ07, WQZ09, Web10b, Web10a, XSZ09, XS11, ZN20]. **order-reducible** [BCR14]. **ordered** [Bea94]. **Ordering** [HS05, HS15, Sco99]. **orderings** [DS10, NA97]. **ordinary** [BCR11, BCR14, Bot13, ZCW11]. **oriented** [TC10]. **Orthogonal** [FB95, VVM05a, AM95, BF96, DBG06, Kem12, MO94, PN18]. **orthogonality** [Par92]. **Orthogonalization** [Jia96, LBG13, LL97, SW96, VS17]. **orthogonalizations** [Dax04]. **orthogonalizing** [Mat96]. **Orthotropic** [GL96]. **oscillators** [MV19]. **Oseen** [CBE18, HBH10, KLM<sup>+</sup>06, Ols99]. **outer** [Cor04, Xia12]. **output** [LW05]. **outs** [LPW06]. **ovals** [KVC12]. **over-penalized** [BPS13]. **overall** [BS01]. **overlap** [KK02, mMvdV02]. **Overlapping** [CS96, GNQ15, CGM01, Gan99, GVT03, JS96, KP00, LMM00, MO11]. **overrelaxation** [BGN07, Gus03]. **Owe** [Cao13, Vas05].

**p** [SP06, HMS99]. **p-level** [SP06]. **Padé** [BLW08, GGZ12, LZ09]. **PageRank** [CRZT20, LLNV17, MP18b, WW07, YYN12]. **pairs** [CLC11, GMS18]. **pairwise** [FLR03]. **palindromic** [LYL15, MMMM09]. **panel** [PR96]. **Papers** [Ano08, LD08]. **parabolic** [AT15, JM10, KK13]. **Parallel** [AO07, AMMP06, Bas00, BLE97, BGM<sup>+</sup>12, BS10, CR16, FJP16, GR05, GL96, KR11, Lee16, LSL01, LGS12, NO04, RT99, The98, Voe92, WH94, ZYFG11, AGG<sup>+</sup>16, ACR<sup>+</sup>00, AMMR17, AMP99, BPS00, BMS17, BMS18, BvdV00, CS09, CS11, CJT03, DFNY08, DFHM20, FJP12, FM99, GMR05, GSS01, GMOS06, GL98, GL02, GL13, Hac92, HS05, JO94, KK02, Kuz92, LVW01, LSS03, LWC16, MW16, MM97, MBW97, MC04, MR14, Pad99, PR95, PR96, Rak99, RK18, Ren98, SL19, Sid97, TSPSO06, Van00, WLBH12, mMvdV02, mM04]. **parallel-in-time** [DFHM20]. **parallelism** [Vöm12]. **parallelizable** [GL95b]. **parameter** [AK99, BEG18, GNR14, GS05, HMMP19, HKLP19, KPT14, MSV13, Not02b, Yan18]. **parameter-dependent** [BEG18, GS05, KPT14]. **parameter-free** [Not02b]. **parameter-robust** [HKLP19]. **parameterized** [CCvG06, HW18, RMM19]. **parameters** [Bai09, BNP15, GHO15, HW18, Mai06, dCSRS19, Yan04, Yan18, ZHJL12]. **parametric** [SH19]. **parametrization** [Hua12]. **Parlett** [Bun95, EM95]. **pARMS** [LSS03]. **Part** [GL98, GL02, GL13]. **Partial** [LW04, LW05, BSC20, BGP97, CQX11,

KKO20, LH08, LHW11, LW03, MW11, MM11, Not02a, Rak99, RBV08, SW12, TC10, YBZ19, Zhu14, vNR07]. **partially** [DD07, WQZ09]. **particle** [Sei10]. **particular** [ESC20, dF20]. **partition** [BDV06]. **partitioned** [AB10, AB13, Cao13, Poi00]. **partitioning** [CJT03]. **partitionings** [GKY97]. **parts** [Bai18a]. **passage** [KNX01]. **past** [Axe10]. **pathology** [PM11]. **pattern** [CDG00, ISZ09]. **PDE** [BDM<sup>+</sup>14, GHW06, Lin12, OZB<sup>+</sup>18, PW12, PPS20, RS10]. **PDE-based** [GHW06]. **PDE-constrained** [PPS20, Lin12, PW12, RS10]. **PDEs** [AT15, AMMR17, Hem96, Höm06, MO11, VSG09, VZ08, ZMO10]. **Peaceman** [LR95]. **PEERS** [KS04]. **penalized** [BPS13, Dos99]. **penalties** [MG08]. **penalty** [BCS09, BPS13, BDR17, DH04, Lai97, PSW14]. **pencil** [LW05]. **pencils** [BB01]. **Penrose** [DW07, DWWQ13, KKMM12, LXW13]. **Performance** [BT15, Sei10, mM04, Alb06, BE98, MO14, SST18]. **periodic** [KK13, Var08, WZZ18]. **periodicity** [BDS94]. **permanents** [WLBH12]. **permittivity** [PR11]. **permutation** [May07]. **Perron** [ES09b, KNX01, LCN13, MP18b, NX03]. **Perron-based** [MP18b]. **perspective** [BMS17, OST10a]. **persymmetric** [XHZ03]. **Perturbation** [Cas11, CLC11, GCLG18, GW00, WW08b, YL08, ZY19, CTP09, Cha12, CLTW11, FT98, JLW05, LS05, LS06, LCN13, LW15, O'H14, WKS95, WL03, YDH11]. **perturbations** [AIT05a, AIT05b, BSC20, LXW13, NR19]. **perturbed** [Sau95]. **Petrov** [CGM11]. **phase** [DY04, HS13, HLLL16, NH06, SY18a]. **phylogenetic** [BL03]. **physics** [TC10]. **physics-oriented** [TC10]. **Physiology** [PM11]. **Piecewise** [HM96, Bos19]. **pinch** [LPW06]. **pinch-outs** [LPW06]. **pipes** [HG00]. **pivoted** [HC05]. **pivoting** [BM05b, BM06, EM11, LSS18, May05, May07]. **placement** [Dod11]. **planar** [GLGR10]. **plane** [BLE97, Ypm95]. **planewise** [mMP99]. **planewise-like** [mMP99]. **plants** [Özb13]. **plasticity** [ABK97, Car97, HJR97, Wie99]. **plate** [AY11, CYZ99]. **player** [AD12]. **Plemmons** [NN15]. **plus** [BLP17, DPRV19, Fas05, HN05, KN07, MCV01]. **point** [AN06, Axe15, Bai09, Bai12, BMM06, Ber12, BG05a, Bir15, Cao04, Cao08, Cao09, CJZ11, CH03, CRZT20, EG16, HP04, HD07, HDH19, KP00, KO18, KKR14, Krz11, KKMM12, LOY08, LOS04, LW07, LMV04, LSS18, MZ15, PPS20, PW13, RS18, SJBH14, SX15, TH19, VL96, Wan18a, Web18, WBL14, Zha18, MST16]. **point-type** [Cao08]. **points** [HM96]. **Poisson** [CKW02, CJL08, Dah02, RSR10, TSPSO06]. **polar** [CCG00, LS06, RT02, YL08]. **Pole** [Dod11, LC13, LW04, LW05]. **poles** [Mee01]. **policy** [BLLA11]. **polyadic** [BVD<sup>+</sup>18]. **polyhedral** [Dah02]. **polynomial** [CCS19, CR16, Gan05, GKV12, HM96, HS08, HVX16, Lee16, LW98, WCZ15]. **polynomials** [BB97, BGW05, BG05a, HDIS18, KR14, MO94, MN05, Nov03]. **population** [DHSW11]. **poroelasticity** [GLOW04, HKLP19, LRGO17]. **porous** [NH06, ŠBS15, WWX10, Yot01]. **posed** [CLTW11, DNR12, DHNR18, Est09, GORR16, HDA19, NR14b]. **positive** [ARMW14, AIT05a, AV94, Bai16, Bai18a, BP13, BMAA16, BT03, CS09, CS11, DPP16, DJ09, Kap98, Kol05, LHL07b, MVV08, PS11, yPES07, PW13, SB12, WW08b]. **positive-definite** [DJ09, Kol05, LHL07b, MVV08, SB12]. **positivity** [KSB13]. **possible** [VL11]. **Post** [KLN99]. **Post-processing** [KLN99]. **posteriori** [AM96, BLP01, CS18, OOO16, Pul09, Ney02]. **potential** [Kho96, MRT96, Shi02, Shi04].



**potential-reduction** [Shi04]. **potentials** [KK16]. **£1000** [Ano08]. **Power** [AS19, CEQN07, CH05, DS13b, GGV13, JZ09, Lee18, LP16, Vab20, WW07]. **powers** [HLM<sup>+</sup>18]. **practical** [DGB<sup>+</sup>13, Kap99, WQZ09, WM12]. **Prandtl** [Wie99]. **Prandtl-Reuss** [Wie99].

#### **Preconditioned**

[Axe98, CGK94, DGM<sup>+</sup>16, GKK19, HMS99, HES15, AN06, BM13, Ber12, Ber01, BWN05, BB06, Bla02, BHHJ13, BE98, CZ02, Cao09, Dam08, DW15, DH18, DS08, DR03, GLJ19, KK13, KPT14, LD07, LV98, PR95, PR96, RV12, SJBH14, SHZ20, WBL14].

#### **Preconditioner**

[TT10, BPS15, BT03, Beu03, BC12, BPS13, CGPV13, CJZ11, CNP96, CJW06, CS95, CV13, Doh07, ES07, EGF11, GN00, GTZ18, HFW01, ISZ09, KS04, KWS<sup>+</sup>18, KV96, Kuz92, KP10, LS04, May05, May07, MC09, NL16, SPD05, SP06, SLV13, SGP14, UMO09, Xia12, XS11, XM17, Zha18, Zhu14, vN00].

#### **Preconditioners**

[CPS01, Est09, GS07, PSW14, AY11, AN13, Bai16, BM17, BDdSM18, Bla02, BMN05, BCHT04, BIA18, BSI17, Cao08, CDG00, CDGmM04, CGM01, CC92, CW97, CEL<sup>+</sup>96, CDDZ19, DDG99, DP03, FP15, FK15, FS09, GMTV16, GNQ15, HLM92, HH06, Hem96, HKLP19, HK12, JLW05, KABH17, KY95, KKNY01, KP00, Krz11, LVW01, LOY08, Lee16, LJ04, LXS16, LC05, LW07, LWC16, Mar16, MSS07, NV08a, NR12, Osw95, PW12, PS00, QB15, RS10, RSCTP15, RVW98, SZ99, ST17b, The98, TT15, Tyr92, Tyr05, WRW18, XG10, YNP04, Yan18, ZCW11, ZHJL12, Zhu08, mMP99].

#### **Preconditioning**

[ABM17, AN03b, AB10, ABNP15, ABK15, CFAM16, Egg07, Gro00, HW19, HSCTP05, MW11, Pul09, SMSW00, SW12, Vas92, VL96, WDS09, WBWM04, AFSCSU14, AT15, AK94, AV94, AFK02, Axe15, BCR11, BCR14, Bas00, BGM09, BPS00, Bla94,

CDDSC12, De 13, DLVZ06, DD07, Dos99, DKVB15, FJP12, FJP16, GM11, Gus03, GL95b, HPPS03, JZ09, JK17, Kap94, Kap98, KK02, Kap02, KM99, KPV08, KOV17, Kra02, Kra06, KMS08, LV04, LW03, MFFJ18, MM95, MM02, NO04, NR11, NA97, Not98, Not02b, NCV05, PPS20, PW13, Poi00, SP18, SL10, Vas02, WH94, XXCB20, AB13, Cao13].

**preconditionings** [GKY97, KNY99, NY03].

**prediction** [BS10, PGT14]. **predictive** [FM15]. **predictor** [BB97, HM14]. **Preface** [Axe02, AK10, Cve09, Dat01, NT04].

**Prefiltration** [NY03]. **Preordering** [LSS18]. **presentation** [EJK01]. **preserving** [HLL16, PR16, Wan00, WRW18]. **Press** [Nab97, Amb15].

**pressure** [Lay05, LWC16, vKVV00]. **Prestructuring** [How18]. **Price** [Nab97]. **pricing** [LLS12, Rag14].

**Primal** [HP04, RT02, FLP00, WSN19].

**Primal-dual** [HP04, WSN19]. **principal** [GH06, LB17].

**principle** [BC02, Vos09]. **principles** [Gar04]. **priori** [HM96]. **PRISM** [Axe98]. **Prize** [Ano08]. **probabilistic** [WWC<sup>+</sup>15].

**probabilities** [NX03].

**probability** [BH16, LCN13, MM98].

**probing** [TS12]. **problem** [AS19, AH02, AK99, ABK15, Bai95, BDK<sup>+</sup>15, BFPS10, CCS19, CZ15, Car97, CPSM06, CGL05, CG15, CFAM16, CMSW19, CJT03, DL97, DMS17, DWWQ13, Dod11, DBLP16, ES07, ES09a, ER96, GKK04, GT19, Gus98, HBH10, Hla99, HS08, HC20, IV04, KABH17, KPV06, KH07, KMM19, KNP03, LLLJ16, pLL07, LYL15, LD07, MV13, MRT96, MLV05, Mee01, MP15, Ols99, OC04, yPyHZ04, Ren98, RSR10, Rja98, RT99, Sau95, SH14, Sim03, Sot13, TW20, VFdV13, Vla00, WKS95, XZS10, YHS18, ZJ06, ZYFG11, ZYL13, ZVO14].

**Problems** [CGK94, GL96, Ada04, AB00, AW11, AIT05b, AHJ20, AG99, AV94, Axe98, AN03b, BBP03, Bai09, Bai10, Bai12, BZ13, BZ17, BW19, BKY10, BKP02, Bar02,

BLE97, BBS12, BMM06, BGM09, BGM11, BLP08, BCV03, Bla94, BC02, BBG13, BMS18, BvdV00, BRT07, Bör17, BO13, BDM<sup>+</sup>14, BIA18, CL96, CNT07, CQX11, CGPV13, CRS05, CR16, CEQN07, Cao04, CJZ11, CCvG06, CC92, CNP96, CW97, CS02, CTP09, CEL<sup>+</sup>96, CCK06, CWwS18, CWS97, CC03, CLTW11, CP12, CBE18, CV13, CRV14, CK14, Dax94, DE98, DW07, Dia09, DNR12, DJ09, DGP19, DHR<sup>+</sup>04, DP03, DR03, DHNR18, Egg07, EAA19, EGF11, ELV94, EWY03, FY01, FGT11, Gar04, GGLO08, GH01, GORR16, GHT09, GVT03, GGZ12, GTZ18, GKK19, GMTV16, GL98, GL02, GL13, HJ18, HP97, HKST12, HJR97, Han13, HDA19]. **problems** [HW19, HMMP19, HS13, HL16, HD07, HLLL13, HM16, HDH19, HLLW05, JZ11, JK18, JM10, KKPS18, KMM18, KK02, KR11, KP00, KK13, KR06, KT08, KMS08, KLM14, Krz11, KM92, LLL97, LR95, Lay05, LPV01, LV99, LW07, Lin12, LZ12, LW16, LW17, Liv04b, LL97, LV98, MZ15, MMMM09, MS07, Mar00, Mar98, MRT02, Mar16, MSS07, Mav01, MSV13, MP13, MM97, MBW97, MM02, MSB18, MZ98, NR14a, NR14b, Nov03, OS10, Pad99, PBN05, PSW14, PPS20, Pen08, PH19, RR12, ROA13, SLK16, SX15, Shi02, Shi04, SY18a, SV11, Sta96, Sto92, TDH<sup>+</sup>18, Tre13, TT15, VJM16, VL96, Ver00, Wan00, Wan18a, Web18, WWC<sup>+</sup>15, XG10, XZS15, XXW19, wX15, XCG16, YBZ19, YCY17, ZZ15, ZN18, Zha18, ZHZ10, ZY19, ZSCX10, mMP99, mM04, VW01]. **Procedure** [IDVV96, JZ09, JK17, LR95]. **process** [PRR<sup>+</sup>16]. **processes** [AD11, BMMR18, BL03, Buc11, DGB<sup>+</sup>13, GCLG18, NH06]. **processing** [Dat01, KLN99, SKR08]. **Procrustes** [CZ15, KH07, XCG16]. **producing** [SH19]. **product** [Aih20, BW17a, Che15, DQW15, DK15, FZwCW17, Gus04a, HXM19, KN07, LS04, MGF<sup>+</sup>02, Per06, XG10, ZSKA18]. **products** [BB01, DWWQ13, LPS16, Mat96, Mey94]. **Professor** [SGP14]. **profile** [HR05]. **program** [CCLQ18]. **programming** [BDdSM18, BRT07, HHQ13, LV98, Naz95, RGG07, Shi02, Shi04]. **Progress** [Bai95]. **Projected** [HKKP07, KO18, Shi04]. **projected-steepest-descent** [Shi04]. **projection** [BG13, Baz08, BG00, FB95, GKL18, HCD15, ITS07, MZ98, RT02, RMM19, YCY17]. **projection-based** [GKL18]. **projection-type** [Baz08]. **projections** [Dax04, Han13, LCHH18, VZ14, WTWG14]. **Projector** [DD07]. **prolongator** [KV15]. **prolongators** [BDV06]. **proof** [Adi08]. **propagation** [BO13, mM04]. **proper** [Kem12]. **Properties** [PSK08, Wei94, Yon96, ZHZ10, BDS94, Bun92, CGK05, CJW06, CDDZ19, LV12, NPR13]. **property** [DMY03, EZ96, ES09b, NL16, YLH11]. **proposal** [NCV05]. **proving** [BBP03]. **pseudo** [BFdP13, mMvdV02]. **pseudo-Jacobi** [BFdP13]. **pseudo-overlap** [mMvdV02]. **Pseudoeigenvector** [MYZ16]. **Pseudospectra** [KCC16, VW15, NR17, Sir19]. **PSF** [BNP15]. **published** [Ano09]. **pure** [KM99]. **purely** [BF11a]. **Python** [BISC14]. **QBD** [BMMR18, GCLG18]. **QLP** [HC05]. **QR** [CGK05, Fas05, LW15, VVM05b]. **quadratic** [BLP08, BDdSM18, BG05a, BMP11, BMMR18, CQX11, CCvG06, CMSW19, DMS17, DD07, DR03, EGF11, GA18, HLLL13, KLM14, LC13, LW05, LZQ12, LYL15, MP13, QXB09, Ste99, XZS15]. **quadratic-bilinear** [GA18]. **quality** [BC10, Kap98, NY03]. **Quantized** [KKS19]. **quantum** [KMMR10]. **Quasi** [RSCTP15, DEM18, Gar01, Gar02, HMS99, LY15, MN05, SW96, ZZ15, Bai18a]. **Quasi-HSS** [Bai18a]. **quasi-isometric** [Gar01, Gar02]. **quasi-kernel** [MN05].

**quasi-minimal** [SW96]. **quasi-Newton** [DEM18, ZZ15]. **Quasi-optimal** [RSCTP15]. **quasi-uniform** [HMS99]. **quasiseparable** [BEG18]. **quaternion** [JNS19]. **question** [JK09]. **queueing** [BLLA11]. **quotient** [FK15, Het07, NZ14, PS95, Zho06].

**R** [Nab97]. **Rachford** [LR95]. **radial** [CDDSC12]. **radiation** [OC04, WBWM04, XM17]. **radii** [CfX05, ZWQA18]. **Radim** [Cao13]. **radiosity** [Leb02]. **radix** [MR14]. **radix-** [MR14]. **random** [HPS15, LW98, LCHH18, OZB<sup>+</sup>18, WF15]. **Randomized** [SLK16, XXW19, BW19, Du19, ZSKA18]. **range** [AMMR17, CJW06, KK16, MM18, Yan10, ZW10]. **range-Hermitian** [ZW10]. **Rank** [GS97, Kub92, AT15, BE09, Bau08, BF96, CH94, CSYS14, DE98, DW15, DPRV19, DBLP16, ES05, FMPS13, Gra08, HS18, HR05, HC05, JMPR18, KO18, KJ12, KPT14, KS15, Laz16, LXS16, LO15, NL16, O'H14, QXB09, SPD05, SP06, SLV04, SLV06, Tia13, Tyr92, VVM05a, VJM16, WQ07, WN18]. **rank-** [DW15]. **rank-1** [KJ12, WQ07]. **Rank-deficient** [GS97, DE98]. **rank-exploiting** [VJM16]. **rank-one** [CSYS14, O'H14]. **ranks** [LT08, STZ12]. **Rapid** [LO13]. **rarely** [BG05b]. **rate** [BS01, CJT03, KKO20, MRT96, RV12, Zik08]. **rates** [Li00]. **Rational** [Fas05, Mor09, Rag14, BBJ17, DGP19, Mee01, Mor07, PRR<sup>+</sup>16, Tre05]. **Raviart** [KMS08, LV12, Zhu14]. **ray** [Liv04b]. **Rayleigh** [FK15, Het07, HS08, KABH17, NZ14, PS95, Zho06]. **Raytcho** [Vas03]. **RBFs** [FP15]. **RD** [Mor07]. **RD-rational** [Mor07]. **reaction** [Gan99, TC10]. **Real** [AK00, BF19, Bra02, CHV05, GHR98, MZHB17, MSV13, MV19, Sot13, vNR07]. **real-equivalent** [MZHB17]. **realizability** [Sot13]. **realizable** [CfX05]. **realization** [Baz08, PR96]. **reciprocals** [Vöm10]. **reconstruction** [CNSY05, PN18]. **recovery** [AGG<sup>+</sup>16]. **rectangular** [BS01, LS06, Osw95, Pul09]. **Recursive** [FLM09, HSY18, NV08b, LSS03, Not05a, NA97, SS02]. **recycling** [RLG12, SGSM15]. **red** [NA97]. **red-black** [NA97]. **reduced** [ES05, GH11, KN14, Sir19, VW15]. **reduced-rank** [ES05]. **reducible** [BCR14, ZWQA18]. **Reducing** [GHJV16, VY14, Zha92]. **reduction** [AK94, BBJ17, BPS95, BTT13, GORR16, GA18, HNR<sup>+</sup>18, KCS11, Lay05, LO13, Lee18, MMM06, MV13, MR14, PV99, Shi02, Shi04, VP95, YZ13, ZS08, vGSZ15]. **reduction-based** [MMM06]. **reductions** [KNX01]. **Reeves** [YBZ19]. **refined** [BB00, HS08, KR11]. **Refinement** [GL95a, BS01, BGM<sup>+</sup>12, CR16, DMM<sup>+</sup>08, DHR<sup>+</sup>04, ELV94, MMN<sup>+</sup>10, MM95, Mit10, WW11]. **Refining** [Peñ07]. **reflective** [Per06]. **regenerative** [AD11]. **region** [HS18]. **Regions** [PS95, Naz95]. **registration** [GHW06, HHM10, Höm06, RGM17]. **regression** [ES05]. **regular** [CLC11, FG02, FT98]. **regularity** [Dah02]. **Regularization** [BGM09, DHNR18, IDVV96, BCB14, BDR17, CRS05, CLTW11, Don05, DNR12, FRR16, GNR14, LHW11]. **regularized** [BL20, ES07, ES09a, FGT11, MLV05, RLG12]. **regularizer** [KRW08]. **Regularizing** [CDDZ19]. **Reissner** [CYZ99]. **related** [AK94, DSV18, ESC18, GGZ12, Li00, Mor09]. **relations** [Tia13]. **relationships** [JYZ17, Tre05]. **Relaxation** [BKM<sup>+</sup>12, LLV19, Dax94, FP95b, Gan99, HM18, LZQ12, Liv04a, PBN05, SX15, Yan04]. **Relaxation-corrected** [BKM<sup>+</sup>12]. **Reliable** [Ber01, Hla99]. **remarks** [LS06, Mar95]. **Reorthogonalization** [DKVB15, Van00]. **Reorthogonalization-based** [DKVB15]. **Repairing** [Ver00]. **repeated** [AT00].

**repetitive** [DGB<sup>+</sup>13]. **representation** [CC07, DEM18, VVM05c, Vöm12]. **representative** [KKO20]. **representing** [MO16]. **reservoir** [LVW01, LWC16]. **residual** [AM95, GH01, Gus03, HMS99, JR94, JK17, Kap05, LWC16, MO94, MRT96, SW96, Saa00b, Sta96]. **resilient** [AGG<sup>+</sup>16]. **resolution** [CNSY05, JK09]. **resonant** [AG99]. **Respectively** [Bai18b]. **Response** [AB13]. **restart** [MN00]. **restarted** [Dax19, Jou94, MP14, Sim99, VL11, ZM08, Zho18, Zit00, Zit05]. **restarting** [BD15, SHJC18]. **restoration** [BC02, CNXY20, Per06]. **restoring** [NWZ17]. **Restricted** [BK11]. **result** [FP95b]. **resultant** [BGW05]. **results** [BF19, BMSS09, DFF<sup>+</sup>18, Kap94, MMN<sup>+</sup>10, MM18, NH98]. **retinex** [YHS18]. **retraction** [Kau07]. **retrieval** [BF96, FJ05]. **Reuss** [Wie99]. **revealing** [CH94, DCT18]. **reversible** [NW15]. **Reversing** [RS01]. **Review** [Nab97, MO14]. **revisited** [XXCB20]. **Revisiting** [AD11]. **reward** [Buc11]. **rewards** [Par92]. **RIC** [Not94]. **Riccati** [AHJ20, BGX06, BLP08, GB11, GL95a, Gra08, HM14, HHLL16, IP13, LB08, LS15, Lu05, Miy17, Var08]. **Richard** [LPQ06]. **Richardson** [Pas19]. **Riemannian** [FJ05, HS18, YBZ19]. **Right** [SHZ20, ARSO14, ARMW14, Lin12, SHJC18]. **right-hand** [ARSO14, ARMW14, SHJC18]. **rigorous** [LW15]. **ring** [MK20]. **rising** [KNY99]. **Ritz** [GR99, HS08, Vöm10]. **RLSL** [BLP01]. **Robert** [NN15]. **Robust** [AY11, BMN05, JNS19, KSB13, KW99, KLM14, MMC12, Not02b, SNZ20, AMM04, BT03, CDG00, GTZ18, HKLP19, KKNY01, Lee10, SZ99, Xia12, XS11, vN00]. **robustness** [ST17b, XXCB20]. **root** [AEHV15, LZ09, LH17, Mor09, PRPI09]. **root-finding** [PRPI09]. **roots** [CC20, MO94]. **rotated** [CG15]. **rotating** [SL19]. **rotations** [MCLM20, Ypm95]. **rounded** [BH07]. **roundoff** [WW11]. **row** [Dax94, May07, RS01, SLV06, Sco99, ZHZ10]. **row-by-row** [RS01]. **rows** [DS10, How18]. **RSCG** [FO95]. **Runge** [Che15]. **Rybicki** [Amb15]. **SA** [BMM<sup>+</sup>08, GX14, HVX16]. **SA-AMG** [HVX16]. **saddle** [AN06, Axe15, Bai09, Bai12, Ber12, Cao04, Cao08, Cao09, CJZ11, CH03, EG16, HD07, HDH19, KP00, KKR14, Krz11, KKMM12, LOY08, LOS04, LW07, LSS18, MZ15, PW13, RS18, SJBH14, SX15, VL96, Wan18a, Web18, WBL14, Zha18]. **saddle-point** [Bai09, Bai12, EG16, HDH19, KKR14, KKMM12, LOY08, LSS18, VL96, Wan18a, Web18]. **same** [GHR98]. **sample** [DXW12]. **sampled** [Rie09]. **sampler** [OZB<sup>+</sup>18]. **Sampling** [US19, AFSCSU14, FGT11]. **SANs** [LS04]. **SAXPY** [Ypm95]. **Scalable** [DH04, OZB<sup>+</sup>18, FLP00, Liv14, MW16]. **Scale** [VW01, Axe98, BBJ17, Bar02, BCB14, Ben08, BLP08, BES14, DMY03, DGP19, GLJ19, Gra08, GR04, HJ18, Lee16, NH06, Sir19, XM17]. **Scaled** [Yan18, Bai18b, CTP09]. **scaling** [BBKY06, GHO15, HS15]. **scattering** [FGT11, MV13, WDS09]. **Scheme** [Zha92, BS01, BMS17, BMS18, CRV14, GB11, GSS01, GMOS06, KV15, LLS12, Poi00, Pul16, RR12]. **schemes** [AIT05b, AJ94, Bir15, DE06, Gus03, HM18, HM14, KABH17, OCYM08]. **Schmidt** [Dax04, LBG13, LL97, Van00, WL08]. **Schoenmakers** [DPP16]. **Schrödinger** [CJL08, WRW18]. **Schur** [BG00, BCK05, BG05a, Bra02, BCGM09, BD15, Bun92, HKKP07, KSB13, KW99, Kra06, KLM15, LXS16, LW03, MMMM09, MW16, NG15, PW12, Rak99, SGP14, TSPSO06, WW08b, WTWG14, vNR07]. **Schwarz** [AB13, Cao13, AALS01, AB10, AG19, BK11, CZ02, DS08, EGMS20, KP00, KWS<sup>+</sup>18, OC04, VSG09, XZS10]. **scientific**

[Axe98]. **searches** [DMY03]. **Second** [JM10, VfV13, AK19, BBJ17, CEL<sup>+</sup>96, DLVZ06, GTI16, KPV06, Lee19, LM06, MM09]. **second-generation** [LM06]. **Second-order** [JM10, BBJ17, DLVZ06, GTI16, Lee19]. **sector** [LZ09]. **seed** [ARMW14]. **segmentation** [LNP12]. **Seidel** [Du19, HP97, KLN99, LO13, Sun06]. **select** [Alb06]. **selected** [BTT13]. **selection** [AO07, CDG00, MO16]. **selective** [NO04]. **self** [Leb02, MWZ06, MM11]. **self-adaptive** [MWZ06]. **self-adjoint** [MM11]. **Selfadjoint** [AV94]. **Semi** [Mar98, CH05, Ema12, GLGR10, KH07, LJM14, LD07, MCV01, MC08, Par92, WW08b, Xia12]. **semi-algebraic** [MC08]. **Semi-coarsening** [Mar98]. **semi-definite** [Ema12, KH07, WW08b]. **semi-iterative** [CH05, LJM14]. **semi-monotonic** [LD07]. **semi-orthogonality** [Par92]. **semi-separable** [MCV01, Xia12]. **semi-structured** [GLGR10]. **semiconductor** [GMR05]. **Semiconvergence** [CS11]. **Semidefinite** [LZQ12, CS09, CS11, CCLQ18, HHQ13, PS11]. **semidiscrete** [GB15]. **Semilocal** [GD11]. **semiorthogonal** [HLLL13]. **semiseparability** [VVM05a]. **semiseparable** [Fas05, VVM05a, VVM05b, VVM05c, XCG10]. **sensing** [BT15, ZZ15]. **Sensitivity** [CL13, GL95a, PV99, BW17b, NR19]. **separable** [MCV01, Xia12]. **separation** [CCE<sup>+</sup>18]. **sequences** [AFSCSU14, BSC20, BDdSM18, Not05a, TT10]. **sequential** [ACR<sup>+</sup>00, HCD15, HHQ13]. **serendipity** [HH06]. **series** [GZ16, ROA13]. **set** [BDK<sup>+</sup>15, MO16]. **sets** [KMC16, LLK14]. **Several** [Wu15, DHNR18, Pul16]. **Shader** [Nab97]. **shallow** [SL19]. **Shamanskii** [LB08]. **shape** [HP04]. **shaped** [GH11, ZMO10]. **shapes** [AG95]. **shared** [JO94]. **sheet** [AMR18]. **shell** [MBW97, The98]. **Shift** [PS11, BBP03, IP13, MC09, MP14, WtFW15, vGSZ15, Sim03]. **shift-and-invert** [MP14, WtFW15, Sim03]. **Shift-invert** [PS11]. **Shifted** [LP16, CV13, JR94, JYH17, SLV13, TT15, UMO09]. **shifts** [SHJC18]. **Short** [Lai97, SHT11, Yon96]. **sided** [FK15, JZ11, ZJ06, Zik08]. **sides** [ARSO14, ARMW14, SHJC18]. **Sign** [Nab97, CLC11, GM17, GGZ12, SST18]. **sign-indefinite** [GM17]. **Sign-Solvable** [Nab97]. **signal** [Dat01, HM03]. **signless** [XC13]. **Signorini** [Hla99, IV04]. **similarity** [VVM05a]. **similarly** [Tre05]. **SIMPLE** [LV04, KNY99]. **simpler** [JYH17, LSJ18, WZ94]. **simplified** [BM06, ZVO14]. **simulating** [MC04]. **simulation** [BFPS10, BvdV00, BO13, PR11]. **simulations** [AK16, KR11, LWC16, NO04]. **simulator** [LVW01]. **Simultaneous** [DK15, Peñ03, AT15, GM11, LT11]. **sync** [BCR11, BCR14, NSCTP05]. **Sine** [CW97]. **single** [PDV05]. **single-channel** [PDV05]. **singly** [HS05]. **Singular** [AFSCSU14, BCC98, CKW02, Cao08, CL13, Dod11, EN17, FP95a, FH94, GTI16, HS11, HS14, HLLL16, JLW05, JK18, KR06, Krz11, KKMM12, KMM19, LSL01, LHLS07, LHW11, LT13, MPS96, NR14b, PH19, Roh92, Sau95, SS97, SNZ20, SHZ20, Szy94, THC09, Tre05, ZW10, ZSKA18]. **Singular-value** [AFSCSU14]. **singularities** [BLZ08, CKW02, Dah02, LLW09]. **singularity** [Ver00]. **sixtieth** [LPQ06]. **size** [BMMR18, FJP12, KKO20]. **skew** [BGN07, KKR14, LHL07b, SB12, Wu15, Bai18a]. **skew-Hermitian** [SB12, BGN07, KKR14, LHL07b, Wu15, Bai18a]. **sliding** [AMR18]. **small** [DXW12, KV96]. **smallest** [MVV08, MM11]. **SMASH** [CCE<sup>+</sup>18]. **Smith** [BES14]. **smooth** [Car97, HKKP07, The98]. **Smoothed** [BDM<sup>+</sup>14, CDW06, OS10, Sch12, BMM<sup>+</sup>08, BVV12, GHT09, KWS<sup>+</sup>18]. **smoother** [LRGO17, ZVO14]. **smoothers**

[AK19, BO18, GGLO08, GKV12, HBH10, LJM14, MO11, Yan04]. **smoothing** [BC09, EZ96, GLOW04, HP97, TC10]. **smoothness** [Cho03]. **SNAP** [ITS07]. **Sobolev** [AFK02]. **social** [GB15]. **software** [Voe92]. **solid** [Ada04, SV11]. **Solution** [Bar02, BFPS10, Ben11, JL09, ACR<sup>+</sup>00, AD11, Axe98, Axe99, BDGL09, Bai95, BKP02, Bau08, BMM06, BLP08, BS01, BPS00, BMP11, BEG18, BRT07, BDS94, Bot13, BVD<sup>+</sup>18, BFM12, CGPV13, CLR01, Che15, CA99, Cor04, DMS17, DSV18, DO18, DFHM20, DBLP16, FZwCW17, FJP12, Gem00, GTY97, Gra08, GT19, GS05, GL98, GL02, GL13, HJR97, HG00, Hla99, HC20, ITS07, JZ11, JO94, KRW08, LX08, LPV01, LV99, LGS12, Lin12, LL97, Lot07, MS14, MZHB17, MP13, MM97, MBW97, Miy15, MSB18, Ols99, yPES07, PH19, Ren98, SGSM15, Sim03, Ste95, TSPSO06, WWC<sup>+</sup>15, ZN18, ZYL13, VW01]. **Solutions** [GL95a, Pen08, AW11, AHJ20, BGX06, CH03, DE98, DBG06, HM96, KR06, fLyHZ11, pLL07, Miy17, PPv95, SH19, Tia13]. **solvability** [XHZ03]. **Solvable** [Nab97]. **solve** [BG13, DV19, HXM19, KBF15, Liv04b, MZHB17, ZJ06]. **solver** [BvdV00, Bos19, CHV05, GKK04, KK13, KR06, LSS03, LM06, MNCT07, MRT02, Ols99, Pad99, PR11, RTN03, Rak99, RGG07, RGM17, SS02, Sol14, SKR08, TW20, TH19, Yot01]. **solvers** [AGG<sup>+</sup>16, AG99, ABK97, Ber01, BC02, BO13, FS09, HLM92, HLM<sup>+</sup>18, HS05, KKPS18, LR08, Lee16, Mey94, MSB18, NO04, Sch12, Sco99, Web18]. **solves** [Cha07, GP18]. **Solving** [BG05a, CCS19, EAA19, Nov03, WZZ18, AH02, AMMR17, AK99, AK00, Bai18b, BW19, BL20, BSI17, Cao04, CQ10, CWwS18, CC03, CNY05, DN12, EM11, FH94, HKKP07, HM14, JLW05, Jou94, KS15, KKMM12, KM92, LT09, LLV19, Liv14, MZ15, MLV05, NQ96, PM97, yPxP06, QACT18, RSR10, SL19, Shi02, Šmi19, Sto92, SHJC18, TT10, Var08, Vla00, WTZD10, mMP99, mM04, vGSZ15]. **Some** [BFG95, BM05a, CGK94, CZ02, HM14, LS06, Mar95, Sun06, Ber01, BB06, CDW06, DS10, ESC20, GL02, LV08, LHL07a, Peñ09, XZS15, dF20]. **SOR** [Che02]. **sorting** [Bra02]. **source** [TH19]. **Space** [Lee12, AT15, AMM04, AFK02, BPSH13, BMS17, BMS18, BV13, BC12, DHNR18, GB15, How18, ITS07, KV92, KLM15, RS18, RSR10, SY18b, WRW18]. **Space-angle-energy** [Lee12]. **spaces** [GH06, LV12, LZY11, LPW06, VSG09]. **Sparse** [CDG00, CDGmM04, Vas02, WWC<sup>+</sup>15, AB00, ADT19, BPS95, Bas00, Bau08, BF11a, BEH<sup>+</sup>17, BPS00, BV00, BG00, CS96, DCT18, DR03, EW13, FJP12, FSS18, GHO15, Gus03, HLM<sup>+</sup>18, HS15, How18, HS05, Huc98, ISZ09, JZ09, JK17, KKNY01, KKS19, KNY99, LLL97, LV98, LSS18, Mey94, NLZ11, NY03, NH98, RTN03, RK18, RS18, SZ99, SS02, VS17, WLBH12, WN18, XM17, vGSZ15]. **sparsity** [PPS20, Poi00]. **spatial** [BLP17, Bai18b, BL20]. **spatially** [OZB<sup>+</sup>18]. **SPD** [HLM<sup>+</sup>18, Mar16]. **Special** [Año08, CLR13, Fal06, LD08, VW01, Vas05, Ben08, Dat01, ES07, Mey94, Axe99]. **specially** [SHT11]. **specified** [fLyHZ11]. **Spectral** [ADT19, CDDSC12, MST16, SGSM15, mMvdV02, BSC20, BPS95, BFdP13, BM17, CQZ13, CNZ17, Cfx05, DGC19, LQY13, LNQ13, MS14, MC09, Par03, SK01, ZWQA18, DFF<sup>+</sup>18]. **spectrum** [Cao09, Lor14]. **Speed** [LY15]. **sphere** [ALM18, SL19]. **spheres** [WCZ15]. **Spline** [LPS16, EFG<sup>+</sup>18]. **splines** [LY15]. **Split** [HR05]. **Splitting** [HN05, LXX17, BGN07, Bai10, Bai12, BLP17, BL20, CJZ11, Che15, Gan99, HL16, HM16, KKR14, LHL07b, SB12, Wan18b, Wan18a, Wu15, wX15]. **spring** [EKS02]. **spring-mass** [EKS02]. **SQP** [AH02]. **Square** [DNR12, TY10, Mor09]. **squared**

[BES14]. **squares** [AB00, AK99, BDGL09, BW19, Bar02, BMM06, BGM09, BGM11, BGM<sup>+</sup>12, CYZ99, CNP96, CTP09, CP12, CP06, DE98, DH18, DW07, DWWQ13, EAA19, ES07, ES09a, ER96, FB95, GW00, GR05, KMM18, KLM<sup>+</sup>06, LVD02, pLL07, LZ12, LW17, LL97, MMN<sup>+</sup>10, MVK04, MLV05, Miy15, Pen08, Ren98, RLG12, Sto92, TDH<sup>+</sup>18, Tia13, WKS95, WWC<sup>+</sup>15, XXW19, ZHZ10, ZY19]. **squares-total** [ZY19]. **SSOR** [Bai16, GKY97, WH94]. **SSOR-like** [Bai16]. **Stability** [CJW06, DHS95, OCYM08, BV13, DGB<sup>+</sup>13, DS13a, EM11, KSB13, Lee10, NX03, Peñ03, Sau95, ST17b]. **stabilization** [AB12, AG19, DGB<sup>+</sup>13, DGRR11, Lay05]. **Stabilized** [BH07, Cao04, EWY03, KOV17, LMM00, RGM17]. **Stabilizing** [VW97]. **Stable** [OS01, ABK15, CGS20, Gem00, GMS18, LXW13, LSJ18, MCV01]. **Stably** [CC20]. **stage** [AMMP06, BM17, JS96, MPS96]. **Staggered** [DFE<sup>+</sup>18, OCYM08]. **standard** [Han13, LPV01]. **standard-form** [Han13]. **standpoint** [Voe92]. **start** [LW98]. **State** [DGRR11, BV13, BF11b, CD11, DK15, KV92, LCHH18, PSW14]. **state-constrained** [PSW14]. **state-space** [BV13, KV92]. **state-time** [DK15]. **static** [LNY15]. **stationary** [AMP99, BH16, LMM00, MM98, NX03, RBV08, ZW10]. **statistical** [DXW12, LX08, LT08]. **Steady** [HG00, BF11b]. **steady-state** [BF11b]. **Steepest** [De 13, NZ14, Shi02, Shi04]. **Stein** [BES14]. **stents** [GT19]. **step** [AV94, CWwS18, CK10, Li00, PBN05]. **stepping** [Lam12]. **steps** [Fas05, Shi02]. **Stewart** [HC05]. **Stiefel** [CZ15]. **Stieltjes** [AN94, FSS18]. **stiffness** [DKVB15]. **stochastic** [AD12, BMMR18, BDM<sup>+</sup>14, DMS17, GHR98, KKO20, Lee16, MM98, RBV08, ROA13, SGP14, TY10, YBZ19]. **Stokes** [ABM17, AB12, AK99, BKP02, CA99, CBE18, DFF<sup>+</sup>18, HM18, HFW01, KOV17, LR08, Lee10, LMM00, LD07, Ols99, PT17]. **Stokes-like** [Lee10]. **Strang** [ZCW11, CNP96, NR12]. **Strang-type** [ZCW11, NR12]. **strategies** [AGG<sup>+</sup>16, BE98, CDG00, DMM<sup>+</sup>08, GTY97, HSCTP05, Kap94, PM97, PGT14, SGSM15, SMSW00]. **strategy** [BBM<sup>+</sup>06, BM05b, BM06, GP18, Sco99, SY18a, WLBH12]. **strength** [OST10a]. **Strengthened** [AALS01, AM96, Bla03, Mar94]. **stress** [MM02]. **stretch** [TY10]. **stretched** [KM92, ZMO10]. **stretching** [AB00]. **Strong** [DGB<sup>+</sup>13, Bai18a, DS13a]. **strongly** [ABK15, KW99]. **structural** [GMTV16]. **structure** [BS01, FZwCW17, Hem96, HHLL16, PR16, Rja98, WRW18, WN05]. **structure-preserving** [HHLL16, PR16]. **Structured** [BGW05, BG05b, CCE<sup>+</sup>18, CCLN05, CNXY20, MCC<sup>+</sup>12, SLV04, Tyr05, CCLQ18, DDG99, Dia09, GLGR10, Gem00, HM18, LVD02, LYL15, MMC12, MVK04, MLV05, MP13, NR11, NR17, NR19, Poi00, Sun05, SHT11, Tre05, XXCB20]. **structures** [BCK05, BH04, EJK01]. **structuring** [SV11]. **Studies** [Zho06]. **study** [KKO20, LR08, RS18]. **sub** [CZ15, LPS15, SV11]. **sub-diffusion** [LPS15]. **sub-Stiefel** [CZ15]. **sub-structuring** [SV11]. **subclasses** [LHL07a]. **subdiffusion** [LPSV18]. **subdivision** [EGMS20]. **subdomain** [HLM92]. **subgraph** [BCZ12]. **submatrix** [KK02, fLyHZ11, pLL07, yPyHZ04]. **suboptimal** [HS15]. **subsets** [MPV06]. **Subspace** [CS02, DDG99, HMMP19, BMAA16, Bot13, CS97, Dam08, DK95, GLJ19, GZ16, GTI16, HCD15, HS11, HS14, HXM19, IP13, KS10, LS15, NR14a, RLG12, Sid97, SS07, ZS08]. **subspace-based** [GZ16]. **Subspace-by-subspace** [DDG99]. **subspaces** [BDK<sup>+</sup>15, DF01, IT05, MP16, PPv95, VS17].

**substructuring** [GMR05]. **Subtracting** [KJ12]. **successive** [BGN07, Gus03, WQ07]. **successive-overrelaxation** [BGN07]. **sufficient** [Pul08]. **sum** [AD12]. **summation** [FP05, KK16]. **Super** [CNSY05]. **Super-resolution** [CNSY05]. **Superconvergence** [FY01]. **superfast** [CHV05]. **Superlinear** [Kap05]. **superlinearly** [CQ10]. **superoptimal** [CJW06, CDDZ19]. **supersymmetric** [HCD15, WQ07]. **supply** [CPSM06]. **supported** [FP15]. **supports** [Pul09]. **Surfaces** [LD08]. **surveillance** [LNY15]. **survey** [CQZ13, SK01]. **SVD** [FJ05, GL18, SSB19, XQ09, ZN20]. **sweeping** [BPS15]. **switching** [MN00]. **Sylvester** [Bau08, BMAA16, BHHJ13, CLR01, CD11, DIPR19, DXW12, HJ18, JMPR18, MP15]. **Sylvester-observer** [CLR01, CD11]. **symbol** [DGM<sup>+</sup>16]. **symbols** [ESC18]. **Symmetric** [AIT05b, PN18, QXB09, Zha92, ARMW14, AG95, AK00, BGP97, BV00, Ber12, Bla02, BCS09, BPS13, BM05b, BM06, CL96, CRS05, Cao04, CS09, CS11, CDGmM04, CK01, CHV05, CS95, DS10, DJ09, EW13, EZ96, EN17, GB11, GM11, GMTV16, HKKP07, HR05, HES15, HS15, IK00, Jia17, KKPS18, Kap98, Kau07, LOY08, LQY13, LLLJ16, pLL07, Lu05, MVV08, MZ98, MST16, NSCTP05, Not02a, O'H14, PS11, PS00, RT02, RS18, RMM19, ST17b, Sei10, SS97, Sot13, VVM05b, WQZ09, WBL14, Wu15, XHZ03, XQ09, YLH11, ZZLX20, ZQW13, vN00]. **symmetrization** [GM11]. **symmetrizing** [Tyr92]. **symmetry** [Pen08, Szu14]. **symmetry-constrained** [Pen08]. **symplectic** [DS13a]. **synchronization** [CvG11]. **Synchronous** [EGMS20, BZ13]. **synthesis** [RGG07]. **system** [AALS01, BC09, Baz08, BB06, BvdV00, BGM<sup>+</sup>12, CJL08, GLOW04, GP18, HES15, ITS07, KLM<sup>+</sup>06, KRW08, LW04, MMN<sup>+</sup>10, SB12, SCD94, ZS08]. **systematic** [GLOW04]. **Systems** [Jia96, Nab97, ARSO14, AM96, Ada04, ACR<sup>+</sup>00, AMP99, AMMP06, AK00, AN03b, BPS15, BLP17, Bai18a, BG13, BBJ17, Bas00, Bat95, BGM09, BFPS10, BEH<sup>+</sup>17, BDdSM18, BMN05, BW17b, BEG18, BRT07, Bot13, BVD<sup>+</sup>18, BSI17, CS09, CS11, CDGmM04, CD11, CPSM06, CPS01, CSCTP05, CC03, CNY05, CK01, CA99, CHV05, CS95, CP06, DSV18, DDG99, DFHM20, DIPR19, DGRR11, Dob99, Dod11, DGM<sup>+</sup>16, DN12, EKS02, Ema12, EN17, EM11, FP15, FLM09, FM18, FH94, Gem00, GLJ19, GM11, GSS01, GTY97, GA18, GKY97, GS05, GD11, HLM<sup>+</sup>18, HKKP07, HS11, HN05, HW18, HSCTP05, JZ09, JK17, JYH17, JL09, Jou94, KBF15, KM99, KKR14, KKMM12, Lai97, LX08, LOY08, Lee19, LOS04, LJ04, LHL07b, LT09, LC13, LC05, LC07, LW03, Lot07, LSS18, MO11, MPR20, MS14, MW11]. **systems** [MZHB17, MCV01, Mey94, MPS96, MST16, NSCTP05, NCV05, PM97, PW13, QACT18, RK18, RS18, RVW98, SZ99, SS02, Sac05, SPD05, SP06, SP18, SS07, SH19, SMSW00, Ste95, SHZ20, Sun05, SL10, SHJC18, Szu14, TT10, TC10, VFdV13, VZ08, WD08, WM12, Wan18b, WTWG14, Wu15, ZW10, vGSZ15, HS14]. **t** [mM04, ZN20]. **T-SVD** [ZN20]. **tangential** [AN03a, AN07]. **technique** [HM03, IP13, NY03, WZZ18, XXCB20]. **techniques** [ACR<sup>+</sup>00, BB00, Bla94, CDDSC12, CS97, CFAM16, Dat01, ELV94, GKL18, GNR14, HK02, HS05, LM06, SZ99, Ver00, BFG<sup>+</sup>18]. **template** [LB17]. **Tensor** [BFG<sup>+</sup>18, DHW16, JYZ17, AT15, AK16, BG13, BMAA16, BH16, CLNY15, DW15, DH18, DQW15, DK15, DS13b, EAA19, FZwCW17, HKST12, HS18, HDIS18, HXM19, KK16, KKS19, KN14, LQY13, LCN13, LXX17, LLV19, LP16, Lun20, MK20,



OST10b, STZ12, SNZ20, WQZ09, XC13, ZQ12, ZQLX13, ZSKA18, ZQW13]. **tensors** [BW17a, CQZ13, CCLQ18, FMPS13, HCD15, HHQ13, KJ12, LLK14, LNQ13, Lun20, MCLM20, MCC<sup>+</sup>12, O'H14, PN18, WQ07, WN18, ZN20, ZZLX20, ZWQA18]. **term** [BDR17, Lai97, WM12]. **Termination** [Bir15]. **terms** [PPS20]. **tessellations** [DE06]. **test** [BC09, CCLQ18]. **tetrahedral** [Bla03]. **texture** [WSN19]. **th** [AEHV15, LZ09, LH17]. **their** [BKP02, CEQN07, KCC16, Kub92, LY15, LHW11, Tia13, Vöm10, Xie11]. **theorem** [Adi08]. **theorems** [BBP03, BKP02, CP99]. **Theoretical** [MO14, Gar04, MM18, Not05b, WF15]. **theories** [BDRS12, BNR18]. **theory** [AHJ20, ABK97, ABNP15, CCvG06, CQZ13, FT98, GW00, GL98, HM14, JL09, LQY13, LNQ13, Miy17, Pul16, VW97]. **thermal** [HK12]. **thermoacoustics** [SGSM15]. **thin** [The98]. **third** [ABBP10, BCR11, BCR14, Lun20, ZN20]. **third-order** [ABBP10, BCR11, BCR14, Lun20, ZN20]. **Thomas** [LV12]. **three** [AALS01, BO18, BB96, CGPV13, DM10, HMMP19, HW18, HDH19, Ibr02, KT08, Rja98, XZS15, YW12]. **three-by-three** [HDH19]. **three-dimensional** [AALS01, CGPV13, KT08, Rja98]. **three-parameter** [HMMP19]. **three-way** [Ibr02]. **threshold** [Saa94, SZ99]. **thresholding** [LM06]. **Tight** [Du19, OOO11]. **Tikhonov** [BCB14, BDR17, CRS05, CLTW11, Don05, FRR16, GNR14, LHW11]. **time** [AT15, ABK15, Bai12, BW17b, BMS17, BMS18, Bot13, CNT07, Cas11, CLNY15, CJL08, DV19, DFHM20, DGRR11, DK15, GZ16, GS07, HG00, HNR<sup>+</sup>18, Kem12, KK13, Lam12, LLS12, LGS12, LC13, LPSV18, MV13, MC09, RBV08, SL19, SY18b, TH19, WZZ18, ZYFG11, ZSWX13, vKVVW00]. **time-delay** [DGRR11, LC13]. **time-dependent** [CNT07, MV13, RBV08, ZYFG11]. **time-exact** [Bot13]. **time-fractional** [LPSV18]. **time-harmonic** [Bai12, GS07, LGS12, ZSWX13]. **time-independent** [CJL08]. **time-periodic** [KK13, WZZ18]. **times** [KVV10]. **tire** [SMSW00]. **Toeplitz** [BF19, AH02, BLP17, BG05a, BG05b, CNP96, CPS01, CGK05, CNY05, CHV05, CS95, Don10, DGM<sup>+</sup>16, ESC18, ESC20, Est09, FLM09, HR05, Hem96, HSCTP05, KN07, LC05, LC07, Lot07, LPS15, MS14, MVV08, NR11, NPR13, NR19, NCV05, PS11, SP18, WtFW15, dF20]. **Toeplitz-block** [SP18]. **Toeplitz-plus-Hankel** [KN07]. **Toeplitz-type** [NR19]. **tolerant** [RTN03]. **tool** [FM15, GS97]. **tools** [BBP03]. **topology** [HP04, Vas02]. **Total** [CLNY15, CTP09, FB95, GR05, LVD02, LW17, MVK04, MLV05, XXW19, ZZ15, ZY19]. **totally** [BP13, Hua12]. **Trace** [KCS11, BFM12]. **tracking** [LB17]. **transfer** [Don10, GVT03, KV92]. **transfers** [WTWG14]. **transform** [CW97, TW20]. **transformation** [FLPW01, HSY18, LL97, MC09, OOO16, VVM05a]. **transformations** [CHV05, Dax04, Han13, JO01]. **transformed** [MPR20, SNZ20]. **transforming** [Lin12]. **transforms** [FP05]. **transient** [KWS<sup>+</sup>18]. **transition** [BH16, LCN13]. **translation** [KY95]. **transmission** [GH01]. **transport** [AHJ20, Cha07, CGM11, HM14, Miy17, TC10]. **travel** [TH19]. **treatment** [JM10, MM09]. **tree** [Vöm12]. **Trees** [BMP11]. **Trefftz** [LLW09]. **triangle** [RSCTP15]. **Triangular** [Zho16, BNT94, BF11a, FP95a, GLGR10, KABH17, KKR14, LPS15, MMMM09, Mit10, RS10, SRGL13, SST18]. **Tri-diagonal** [NPR13, Zha92, BPS15, BF19, BM05b, BM06, EM11, Jia17, LLLJ16, NR19, XQ09,

YLH11]. **trigonometric** [CHV05, FP05]. **trigonometry** [Gus97, Gus98, Gus03]. **trilinear** [BG02]. **triplet** [LT11]. **triplets** [SS97]. **Truncated** [GKK04, KS15, GTI16, LHW11, NR14b, SSB19]. **truncation** [STZ12, Zho16]. **Trust** [Naz95, HS18]. **trust-region** [HS18]. **Tubes** [LD08]. **Tucker** [GL18, JYZ17]. **Tuned** [FK15, Mar16]. **tuning** [FLPW01]. **tunnel** [PM97]. **twisted** [XQ09]. **Two** [BM17, CSCTP05, CWwS18, DLVZ06, ES09b, rFS09, HH06, HM20, JS96, KM99, KV96, PBN05, XZS10, Yon96, Zha92, ZSWX13, Zik08, vRH05, AM96, AD12, AABHV18, AMMP06, AN13, BSI17, CGPV13, CGM01, CG15, DY04, DFNY08, DBG06, EN17, ELV94, FVZ05, FK15, FH94, GVT03, HHvR04, HVX16, HC20, HLL16, Ian16, JZ11, KWS<sup>+</sup>18, MCV01, MSV13, MP15, MPS96, NN10, NH06, Not10, NCV05, SY18a, VSG09, WM12, Wan18b, XSZ09, Yan18, YXZ13, ZJ06]. **two-by-two** [AN13, MP15, Wan18b]. **two-component** [NH06]. **two-dimensional** [DY04, XSZ09]. **Two-grid** [CSCTP05, ZSWX13, CGPV13, CG15, ELV94, FVZ05, HVX16, HC20, NN10, Not10]. **Two-level** [DLVZ06, HH06, HM20, KM99, KV96, XZS10, vRH05, CGM01, EN17, GVT03, HHvR04, KWS<sup>+</sup>18, NCV05, VSG09, YXZ13, Zik08]. **two-parameter** [Yan18]. **two-phase** [HLL16, NH06, SY18a]. **two-player** [AD12]. **two-real-parameter** [MSV13]. **Two-sided** [Zik08, FK15, JZ11, ZJ06]. **Two-stage** [BM17, JS96, AMMP06, MPS96]. **Two-step** [CWwS18, PBN05]. **two-term** [WM12]. **Two-Way** [Zha92, MCV01]. **type** [Aih20, ABBP10, AABHV18, BR07, Baz08, Ben08, Cao08, CWwS18, CWS97, EG16, FG02, GKK04, HM14, KKNY01, KCV09, LHLS07, LT13, MP15, NR12, NR19, Pas19, SCD94, Vla00, ZCW11]. **typical** [XZS15]. **UK£30.00** [Nab97]. **unbalanced** [FLM09]. **uncertain** [DGB<sup>+</sup>13, DGRR11]. **unconstrained** [Ris19]. **underdetermined** [QACT18]. **Unified** [Axe15]. **Uniform** [BLZ08, Lee10, HMS99, XC13]. **uniformization** [Sid11]. **unifying** [Aih20]. **unilevel** [Tre13]. **uniqueness** [LLNV17]. **unit** [WCZ15]. **unitarily** [YL08]. **unitary** [DPRV19, JR94, Lor14, Mat96, MCLM20]. **unity** [BDV06]. **University** [Nab97]. **unreduced** [MST16]. **unsteady** [OC04]. **unstructured** [Cho03, KV96, Mav01]. **Unsymmetric** [Jia96, EM11, GR04, HS05, MS14]. **untangling** [GKK04]. **unwrapping** [DY04]. **update** [ZZ15]. **updates** [BDdSM18, DEM18, TT10, Tyr92, Zho06]. **Updating** [LB17]. **Upper** [Mar94, BNT94, Du19, GX14]. **US\$49.95** [Nab97]. **Use** [HKST12, Bla02, BDS94, FH94, HS15, Yan04]. **used** [KV15]. **users** [GB15]. **Using** [BBP03, GB15, Kap02, AW11, AMR18, AFK02, BB16, BP13, BTT13, BC02, Buc11, CKW02, CS18, CNSY05, CHV05, DK15, GP18, HDIS18, ISZ09, KMMR10, KRW08, Kra06, Laz16, MGF<sup>+</sup>02, NG15, NX03, OZB<sup>+</sup>18, OOO11, Özb13, PDV05, PH19, Pul09, RTN03, RMM19, Sim03, SNZ20, VY14, VS17, vNR07]. **usual** [BG05b]. **Uzawa** [Cao04, HW18, HDH19, LRG017, MZ15, SX15]. **validation** [CH03, OOO16]. **value** [AFSCSU14, BBP03, BWN05, CL13, Che15, JK18, LHW11, LT13, MSB18, NR14b, Nov03, PBN05, PH19, RT99, SNZ20, ZSKA18]. **valued** [AK00, DGM<sup>+</sup>16, MZHB17, Xie11]. **values** [FP95a, GR99, LHLS07, THC09, Tre05, Vöm10]. **Variable** [AV94, DHR<sup>+</sup>04, GVT03, GR05, RS07, SX15, VS17]. **Variable-step** [AV94]. **variant** [JYH17, ST19, Sim99, YBZ19, Zha18]. **variants** [VY14, Wu15]. **variation**

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