# A Bibliography of Publications of Yousef Saad

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## Abstract

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## Title word cross-reference

$3D$ [GHS10]. $\exp(-\tau A)b$ [SSS10]. $f(A)b$ [CAS11]. $ILU$ [LSC03]. $ILUS$ [CS97c]. $k$ [CrFS09]. $LU$ [CS97c, LSS03b, Saa94d]. $\mathrm{tr}(f(A))$ [CS18, UCS17].

**'02** [AGPS03].

**1982** [KR83]. **1988** [BTS+89]. **1992** [RRV93]. **1993** [BCEP94].

**20th** [Sv00, BW01].

**5** [WS93].

**Abaffy** [Saa92h]. **ABS** [Saa92h]. **Abstract** [SS85c]. **accelerated** [LS13b]. **accelerating** [KKPS18]. **Acceleration** [BRZS18, KS87, Saa84b, BCRZS22, CS99, rFS09, HTZ+24, KS92, ZSTC06a]. **acceptors** [SKBS88]. **acoustic** [EGMS20]. **Adapted** [FSUS20]. **ADI** [MS92, MS93]. **advances** [GGL94]. **algebra** [DS91a, RRV93]. **Algebraic** [LS17, GHS10, LSS03a, SS02b, SST04, SSC04, XLS16]. **Algorithm** [DS91b, LXV+16, Saa85a, SYEG00, XAKS23, ZS07, ESS86, GS87, GS88b, GS88a, GS89b, Ruh94, Saa74c, Saa80a, Saa82a, Saa86c, SS86c, SL86, SL88, SW93, Saa93a, SW96b, XAKS24, Saa91a]. **algorithmes** [Saa74b]. **Algorithms** [AGPS03, ASSS11, BDG+10, CS92, CS85a, CS86, CTJ+95, CTSZ07, CZC+09, LXES19, SS85g, Saa92a, Saa92h, Saa94a, Saa94b, Saa06, BGSS14, BS94, CS93, CS96, FRSY96, GS94, KS87, Saa90b, Saa94e, US19, VS14]. **Alternating** [JSS87, SS85c]. **amplitude** [WGSC18]. **analogue** [CJ04]. **Analysis** [BSS09, BSS10, BW01, Saa92b, Saa94b,

Saa97, Saa16, BJR+09, Saa94e, Saa00b]. **analytics** [KMB+18]. **Anderson** [BRZS18, BCRZS22]. **Anderson-type** [BCRZS22]. **angle** [LSS86, SL86, SL88]. **Application** [CS12, CTWS94]. **Applications** [AGPS03, ASSS11, BKS08, BDG+10, FSUS20, Saa06, SrFS08, BJR+09, CSS02, CCS10, CS98a, CS85b, Saa83a, Saa90b, Saa90d, SAD+00, SS11, SSC04]. **approach** [GS90a, SLX+22]. **approaches** [KKPS18]. **Approximate** [BS02b, BS02c, CS94, CS97d, CS98b, Saa03a, BS02a, CrFS09, CS97f, USS17a]. **Approximating** [LSY16]. **Approximation** [CS09b, FSUS20, GS92a, XAKS23, BSS09, CCE+18, CS97a, CS08, EGMS20, GS90b, GS90a, GS92b, GSS03, ITS07, Saa84a, Saa86b, Saa86e, SS11, UMS17, XAKS24]. **Approximations** [CAS11, Saa92b, GHS10, US19]. **Architectures** [IS85, IS86b, IS86a, SS86b, GS89d, SS89b]. **arising** [Saa84a, Saa86b, Saa86e, SMSW00]. **ARMS** [SS02b, SST04]. **Arnoldi** [BSS10, DS91b, Saa80c, SSW98]. **array** [SSS85]. **Assignment** [DS91b, Saa88d]. **Associated** [DS91b]. **Atom** [TZA+06]. **Augmented** [Saa97, CS97b]. **Automated** [KXS18]. **automatic** [GS94, Saa92a].

**Banded** [SS85e, SS87]. **Based** [BS05b, HS06, KS07, SZ99b, SrFS08, HTZ+24, JSS07, LXS16, MOKS12, SW93, SW96b]. **Basic** [PSWF93, Saa90a]. **basis** [CTS93, CTS94]. **Benchmark** [SW88b, SW88a, SW90]. **Beresford** [Saa83c]. **between** [BS02c]. **Beyond** [KXS18]. **BILUM** [SZ99a]. **BILUTM** [SZ99b]. **biorthogonalization** [Saa80a, Saa82a]. **bisection** [CrFS09]. **Block** [LS03, LSS03b, MS93, SS80, SZ99a, SZ99b, Saa03a, ZS08, CS97d, GS87, GS88b, GS88a, GS89b, Saa80b, SZ01, Saa23, MS92]. **Block-ADI** [MS93, MS92]. **block-partitioned** [CS97d]. **Boeing** [SW89]. **Book** [Cha96, Saa83c, Saa95]. **bordered** [CS85b]. **Bounds** [Saa94b, Saa94e]. **brief** [Saa20]. **Brownian** [ACSS12]. **Bulk** [TZA+06].

**calculation** [ZSTC06b]. **Calculations** [ÖBSC03, SCS10, AJT+07, CTS93, CTS94, JKSC99, SSC+96, ZSTC06a]. **Carolina** [BCEP94]. **Centenary** [BCEP94]. **century** [Sv00, BW01]. **CFD** [CSW00, SST04]. **CG** [CLS24]. **Chain** [PSS92, Saa91c]. **chains** [BGB+10, RGSB08]. **charge** [BSTC05]. **charging** [RGSB08]. **Chebyshev** [ESS86, Saa84b, XAKS23, XAKS24, ZSTC06a, ZSTC06b, ZS07, ZCS14]. **Chebyshev-filtered** [ZSTC06a, ZSTC06b, ZCS14]. **class** [HTZ+24]. **classes** [rFS09]. **clusters** [CTJ+95, JTD+94]. **CM** [PSWF93, WS93]. **CM-5** [WS93, PSWF93]. **Coarse** [MS07a]. **Coarse-Grid** [MS07a]. **Coarsening** [MS07b, CSZ22, OKLS15, US19]. **codes** [GS81, GS83, JKSC99, UMS17]. **Communication** [SS85a, Saa85a, SS85d, Saa86c, SS86b, SM95, SS89a, SS89b]. **Community** [CS12]. **Compensation** [MOKS12]. **Complement** [DKXS18, LS05b, SS99a, GHS10, KLS16, LXS16, Saa07, XKL+22, ZXS21]. **complement-based** [LXS16]. **Complements** [BS05a]. **Complex** [PS85, PS87, Ruh94, Saa83a, Saa84a, Saa86b, Saa86e, Saa87c]. **complexities** [GS89d]. **Complexity** [ISS84, ISS86, Saa85a, Saa86c]. **Component** [JSS07]. **Component-based** [JSS07]. **Computation** [BS05a, BKS08, RRV93, Saa74a, XLS18, LLCS02, dlGGS+05]. **Computational** [PS20, SM95, Fit86]. **Computations** [BTS+89, FWPS92, PSWF93, SW88a, Saa94a, SW88b, SW90, Saa90a]. **Computers** [FWPS92, SS02a, AS88, AS89]. **Computing**

[BSTC05, CAS11, Saa92e, Saa95, SSS10, TS11, XS16, XAKS23, ACSS12, CS18, CSZ22, PS07, Saa80c, SLX+22, TS12, XAKS24]. **concepts** [Saa24]. **Concurrent** [Saa95]. **condition** [Saa84a, Saa86b, Saa86e]. **Conference** [BCEP94, Fit86, KR83, RRV93]. **Confined** [ÖBSC03]. **Conjugate** [SS85g, SS85f, SS86a, SYEG00, Saa06, HTZ+24, Saa85c]. **Conquer** [LS13a]. **consistent** [ZSTC06a, ZSTC06b]. **Constructed** [BS05b]. **construction** [CrFS09]. **continuation** [CS85b]. **contour** [KKPS18, LXSdH20]. **control** [DS91a, Saa90d]. **Convergence** [BS94, Saa80b]. **convergent** [BS89]. **convex** [BSS09]. **Cornelius** [BCEP94]. **correcting** [UMS17]. **Correction** [LS17, PS07, ZXS21]. **corrections** [LXS16, XLS16]. **counts** [DPS16, NPS16]. **coupled** [KS92]. **coupling** [dlGGS+05]. **Crout** [LSC03, LS05a]. **cubic** [SKBS88]. **Cucheb** [AKS17]. **cyclic** [GS87, GS88b, GS88a, GS89b].

**dans** [Saa74b]. **Data** [SS85a, SS85d, SS86b, SS89a, SS89b, Saa94a, SM95, CrFS09, KMB+18, SS14]. **Davidson** [SSW98, SS98b, ZS07]. **December** [BCEP94]. **Decomposition** [CS92, HS06, KXS18, LS17, Saa94a, TS11, CS93, CS96, KKPS18, LXS16, PS07, Saa92a, SSZ98, UMS17]. **decoupling** [KS87]. **Definite** [SS80, VSS14]. **Deflated** [CS97b, SYEG00]. **deflation** [Saa88d]. **Dense** [CS12, ISS84, ISS86, KMB+18]. **Dense-Linear-System** [ISS86]. **Densities** [XLS18, BSTC05, LSY16, USS17a]. **Density** [BKS08, BSK+03, RGSB08, SS11, dlGGS+05]. **density-functional** [RGSB08]. **dependent** [BSK+03, RGSB08, dlGGS+05]. **Design** [Saa87b, SW95, SW96a, Saa87a, SMSW00]. **Detection** [CS12]. **Development** [Saa22]. **Developments** [BW01]. **Diagonal** [SZ99c, Saa05, TS11, BKS07, TS12]. **diagonalization** [JKSC99, ZCS14]. **diatomic** [CTWS94]. **dictionary** [USS17b]. **Dielectric** [ÖBSC03]. **difference** [CTS93, CTS94, CTWS94, JTD+94, SSS85]. **Differential** [CSS85, CSS87, SS81]. **Dimension** [CS09a, KCS09, KCS11, Saa83b]. **dimensional** [CrFS09, LSS86, LXSdH20, SS14]. **Dimensionality** [KS07, NBS10, SrFS08]. **Dirac** [SS11]. **Direct** [SS85e, SS87, SW96b]. **Direction** [SS85c, JSS87]. **disjoint** [Saa83d]. **Distributed** [MS94, Saa92e, Saa94a, SM95, SS98a, SS99a, SS99c, Saa07]. **Distributions** [CS14]. **Divide** [LS13a]. **Domain** [CS92, KXS18, KKPS18, LS17, Saa94a, SSZ98, SZ99b, TS11, CS93, CS96, LXS16, PS07, Saa92a]. **Domain-Based** [SZ99b]. **Domain-Decomposition-Type** [TS11]. **Dominance** [Saa05]. **d'origine** [Saa74b]. **DQGMRES** [SW93, SW96b]. **dual** [Saa92d, Saa94d]. **Dynamic** [SSW98]. **dynamics** [ACSS12, CJWS96, JTD+94].

**E.** [Saa92h]. **Editorial** [Saa00a, BGSS14]. **Effective** [CS09a]. **Efficient** [AJT+07, DPS16, GS90b, GS92b, GS92a, NPS16, dlGGS+05, LSS86]. **eigendecomposition** [SS14]. **eigenelements** [Saa80c]. **Eigenfaces** [SrFS08]. **Eigenproblems** [ZS07, KCS09, KCS11, SGSM15]. **Eigensolutions** [Saa85b]. **Eigenvalue** [BSS10, rFS12, IS85, IS86b, LXV+16, PS89, Ruh94, Saa83c, Saa84b, Saa11b, Saa16, SSF93, XLS18, DPS16, EGMS20, KLS16, KKPS18, NPS16, Saa82b, Saa83e, Saa89b, Saa92g, SSC+96, Saa23, SSF95, SS98b, WSS98, ZS08]. **Eigenvalues** [BS05a, Saa74a, LXES19]. **Electronic** [JKSC99, SCS10, AJT+07, CTS93, CTS94, CKV+03, CTSZ07, CZC+09, SSC+96]. **element** [KSS03, KSSG04]. **Elimination**

[Saa85a, Saa86a, Saa96, Saa86c, Saa86d, Saa92c]. **Elliptic** [CSS85, CSS87, GS87, GS88b, GS88a, GS89b, GS89d, KS92, SS81, SSS85]. **Engineering** [PS20]. **Enhanced** [SS99b, SZ01]. **Environments** [Saa87b, Saa92e, CS99, Saa87a]. **equation** [KSS03, KSSG04, LSS86, LXSdH20, SL86, SL88, ZCS14]. **Equations** [CSS85, GS92a, MS92, MS93, BCRZS22, BS87, BS90, BS91, CSS87, ESS86, GS87, GS88b, GS88a, GS89b, GS89c, GS89a, GS90b, GS90a, GS92b, GS81, GS83, PS07, SS81, SSS85, Saa90c, Saa20]. **Eric** [Saa95]. **Error** [Saa94b, CS18, Saa94e, UMS17]. **estimate** [CS18]. **Estimation** [UCS17, DPS16, NPS16, USS17a]. **estimator** [BKS07]. **Études** [Saa74b]. **Evolution** [TZA+06, CTSZ07]. **Evolving** [Saa16]. **EVSL** [LXES19]. **Exact** [Saa03a]. **examples** [CLS24]. **excited** [BGB+10, SKBS88]. **Experimental** [CS97e]. **exploration** [Fit86]. **Exponential** [Saa92b, CS98a]. **Extended** [SS85c]. **Extraction** [CS12]. **Extreme** [rFS12].

**F** [Saa95]. **Face** [KS05a]. **faces** [KS05a]. **Factored** [BS02b, BS02c, BS02a]. **Factorization** [HS06, LS05a, Saa92d, Saa94d]. **Factorizations** [MOKS12, XAKS23, CCS10, XAKS24]. **Fast** [CrFS09, USS17a, UCS17, VS14, XLS18, GS87, GS88b, GS88a, GS89b, GS89d, US19]. **February** [GGL94]. **feedback** [Saa88d]. **Fermi** [SS11]. **few** [Saa94b, Saa94e]. **field** [ZSTC06a, ZSTC06b]. **Filtered** [BKS08, rFS12, Saa06, AKS17, ZSTC06a, ZSTC06b, ZCS14]. **Filtering** [KXS18, LXV+16]. **Filters** [XS16]. **Finding** [Saa03a]. **finite** [CTS93, CTS94, CTWS94, JTD+94, KSS03, KSSG04]. **finite-difference** [CTWS94]. **finite-difference-pseudopotential** [JTD+94]. **first** [AJT+07]. **first-principles** [AJT+07]. **Five** [Saa24]. **flexible** [Saa91a, Saa93a]. **flow** [WGSC18]. **flows** [LLCS02]. **fMRI** [SS14]. **forces** [CJWS96]. **format** [CS97c]. **free** [ZCS14]. **frequency** [LXSdH20]. **Function** [XS17, SS11]. **Functional** [BKS08, BSK+03, RGSB08, SS11, dlGGS+05]. **Functions** [FSUS20]. **Further** [BSS10, Saa00b].

**Gaussian** [CS14, Saa85a, Saa86c, Saa86a, Saa86d]. **General** [CS92, CS94, LSC03, Saa94b, Saa96, SZ99a, SZ99b, SS99a, SS02a, CS93, CS96, Saa92a, Saa92c, Saa94c, Saa94e, SSZ98, SZ99c, SZ01, SS02b, Saa07, XKL+22, ZXS20, ZXS21]. **Generalized** [XLS18, SS86c]. **Globally** [BS89]. **GMRES** [Saa91a, CLS24, SS86c, Saa93a, YXS21]. **GPU** [AKS17, LS13b]. **GPU-accelerated** [LS13b]. **Gradient** [SS85g, SS85f, SS86a, SYEG00, Saa85c]. **Gradient-like** [SS85g]. **Gram** [Saa86e]. **Graph** [CSZ22, FSUS20, HS06, SrFS08, VSS14, CrFS09, GS94, OKLS15]. **Graph-Based** [SrFS08]. **Greedy** [MS07b, MS07a]. **Grid** [MS07a]. **Guest** [BGSS14].

**Hand** [Saa87d, KMB+18]. **harmonic** [CJ04]. **Harnessing** [BGB+10]. **Harwell** [SW89]. **Havsbad** [KR83]. **Held** [KR83, GGL94]. **Helmholtz** [KSS03, KSSG04, LXSdH20, OKS10]. **Hermitian** [LXV+16, Saa74a]. **Heuristic** [GS94]. **Hierarchical** [DKXS18, HS06]. **hierarchy** [CCE+18]. **High** [CSW00, CrFS09, LXSdH20, SS14]. **high-dimensional** [SS14]. **high-frequency** [LXSdH20]. **High-order** [CSW00]. **Higher** [CTWS94, SKBS88, JTD+94]. **Higher-order** [CTWS94, JTD+94]. **Highly** [Saa94c]. **Historical** [BW01, Saa20].

**Houston** [Fit86]. **Hybrid** [BS87, BS90, ESS86, GHS10]. **hydrodynamic** [ACSS12]. **Hypercube** [CS85a, CSS85, CS86, CSS87]. **Hypercubes** [SS85a, SS85d, SS85b, Saa86a, SS88, Saa86d, SS89a].

**III** [Ruh94]. **ILU** [CSW00, CS97e, HS06, LS05a, MS94, OKLS15, Saa92d, Saa92c, Saa96, SZ99a, SZ99c, SZ01, Saa03a, Saa05]. **ILUM** [Saa92c, Saa96]. **ILUs** [BS02c, BS05b]. **ILUT** [Saa92d, Saa94d, SZ99b]. **IMA** [GGL94]. **Impact** [IS85, IS86b, IS86a]. **Implementation** [LXES19, AKS17, BSK+03]. **Implementations** [SS85f, SS86a, Saa91b, Saa93b]. **Implicitly** [SSW98]. **Improving** [USS17b]. **incoherence** [USS17b]. **Incomplete** [LS06, MOKS12, CCS10, CS97c, Saa92d, SW93, Saa94d, SW96b]. **Incremental** [CCS10]. **Indefinite** [DKXS18, XS17, CS97e, Saa83d, Saa84c, Saa88a, Saa88b, Saa88c]. **Indexing** [SrFS08, VS14]. **industrial** [SAD+00]. **Inexact** [WSS98]. **Initio** [ÖBSC03, JTD+94]. **inner** [Saa91a, Saa93a]. **inner-outer** [Saa91a, Saa93a]. **Institute** [BTS+89]. **integration** [KKPS18, LXSdH20]. **interactions** [ACSS12]. **Interior** [rFS12]. **International** [BCEP94]. **interval** [DPS16, NPS16]. **intervals** [Saa83d]. **Invariant** [BKS08, PS07]. **Inverse** [BS02b, BS05b, CS94, CS98b, TS11, BS02a, CS97d, CS97f, TS12]. **Inverse-Based** [BS05b]. **Inverses** [BS02c]. **Invert** [PS87, PS85]. **Iron** [TZA+06]. **irregularly** [FRSY96]. **issue** [ASSS11, BDG+10]. **Iteration** [Saa16, ZSTC06b, ZCS14]. **Iterations** [BKS08, CS98b, Saa00b]. **Iterative** [BTS+89, CS85b, GS81, GS83, SS81, Saa83d, SM95, Sv00, Saa03b, Saa20, CSS02, GGL94, JSS07, KMB+18, LS13b, SW94, SW95, SW96a, SKL+97, Saa01, Saa24, Cha96].

**J.** [Saa92h]. **Jacobi** [SS98b, Saa23]. **January** [Fit86]. **journey** [Saa20].

**Kent** [RRV93]. **Kernels** [SM95]. **key** [Saa24]. **kit** [Saa90a]. **Kohn** [SCS12, ZCS14]. **Krylov** [ACSS12, BSS09, BS87, BS89, BS90, BS94, CS99, CCSY98, CS97b, CS14, ESS86, GS92b, GS92a, Ruh94, Saa81, Saa84c, Saa89a, Saa90b, Saa90d, Saa91b, Saa92b, Saa92e, Saa92f, Saa93b, Saa97, Saa98, Saa11a, Saa22, ZS08].

**Laguerre** [SSS10]. **Lanczos** [BCEP94, AKS17, BGB+10, BSTC05, BKS08, CrFS09, CS09a, CS18, rFS12, LXV+16, RGSB08, Saa80a, Saa80b, Saa82a, Saa87d, Saa94b, Saa94e, UCS17]. **Lanczos-Type** [Saa94b, Saa94e]. **Large** [BKS08, BTS+89, DS91b, IS86a, LS06, ÖBSC03, PS89, Saa82b, Saa85b, Saa11b, SSF93, ZS07, DS91a, LSY16, Saa74a, Saa80a, Saa80c, Saa81, Saa82a, Saa83b, Saa83e, Saa89b, Saa90c, Saa92g, SSC+96, SAD+00, SSF95, UMS17, WSS98, ZS08]. **Latent** [SrFS08, VS14]. **learned** [USS17b]. **learning** [CSZ22]. **Least** [CAS11, LS06, Saa83a, Saa87c, XS16, Saa84a, Saa86b, Saa86e]. **Least-Squares** [LS06, XS16]. **level** [SSZ98, SZ99c, SZ01]. **Library** [LXES19, SW94, SW95, SW96a, SKL+97]. **Like** [DS91b, SS85g]. **Linear** [Cha96, DKXS18, ITS07, ISS84, ISS86, MS92, MS93, MS94, SS85g, SS85e, SS87, SS98a, SZ99a, SS99a, SS99c, SS02a, XS17, AS88, DS91a, ESS86, GS81, GS83, GSS03, JSS07, KMB+18, LS13b, OKS10, RRV93, Saa81, Saa83d, Saa84c, SSS85, SS86c, Saa87c, Saa88d, Saa88a, Saa88b, Saa88c, SSZ98, SZ99c, SS99b, Sv00, SZ01, Saa01, SS02b, Saa03b, Saa07, Saa20, Saa24,

SMSW00, ZXS20, ZXS21]. **liquid** [LLCS02]. **localized** [CJWS96]. **Low** [CS09b, DKXS18, LS13a, LS17, UMS17, CS08, LXS16, XLS16, XKL+22, ZXS20, ZXS21]. **Low-Rank** [LS13a, LS17, LXS16, XLS16, XKL+22, ZXS20, ZXS21]. **LR** [Saa74b]. **LU** [CCS10]. **Lyapunov** [Saa90c].

**machine** [CSZ22]. **Magnetism** [TZA+06]. **March** [GGL94, KR83, RRV93]. **Markov** [PSS92, Saa91c]. **Massively** [FWPS92]. **Material** [SÖS+00]. **Materials** [PS20, SCS10]. **mathematical** [Fit86, Fit86]. **Matrices** [CS92, CS94, LSC03, LS13a, ÖBSC03, PS87, Saa85b, SW89, Saa96, SZ99b, Saa16, BSS09, CS93, CS96, CS97d, CS97e, LS05a, LSY16, PS85, Ruh94, Saa74a, Saa80c, Saa84a, Saa86b, Saa86e, Saa92c, Saa94c, UMS17, XLS16, XKL+22]. **Matrix** [AGPS03, ASSS11, AEKS90, BDG+10, FSUS20, FWPS92, IS86a, OKLS15, PSWF93, SW88a, Saa92b, Saa94a, SW94, TS11, XAKS23, BJR+09, BKS07, BGSS14, CCE+18, CS98a, Saa83a, Saa83b, SW88b, Saa90a, SW95, SW96a, SAD+00, TS12, USS17a, US19, VSS14, XAKS24, dlGGS+05, KR83]. **Memory** [Saa87b, SM95, Saa87a]. **Message** [Saa87b, Saa87a, WS93]. **Method** [SS80, Saa87d, CTS93, CTS94, CTWS94, CS18, EGMS20, JTD+94, KSS03, KSSG04, LSS86, Saa80c, Saa85c, Saa23, SCS12, TS12, ZS08, ZCS14]. **Methods** [BTS+89, Cha96, CCSY98, CS14, DS91b, GS92a, LS17, PSS92, SS81, SS85c, SS85e, SS85f, SS86a, Saa87b, SS87, Saa91b, Saa92e, Saa93b, Saa97, SCS10, Saa11a, Saa11b, Saa22, SSW98, SÖS+00, TS11, ACSS12, BSS09, BS87, BS89, BS90, BS91, CSS02, CS85b, rFS09, Fit86, GS90b, GS92b, GGL94, JSS87, JSS07, KS92, KCS09, KCS11, Saa80a, Saa80b, Saa81, Saa82a, Saa82b, Saa83d, Saa83b, Saa83e, Saa84c, Saa87a, Saa88d, Saa89a, Saa90b, Saa90d, Saa91c, Saa92g, Saa92f, Saa98, Saa01, Saa03b, Saa20, Saa24, SS98b]. **minimal** [SS86c, SW93, SW96b]. **minimum** [Saa00b]. **Minneapolis** [BTS+89, GGL94]. **Minnesota** [BTS+89, GGL94]. **MIQR** [LS06]. **Modeling** [PSS92, Fit86]. **models** [Saa91c]. **modern** [CSS02, SSC04]. **modes** [SLX+22]. **Modification** [MOKS12]. **Modified** [CS99, Saa84a, Saa86b]. **module** [SW94, SW95, SW96a]. **Molecular** [CJWS96, BGB+10, JTD+94]. **molecular-dynamics** [JTD+94]. **molecules** [CTWS94]. **moment** [Saa84a, Saa86b]. **Multi** [Saa96, Saa92c, SSZ98, SZ99c, SZ01]. **Multi-Elimination** [Saa96, Saa92c]. **multi-level** [SSZ98, SZ99c, SZ01]. **Multicolor** [ZXS20, SS99b]. **Multielimination** [SZ99a]. **Multigrid** [CS85a, CS86]. **Multilevel** [BS05b, KXS18, LS06, SZ99a, SZ99b, Saa05, SrFS08, LSS03a, OKLS15, SS02b, SST04, SSC04, US19, XLS16, XKL+22]. **multiple** [KMB+18]. **Multiprocessor** [CS85a, CSS85, CS86, ISS84, ISS86, CSS87]. **Multiprocessors** [SS85c, Saa85a, JSS87, SS81, Saa86c]. **multisecant** [rFS09]. **Multistage** [HS06]. **Multivariate** [CS14].

**N** [Saa83c]. **nanocrystals** [CTSZ07, CZC+09]. **Neighborhood** [KS07, KS05b]. **News** [Cha96, Saa95]. **Newton** [BS94, WSS98]. **nlTGCR** [HTZ+24]. **NN** [CrFS09]. **Non** [SS99c, SLX+22]. **non-perturbative** [SLX+22]. **Non-standard** [SS99c]. **nonlinear** [BCRZS22, BS87, BS89, BS90, BS91, BS94, EGMS20, rFS09, HTZ+24, KS92, SGSM15]. **Nonsymmetric** [LSS03b, MS92, MS93, MS07b, Saa84b, SS85g, Saa85b, ESS86, Ruh94, Saa83a, Saa84c, SS86c, Saa87c, Saa88a, Saa88b, Saa88c, Saa89b]. **normal** [BSS09, SLX+22]. **North** [BCEP94]. **null**

[ITS07]. **null-space** [ITS07]. **number** [Saa86e]. **numbers** [Saa84a, Saa86b]. **Numerical** [BW01, PSS92, RRV93, Saa83b, Saa87b, Saa89b, Saa90c, Saa92g, SCS10, Saa11b, Saa87a, Saa91c].

**oblique** [Saa80a, Saa82a]. **Observer** [DS91b]. **October** [BTS+89]. **ODE** [GS81, GS83]. **Ohio** [RRV93]. **Operator** [Saa92b, CS98a]. **OPRA** [KS05a]. **OPRA-faces** [KS05a]. **Optimal** [CS09b, CS08]. **Optimization** [NBS10, NBS12, BSS09, KCS09, KCS11]. **order** [CSW00, CTWS94, JTD+94]. **Origin** [Saa22, Saa74c]. **Orthogonal** [CS09b, KS05b, KS07, CS08, Saa83d]. **orthogonalization** [SW93, SW96b]. **other** [Saa80a, Saa82a]. **outer** [Saa91a, Saa93a]. **Overlapping** [CS92, CS93, CS96, LS05b]. **overview** [Saa90d].

**P_SPARSLIB** [SW94, SW95, SW96a, SKL+97]. **Package** [SW88a, SS02a, SW88b, SW90, XKL+22]. **papers** [GGL94]. **Parabolic** [GS92a, GS89c, GS89a, GS90b, GS90a, GS92b]. **Parallel** [BDG+10, BGSS14, BSK+03, CSS02, CS97f, FWPS92, FRSY96, GS90a, HS06, IS85, IS86b, IS86a, SS85e, SS85f, SS86b, SS86a, Saa87b, SS87, SW94, SS99c, Saa01, SS02a, SÖS+00, XAKS23, ZSTC06a, AS88, AS89, CS99, GS87, GS88b, GS88a, GS89b, GS89c, GS89a, GS89d, GHS10, LSS03a, LLCS02, SS80, Saa87a, SS89b, Saa92c, Saa94c, SW95, SW96a, SKL+97, SS99b, SSC04, XKL+22, XAKS24, AGPS03, ASSS11]. **parGeMSLR** [XKL+22]. **Parlett** [Saa83c]. **pARMS** [LSS03a, SS02a]. **Partial** [CSS85, DS91b, Saa85b, XS16, XAKS23, CSS87, Saa88d, XAKS24]. **partially** [BSTC05]. **Particle** [LLCS02]. **partitioned** [CS97d]. **partitioning** [GS94, LLCS02, Saa74a, VSS14]. **Passing** [Saa87b, Saa87a, WS93]. **Pencils** [KR83, XAKS23, XAKS24]. **Performance** [WS93]. **periodic** [AJT+07]. **perturbative** [SLX+22]. **Phase** [WGSC18]. **physical** [CSS02, SSC04]. **Pite** [KR83]. **Pivoting** [BS02b, BS02a, LS05a]. **plane** [JKSC99, Saa83a, Saa84a, Saa86b, Saa86e, Saa87c]. **plane-wave** [JKSC99]. **planets** [SLX+22]. **PMAA** [AGPS03]. **PMAA'10** [ASSS11]. **Point** [LS03, LSS03b]. **pole** [Saa88d]. **Polynomial** [BKS08, CAS11, FSUS20, LXV+16, YXS21, GS90b, LXSdH20, Saa85c]. **polynomials** [Saa83d, Saa83a, Saa87c, SSS10]. **portable** [SKL+97]. **Positive** [SS80, VSS14]. **posteriori** [CS18]. **potential** [CTS93, CTS94]. **power** [ZXS21]. **Practical** [BTS+89, Saa84c, Saa85c, BTS+89]. **Preconditioned** [CCSY98, CS14, SS85f, SS86a, Saa91b, Saa93b, Saa98, LS13b, Saa91a, Saa92f, Saa93a]. **Preconditioner** [BS02b, DKXS18, LS05b, LS06, Saa96, SZ99a, SZ99b, XS17, BS02a, CS97c, Saa92c, XLS16, ZXS20, ZXS21]. **Preconditioners** [BS05b, CS94, CS98b, LS13a, LS17, LS03, LSS03b, MS92, MS93, MS94, CS97a, CSW00, CS97e, CS97f, GSS03, LXS16, Saa94c, SZ99c, Saa07]. **Preconditioning** [CS98a, KSS03, KSSG04, OKS10, Saa88a, Saa88b, Saa88c, SAD+00, Saa03a, SMSW00, SSF93, YXS21, LXSdH20, OKLS15, SS99b, SZ01, SSF95, VSS14, WSS98, XKL+22]. **preconditionings** [Saa85c]. **Predicting** [SÖS+00, CTJ+95]. **Preserving** [CCSY98, KS07, KS05b]. **Prewhitening** [SS14]. **primitives** [WS93]. **principles** [AJT+07]. **probing** [TS12]. **Problem** [NBS10, NBS12, CKV+03, Saa23, SCS12, Saa83c]. **Problems** [BSS10, DS91b, rFS12, GGL94, IS85, LS06, LXV+16, LS03, LSS03b, MS07b, PS89, Saa84b, Saa11b, Saa16, SSF93, XLS18, CSW00, DS91a, EGMS20, FRSY96, IS86b, KLS16, KKPS18, Ruh94, Saa82b, Saa83a, Saa83b, Saa83e, Saa89b, Saa90d, Saa92g, SSC+96, SAD+00, SST04, SSF95,

WSS98, ZS08]. **Procedure** [rFS12, AKS17]. **procedures** [HTZ+24]. **Proceedings** [BTS+89, KR83, Fit86, RRV93, BCEP94]. **Process** [BSS10]. **Processing** [FSUS20]. **processors** [SSS85]. **Projection** [BS91, KS07, Saa82b, Saa83e, Saa88d, Saa91c, Saa92h, ITS07, Saa80a, Saa82a]. **Projection-Based** [KS07]. **Projections** [KS07, KS05b]. **Properties** [SS85b, SS88, SÖS+00, CTJ+95, CTSZ07, CZC+09]. **Proxy** [YXS21]. **Proxy-GMRES** [YXS21]. **pseudo** [CTS93, CTS94]. **pseudo-potential** [CTS93, CTS94]. **pseudopotential** [CTWS94, JTD+94]. **pseudopotentials** [CKV+03]. **PSPARSLIB** [SS98a]. **purpose** [Saa92a].

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**Saad** [Cha96, CJ04]. **Saddle** [LS03, LSS03b]. **Sampling** [CS14, US19]. **scalable** [KMB+18]. **Scale** [BTS+89]. **Schur** [BS05a, DKXS18, GHS10, KLS16, LS05b, LXS16, SS99a, Saa07, XKL+22, ZXS21, ZS08]. **SchurRAS** [LS05b]. **Science** [PS20]. **Scientific** [RRV93, Saa95, CSZ22]. **seismic** [Fit86, SLX+22]. **Selection** [MS07a]. **Self** [ZSTC06b, ZSTC06a]. **Self-consistent-field** [ZSTC06b, ZSTC06a]. **Semantic** [SrFS08, VS14]. **semiconductor** [KS87]. **semiconductors** [SKBS88]. **separation** [CCE+18]. **Sequence** [BRZS18]. **sets** [SS14]. **Several** [Saa87d]. **Sham** [SCS12, ZCS14]. **Shanks** [BRZS18, BCRZS22]. **shaped** [Saa24]. **Shared** [Saa87b, Saa87a]. **Shift** [PS87, PS85]. **Shifts** [Saa74c, Ruh94]. **shrinkage** [USS17b]. **Si** [JTD+94]. **Sides** [Saa87d, KMB+18]. **Signal** [FSUS20]. **simulation** [KS87]. **simulations** [ACSS12, JTD+94]. **Singular** [CS09a]. **skyline** [CS97c]. **Slicing** [LXES19, SCS12]. **Smallest** [BS05a]. **SMASH** [CCE+18]. **SNAP** [ITS07]. **Software** [AEKS90, LXES19, Saa92a]. **solid** [LLCS02]. **solid-liquid** [LLCS02]. **Solution** [DS91a, GS92a, ISS84, IS85, ISS86, IS86b, SSC+96, SS98a, SS99c, GS87, GS88b, GS88a, GS89b, GS89c, GS89a, GS90b, GS90a, GS92b, GS81, GS83, ITS07, KSS03, KSSG04, SS81, Saa83d, Saa83b, Saa89b, Saa90c, Saa91c, SW95, SW96a, Sv00, SST04, Saa24, SGSM15, XKL+22]. **solver** [KMB+18, LSS03a, SS02b, SSC04]. **Solvers** [SM95, GS89d, GHS10, KKPS18, LS13b, SW94, SKL+97, SST04]. **Solving** [AS88, AS89, CSS85, CSS87, LXSdH20,

MS92, MS93, PS89, SS80, Saa84b, SS85g, SS85e, SSS85, Saa87d, SS87, SS02a, BS91, CS85b, EGMS20, ESS86, LSS86, Saa80a, Saa81, Saa82a, Saa82b, Saa83a, Saa83e, Saa84c, SS86c, SL86, Saa87c, SL88, ZCS14]. **Some** [GS89d, SW89, Saa92b, BSS09, Saa84c, Saa86e]. **SOR** [MS94]. **Space** [YXS21, CKV+03, ITS07]. **SPARK** [SW90]. **Sparse** [AEKS90, CS92, Cha96, CS94, CS98b, FWPS92, GHS10, GGL94, IS86a, LSC03, LS06, MS92, MS93, MS94, PSWF93, PS89, SW88a, SW89, Saa94a, SW94, SM95, Saa96, SS98a, SZ99a, SZ99b, SS99a, SS99c, SS02a, XS17, AS88, AS89, CS93, CS96, CS97c, GSS03, JSS07, LS05a, Saa82b, Saa83a, Saa83e, SW88b, SW90, Saa90a, Saa92c, Saa94c, SW95, SW96a, SKL+97, SSZ98, SZ99c, SAD+00, SZ01, Saa01, SS02b, Saa03b, Saa07, SSF95, XLS16, XKL+22, ZXS20, ZXS21, ZCS14]. **Sparse-Sparse** [CS98b]. **SPARSKIT** [Saa90a]. **Special** [ASSS11, BJR+09, BDG+10]. **Spectra** [XS16, CJWS96]. **Spectral** [BS05a, KLS16, SGSM15, XLS18, XAKS23, LSY16, USS17a, XAKS24]. **Spectrum** [DS91b, FSUS20, SCS12]. **Spectrum-Adapted** [FSUS20]. **Spedicato** [Saa92h]. **Squares** [CAS11, LS06, XS16, Saa83a, Saa84a, Saa86b, Saa86e, Saa87c]. **standard** [SS99c]. **Standards** [AEKS90]. **state** [Saa88d]. **states** [BGB+10, SKBS88]. **Statistics** [SW89]. **Stewart** [CJ04]. **Stiefel** [SS80]. **Stochastic** [UCS17]. **Strategies** [MS07b, MOKS12, PS87, SS99c, LLCS02, PS85, SZ01, SGSM15, SMSW00]. **Strategy** [MS07a]. **structural** [CTJ+95]. **Structure** [SCS10, AJT+07, CTS93, CTS94, CKV+03, JKSC99, SSC+96]. **Structured** [GGL94, CCE+18, FRSY96]. **Structures** [Saa94a, SM95, Saa03a]. **study** [CS97e]. **Subgraph** [CS12]. **Subspace** [CCSY98, CS14, Saa91b, Saa92b, Saa92e, Saa93b, Saa97, Saa11a, Saa16, Saa22, ACSS12, BSS09, BS89, CS97b, ESS86, Saa81, Saa84c, Saa89a, Saa90b, Saa90d, Saa92f, Saa98, Saa23, ZSTC06a, ZSTC06b, ZCS14]. **Subspaces** [BKS08, PS07]. **Substructuring** [KXS18]. **sum** [CS97a]. **Supercomputer** [BTS+89, Saa91b, Saa93b]. **Supercomputers** [PS89, Saa89a]. **SVD** [CS08, CS09b]. **Sweden** [KR83]. **Sylvester** [DS91b]. **Sylvester-Like** [DS91b]. **Symmetric** [LS13a, LSS03b, Saa83c, Saa87d, SSF93, ZS07, KLS16, KKPS18, LS05a, Saa83d, Saa23, SSF95, SS98b, VSS14, WSS98, XLS16, ZS08]. **Symmetry** [CCSY98]. **System** [ISS84, ISS86, BS87, ITS07, KMB+18]. **Systems** [DKXS18, MS92, MS93, MS94, ÖBSC03, SS80, SS85g, SS85e, Saa87d, SS87, SS98a, SZ99a, SS99a, SS99c, SS02a, XS17, AJT+07, AS88, AS89, BCRZS22, BS90, BS91, CS85b, CJWS96, ESS86, GSS03, JSS07, KS92, OKS10, Saa80a, Saa81, Saa82a, Saa83d, Saa84c, SS86c, Saa87c, Saa88a, Saa88b, Saa88c, SSZ98, SZ99c, SS99b, Sv00, SZ01, Saa01, SS02b, Saa03b, Saa07, Saa20, Saa24, SMSW00, VSS14, ZXS20, ZXS21, Cha96].

**Technique** [KS07]. **Techniques** [IS86a, Saa84b, SS99a, BCRZS22, CS97b, CS97d, KLS16, KSS03, KSSG04, KS87, Saa74a, Saa88a, Saa88b, Saa88c, SSZ98, SZ99c, SS99b, SAD+00, SS98b, WSS98]. **Tensor** [CS97a, CS09b, CS08]. **Tensors** [CS09b, CS08]. **Texas** [Fit86]. **their** [GS89d, Saa87c]. **Theoretical** [Saa94b, Saa94e]. **Theory** [BKS08, BSS09, BS94, BSK+03, RGSB08, Saa90b, SS11, dlGGS+05]. **thermoacoustics** [SGSM15]. **Thick** [LXV+16, SSW98]. **Thick-Restart** [LXV+16]. **three** [LSS86, LXSdH20]. **three-dimensional** [LSS86, LXSdH20]. **Threshold** [MOKS12, Saa92d, Saa94d, SZ99c]. **Threshold-based** [MOKS12]. **time**

[BSK+03, RGSB08, dlGGS+05]. **time-dependent** [BSK+03, RGSB08, dlGGS+05]. **tire** [SMSW00]. **tool** [Saa90a]. **Tools** [SÖS+00, Saa92a]. **Topological** [SS85b, SS88]. **Trace** [KCS09, KCS11, NBS10, NBS12]. **Transformations** [BRZS18]. **translations** [Saa74b]. **trends** [Saa92f]. **triangular** [AS88, AS89]. **Turbo** [RGSB08]. **Two** [rFS09, Saa83d]. **Type** [Saa94b, TS11, BCRZS22, Saa94e, SSZ98, Saa06].

**understanding** [CLS24]. **Unstructured** [MS94]. **unsymmetric** [Saa80a, Saa80c, Saa81, Saa82a]. **updating** [VS14]. **USA** [RRV93]. **use** [Saa84c, Saa85c, Saa87c]. **Using** [BKS08, CKV+03, SS98a, SSC04, BS05a, CS18, JTD+94, KS05a, LXSdH20, OKLS15, Saa83d, USS17a, UMS17, VSS14, ZSTC06b].

**values** [VSS14]. **Variations** [Saa80c, SST04]. **Vectors** [CS09a, CJ04]. **Velde** [Saa95]. **Version** [LS05b, SYEG00, LSS03a]. **Versions** [LSC03, SZ99a, LS05a]. **versus** [CS09a]. **via** [BSS09, CrFS09, CAS11, CS98b, UCS17, USS17b, WGSC18, XAKS23, XAKS24, YXS21, ZSTC06a]. **Vibrational** [CJWS96, CZC+09]. **volume** [BJR+09].

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