A Bibliography of Publications of William M. Kahan

Nelson H. F. Beebe
University of Utah
Department of Mathematics, 110 LCB
155 S 1400 E RM 233
Salt Lake City, UT 84112-0090
USA

Tel: +1 801 581 5254

E-mail: beebe@math.utah.edu, beebe@acm.org,
beebe@computer.org, beebe@ieee.org (Internet)
WWW URL: https://www.math.utah.edu/~beebe/

13 December 2025
Version 1.87

Title word cross-reference

128 [289]. 2 [228, 276]. 2×2 [324]. 3 [228, 276]. A_4 [279]. $A_4 z = b$ [279]. $f(x) = 0$ [63]. ∞/∞ [297]. M [73]. $n \times n$ [46]. $p \geq 0$ [218]. QR [35]. $q \times m - n$ [79]. $\rightarrow$ [261]. $\sin \Theta$ [163]. x [69]. $x * [1/x] < x/x = 1$ [140]. x^n [189]. Z [46, 191, 282]. $z = (1 - exp(-pz))/(pz)$ [218]. $z \geq 0$ [218]. $\|Z - Z^*\| \leq \|Z + Z^*\|(\log_2 n + 0.038)$ [46].

-Dimensional [228, 276]. **-matrices** [73]. **-plane** [191, 282].

1 [164]. **128B** [290, 291]. **12th** [345, 358]. **14th** [353]. **15C** [80]. **167** [4]. **168** [6]. **169** [5]. **1971** [44]. **1975** [344, 343]. **1983** [349]. **1986** [351]. **1999** [208].

2-Dimensional [178]. **2007** [357]. **25th** [352]. **2nd** [248].

50th [357]. **52** [57]. **55** [207].

60 [34, 39]. **6600** [45]. **6600/7600** [45].

7094 [18, 25, 307]. **7094-II** [18, 25, 307]. **70th** [308]. **754** [145, 152, 308, 333, 186]. **754r** [301]. **75th** [357]. **7600** [45]. **7th** [350].

8087 [80]. **'83** [349].

Abbreviated [257]. **Abstract** [16]. **Abstracts** [278]. **Accuracy** [102, 110, 117, 139, 313, 116, 162]. **Accurate** [113, 245, 225, 15, 303, 324]. **Accurately** [332]. **ACM** [354, 342, 188]. **ACM/IEEE** [354]. **ACRITH** [86]. **Addition** [14]. **Adds** [123]. **Adjugate** [258]. **Ado** [96]. **Advantages** [138]. **Aitken** [66]. **Alan** [188, 310]. **Algebra**

[112, 245, 19, 118, 234, 95]. **algebraic** [334]. **ALGOL** [39, 34, 39, 34]. **Algorithm** [322, 196, 229, 83, 274, 320, 334, 324, 136, 35, 4, 5, 6]. **Algorithms** [47, 48, 49, 250, 22]. **Almost** [38, 104, 150]. **Almost-Commuting** [38]. **American** [348]. **among** [87]. **Anadromic** [311]. **Analyses** [151, 172]. **Analysis** [340, 164, 327, 329, 351, 18, 25, 41, 49, 122, 127, 133, 307, 83, 353, 324, 318, 30]. **Analyst** [267]. **Angewandte** [346]. **Angle** [108, 246, 280]. **Angles** [159, 235]. **anniversary** [357]. **Annual** [342, 348, 345]. **Anomalies** [86]. **Answers** [165, 226]. **Any** [63, 251]. **aphorisms** [29]. **Application** [133]. **Applications** [74, 323, 301, 161]. **Applied** [157, 359, 328, 148]. **Approach** [225, 330]. **Approximate** [77, 246]. **Approximation** [176, 337]. **Approximations** [211]. **Apr.** [44]. **April** [351]. **Area** [108, 159, 235]. **Argonne** [344]. **Arithmazium** [103]. **Arithmetic** [84, 85, 62, 315, 350, 30, 32, 68, 72, 89, 90, 98, 99, 109, 111, 121, 143, 241, 252, 268, 281, 298, 52, 70, 358, 333, 33, 78, 114, 115, 145, 152, 154, 236, 242, 65, 81, 82, 158]. **Arithmetics** [225]. **Arithmetik** [52, 70]. **Army** [340]. **aromas** [338]. **arrival** [357]. **Art** [357, 351]. **Assessments** [284]. **Assignment** [279]. **assistant** [312]. **Association** [348]. **Augmenting** [121]. **August** [342, 348, 341, 347]. **Award** [188, 277]. **Axioms** [179, 227].

Babuska [34, 39]. **Babuska'sche** [34, 39]. **Back** [306]. **Backward** [6, 335]. **Baleful** [157, 148]. **Bases** [184]. **be** [100, 115, 134]. **Beastly** [149]. **Before** [333]. **Benchmarks** [139, 157, 148]. **Beresford** [321]. **Besieged** [298]. **Bessel** [36]. **Better** [114]. **Between** [347, 128]. **Bidiagonal** [102, 113]. **bidiagonalization** [336]. **Bilinear** [176]. **Binary** [62, 65, 89, 106, 143, 158, 261, 125, 152, 308]. **Birmingham** [351]. **Birthday** [308, 357]. **Bit** [96]. **Blabber** [247]. **Blabber-Mouth** [247]. **blame** [318]. **BLAS** [244, 273]. **block** [334]. **Boats** [247]. **Boston** [342]. **Boulder** [347]. **Bound** [16, 24, 73]. **Bounds** [74, 295, 32, 77, 257, 314, 33, 31, 300, 36]. **Br** [346]. **Branch** [75, 96]. **Brand** [248]. **Brief** [296]. **Bus** [222]. **Business** [298].

Calculating [7, 10, 108]. **Calculation** [4]. **Calculations** [257, 135]. **Calculator** [55, 63, 67, 60]. **California** [354, 349, 192]. **Can** [245, 55, 60, 154, 305]. **Canada** [348, 345]. **can't** [305]. **Cantilever** [160]. **Carlo** [336]. **cases** [145]. **Cayley** [292, 302]. **CDC** [45]. **celebrate** [308]. **celebrating** [357]. **Center** [356]. **certain** [145]. **certification** [303]. **Challenges** [118]. **Chapter** [47]. \ [283]. **Checking** [97, 124]. **Chemistry** [157, 148]. **Chió** [166]. **Circle** [27]. **Circumscribing** [28]. **class** [161]. **classes** [331]. **Classification** [259]. **Clean** [111]. **Cleve** [333]. **Clever** [287]. **Clouds** [270]. **Clustered** [146]. **Clusters** [26]. **Coast** [56]. **Coefficients** [166, 221]. **Coins** [190]. **Colorado** [347]. **Combinatorial** [221, 330]. **Commentary** [32, 316]. **Commutators** [209]. **Commuting** [38]. **comparison** [336]. **Compensated** [133]. **Complete** [30]. **completely** [57]. **Complex** [75, 96, 121, 131, 191, 282]. **Complexity** [245, 193]. **Composition** [156]. **Computable** [16]. **Computation** [322, 245, 105, 150, 212, 281, 284, 306, 347, 324, 115]. **Computational** [357, 117]. **Computations** [344, 151, 172, 309]. **computed** [88]. **Computer** [345, 350, 32, 56, 104, 105, 139, 157, 253, 267, 358, 33, 148]. **Computer-Arithmetic** [33]. **Computerized** [118]. **Computers** [112, 45, 1, 136]. **Computing** [354, 355, 356, 224, 102, 245, 357, 332, 128, 189, 258, 358, 348, 255, 316]. **Concepts** [110, 117, 116]. **Concerning** [32, 29].

Condition [43]. **Conference** [342, 354, 340, 353, 351, 347, 357, 349, 308, 358]. **Confirming** [124]. **Confluence** [43]. **Confluent** [4]. **Congress** [341]. **Conic** [191]. **Conjugate** [279, 285]. **Conserving** [43]. **Constant** [147]. **Constant-Round** [147]. **constants** [156]. **Construct** [147]. **Contains** [27]. **continuation** [230]. **Continued** [101]. **Contracted** [123]. **Contribution** [71, 308]. **Convention** [356]. **convergence** [73, 35]. **Conversation** [162]. **Conversion** [261, 125]. **Corner** [333]. **Correct** [322]. **Correcting** [124]. **correction** [136]. **Correctly** [106, 153, 97]. **Cost** [193, 281]. **Count** [55, 60]. **Course** [30]. **Covered** [243]. **Cray** [352, 115]. **CRC** [316]. **Cross** [228, 276]. **Cross-Products** [228, 276]. **CS** [65]. **Cubic** [93]. **Curbs** [43]. **Curmudgeon** [267]. **Current** [327, 329]. **Cuts** [75, 96].

D. [48]. **Dallas** [356]. **Dates** [128]. **Davidson** [332]. **Davis** [94, 163]. **Davis-Kahan** [163]. **Davis-Kahan-Weinberger** [94]. **Day** [128]. **DAYDATE** [128]. **Days** [128]. **Debate** [315]. **debug** [305]. **Dec** [44]. **Decimal** [89, 261, 125]. **Decisions** [298]. **Dedicated** [321]. **Deficient** [260]. **Defined** [100]. **definite** [21]. **Definition** [52, 70]. **Degrades** [160]. **Demonstration** [297]. **Derangements** [194]. **Derivative** [173]. **Derivatives** [272, 282]. **describe** [114]. **Design** [241, 244, 273, 29, 236, 242]. **Designers** [78]. **Designing** [119, 120, 126]. **Desperately** [309]. **Determinant** [173]. **Determinants** [137, 324]. **Developers** [299]. **Diagnostics** [76]. **Diagonal** [15, 167, 292, 23, 302]. **Differences** [4, 5, 6, 212, 272]. **different** [57]. **Differential** [16, 268, 293, 334, 24, 156, 161, 311]. **difficult** [145]. **digit** [251]. **Digital** [78]. **dilation** [94]. **Dilations** [74]. **Dilemma** [319]. **Dimensional** [178, 228, 276]. **Directions** [357]. **discrete** [336, 328]. **discretization** [331]. **discretizations** [330]. **Discriminant** [322, 303]. **Discussion** [195, 35]. **Divided** [4, 5, 6, 212]. **divider** [251]. **Division** [144, 217, 250, 97]. **Do** [72, 252, 283, 245, 253]. **done** [115]. **Double** [13, 14]. **Double-Precision** [13, 14]. **Doubled** [98]. **Doubled-Precision** [98]. **Down** [137]. **Draft** [62, 61]. **Dual** [184]. **Duisburg** [358]. **Dundee** [353].

Echelon [180]. **Editorial** [321]. **Effect** [157, 148]. **efficiently** [224, 255]. **Eigenproblem** [134, 20]. **Eigensystems** [77, 269]. **Eigenvalues** [146, 15, 26, 22]. **Eigenvectors** [3, 9, 37]. **electronic** [1]. **Elementary** [75, 87, 96, 168, 230]. **elements** [23]. **Elicited** [185]. **ellipse** [50]. **ellipsoid** [28]. **Ellipsoidal** [257, 24]. **ellipsoids** [28]. **End** [316]. **Engineering** [105, 306, 309, 30]. **Enhanced** [327, 329]. **Enumerating** [201]. **Environment** [71]. **Environments** [76]. **Equation** [63, 93, 268, 293, 1, 161, 218]. **Equations** [16, 166, 334, 2, 24, 156, 161, 311]. **Error** [74, 295, 300, 16, 32, 41, 151, 172, 257, 293, 314, 316, 33, 45, 24, 136, 335]. **Error-Bound** [16]. **Error-Bounds** [314]. **Errors** [12]. **etc** [80, 128]. **Euclid** [196, 229]. **Euclidean** [228, 276]. **Evaluates** [67]. **Evaluation** [91]. **ever** [279]. **Every** [46]. **Everyone** [170, 171]. **Everywhere** [170, 171]. **exact** [95]. **Exam** [197, 198, 199, 200, 202, 213, 243, 262]. **Examination** [165, 226]. **Exception** [129]. **Exception-Handling** [129]. **Exceptions** [99]. **Exponentials** [250]. **Exposé** [103]. **Extended** [244, 334, 273]. **Extension** [112, 164, 155, 187]. **Extra** [295, 281, 300]. **Extra-Precise** [281, 300]. **Extrapolation** [66, 264]. **eye** [280].

Factorizations [271]. **Failure** [283]. **Faire**

[56]. **Fallibility** [310]. **family** [311]. **far** [53, 59]. **Fast** [339]. **Fclass** [259]. **Federation** [341]. **Fermat** [204]. **Few** [332]. **Fields** [227, 331]. **Final** [165, 202, 213, 226, 262]. **Finders** [313]. **Finding** [174, 175, 286, 320]. **First** [56]. **Floating** [84, 85, 62, 164, 245, 11, 64, 65, 68, 69, 72, 81, 82, 89, 90, 98, 103, 106, 129, 143, 158, 170, 171, 241, 249, 250, 252, 259, 281, 284, 298, 306, 309, 333, 14, 318, 185, 61, 29, 97, 145, 152, 154, 236, 242, 308, 312]. **Floating-Point** [84, 11, 64, 69, 72, 81, 82, 89, 90, 98, 106, 129, 143, 158, 170, 171, 241, 249, 250, 252, 259, 281, 284, 298, 306, 309, 185, 61, 85, 318, 97, 145, 152, 154, 236, 242, 308, 312]. **Form** [180, 232, 233]. **Formally** [322]. **Formats** [249]. **Forms** [176]. **Formula** [173]. **Forsythe** [357]. **FORTRAN** [8, 17, 251]. **Forward** [5]. **Four** [29]. **FPTRP** [11]. **Fractions** [101]. **Fragility** [203]. **Francisco** [349]. **Freiburg** [346]. **function** [337, 218]. **Functions** [75, 87, 96, 36, 88]. **Further** [324, 155, 187, 12]. **Futile** [284]. **Futility** [109]. **Future** [357, 306].

G. [308]. **Gain** [177]. **GAMM** [358]. **GAMM-IMACS** [358]. **Gauss** [337, 2, 169]. **Gaussian** [66]. **GCD** [196, 229]. **Gene** [357]. **Genealogy** [294]. **Generalization** [155, 187]. **Generalized** [260]. **generating** [36]. **Geometry** [168, 230, 230]. **George** [357]. **German** [60, 52, 70, 34, 39]. **Germany** [343, 346, 358]. **Get** [42]. **Givens** [224, 255]. **global** [337]. **globally** [335]. **go** [53, 59]. **Golub** [357, 334, 336, 337, 328, 332]. **Good** [81, 82]. **got** [247]. **Grades** [231]. **Gradient** [279]. **Gradients** [285]. **Gradual** [296]. **Great** [315]. **Group** [352]. **Gu** [288]. **Guaranteed** [102]. **Gustafson** [316, 315].

H. [216]. **H110** [228, 231]. **H90** [237]. **Half** [287]. **Halting** [205]. **Handheld** [67]. **Handling** [99, 129]. **hardware** [29]. **Haugeland** [48]. **held** [351, 346]. **Help** [42]. **Hermitian** [26, 51]. **High** [354, 355, 356, 112, 102, 119, 120, 126]. **High-Performance** [355, 112]. **Higher** [109]. **Higher-Precision** [109]. **Hilbert** [263]. **Hirondo** [44]. **Hirota** [330]. **Home** [182, 290]. **Hough** [48]. **hour** [154]. **HP** [80]. **HP-15C** [80]. **Huge** [260]. **Hurts** [170, 171, 115].

IBM [86]. **Idealized** [160]. **Idempotent** [261]. **IEEE** [354, 65, 68, 69, 81, 82, 98, 143, 145, 152, 158, 301, 308, 333, 125, 186]. **IEEE-CS** [65]. **IFIP** [341, 347]. **Ihre** [52, 70]. **Ihren** [60]. **II** [9, 18, 25, 247, 307]. **III** [37]. **Ill** [42, 43, 54, 336, 328]. **Ill-Condition** [43]. **Ill-Posed** [42, 54, 336, 328]. **Illinois** [350]. **IMA** [351]. **IMA/SIAM** [351]. **IMACS** [358]. **Implementation** [47, 48, 56, 52, 244, 70, 273]. **Implementierung** [70, 52]. **important** [162]. **Improbability** [151, 172, 203]. **Improvement** [83]. **Improving** [95]. **Inclusion** [26]. **independent** [84, 85]. **Inequalities** [87, 214]. **Inequality** [237]. **Inevitable** [310]. **Infinitely** [248]. **Infinity** [256]. **Information** [341]. **Institut** [346]. **Instruments** [57]. **Integer** [166]. **Integers** [201]. **Integrability** [325, 326]. **integrable** [331]. **Integrals** [67, 338, 95, 330]. **integrator** [141]. **Intel** [80]. **interface** [345]. **International** [341, 358, 346, 343]. **Interpolation** [5, 6, 264]. **intersection** [28]. **Interval** [30, 68, 268, 346, 343]. **Interval-Arithmetic** [268]. **Interview** [185, 186]. **Introduction** [78]. **inv** [283]. **invariant** [335]. **Inverse** [10, 339, 134, 7]. **Inverses** [260, 263, 271]. **Inversion** [169]. **Invited** [32]. **Irrationals** [211]. **irreducible** [73]. **Iterate** [285]. **Iteration** [130, 279]. **Iterative** [295, 300]. **IV** [17].

Jacobi [173]. **Java** [355, 164, 170, 171]. **Jensen** [237]. **Jiang** [335]. **John** [316, 315, 157]. **Joint** [351]. **Jordan** [169, 233]. **Jose** [354]. **June** [352, 353, 350].

K. [32]. **Kahan** [332, 52, 70, 94, 34, 39, 277, 187, 188, 294, 334, 336, 337, 338, 322, 321, 146, 325, 326, 331, 328, 315, 327, 329, 324, 58, 52, 70, 73, 34, 39, 83, 141, 185, 186, 335, 162, 163, 330, 155]. **Kahan-Arithmetik** [52, 70]. **Kahan-Babuska** [34, 39]. **Kahan-Babuska'sche** [34, 39]. **Kahan-Enhanced** [327, 329]. **Karlsruhe** [343]. **Keplerian** [317]. **Kernels** [87]. **Key** [63]. **Kimura** [330]. **Knowledge** [147]. **Können** [60]. **Korteweg** [161]. **Kuki** [44].

L [316]. **Laboratory** [344]. **Laguerre** [27, 130, 320]. **Lanczos** [328, 49, 53, 59]. **Language** [121]. **Languages** [157, 253, 347]. **LAPACK** [112, 304]. **Large** [332, 206, 309, 334, 2]. **Last** [322]. **Law** [206]. **LCAS** [122, 127]. **learn** [154]. **Least** [27, 176]. **Least-Squares** [176]. **Lecture** [30, 48, 143, 152, 157, 158, 174, 175, 257, 286]. **length** [84, 85]. **Lenstra** [216]. **Libraries** [119, 120, 126, 304]. **Library** [112]. **Like** [108, 159, 235]. **Linear** [112, 245, 19, 166, 234, 336, 2, 24]. **Little** [204]. **Ljubljana** [341]. **Local** [293]. **Logarithm** [287]. **Logarithms** [250]. **logic** [251]. **Loss** [177]. **Lotfi** [142]. **Lottery** [192]. **lu** [283].

M [188]. **M.** [248]. **Madison** [340]. **Man** [185]. **Many** [248]. **March** [357]. **Marketing** [236, 242]. **Material** [61]. **Math** [228, 262, 290, 291, 207, 208]. **Math.** [231, 237]. **Mathematics** [357, 80, 157, 236, 242, 359, 148, 343, 346, 294]. **Mathematik** [346]. **MATLAB** [283, 177, 263, 264, 275]. **Matrices** [102, 113, 332, 323, 26, 38, 49, 77, 260, 263, 271, 223, 254, 23, 51, 73]. **Matrix** [344, 7, 10, 15, 46, 169, 234, 155, 187, 334, 22, 279, 311]. **Max** [100]. **May** [343, 346, 345]. **measures** [338]. **Meeting** [352, 348]. **memoriam** [44]. **Method** [332, 27, 34, 320, 336, 337, 338, 325, 326, 39]. **methods** [328, 1, 2, 20, 21, 135, 311]. **Michigan** [30]. **Micro** [349, 349]. **MidTerm** [265, 266]. **might** [115, 310]. **Min** [100]. **Mindless** [284]. **Ming** [288]. **Mini** [349, 349]. **Mini/Micro** [349, 349]. **Minimizing** [79]. **Miscalculating** [159, 235]. **Mixed** [244, 273]. **Mode** [283]. **Model** [197, 198, 199, 200, 202, 220]. **Modes** [301]. **modules** [56]. **Moments** [323]. **monotonicity** [88]. **Monte** [336]. **Mortem** [8]. **Morton** [294]. **Mouth** [247]. **Much** [96]. **Multicore** [327, 329]. **Multiplication** [106, 131]. **Multiply** [123]. **Multiply-Adds** [123]. **Must** [271].

Names [249]. **National** [344]. **Near** [38, 76]. **nearly** [51]. **Need** [72, 252]. **Needed** [309]. **Needle** [108, 159, 235]. **Needle-Like** [108, 159, 235]. **neglect** [23]. **neighboring** [280]. **Network** [355]. **Networking** [354, 356]. **Neumann** [157]. **Newton** [5, 6]. **Next** [304]. **Nickel** [32]. **No** [104, 150, 58]. **Nobody** [177]. **Nonnormal** [77]. **nonsingular** [73]. **Norm** [74, 94]. **Norm-Preserving** [74, 94]. **Normal** [233]. **Norms** [238, 223, 254]. **Note** [36, 13, 187, 163]. **Notes** [30, 48, 130, 143, 158, 174, 178, 216, 228, 237, 238, 257, 286, 152, 230]. **Nothing** [96]. **November** [354, 356, 349]. **NP** [147]. **Numbers** [132, 149, 206]. **Numerical** [340, 119, 120, 126, 245, 357, 353, 351, 18, 19, 25, 30, 76, 124, 151, 172, 267, 299, 307, 347, 135, 311, 162]. **Numerically** [111]. **Numerics** [358].

Occasional [109]. **ODE** [275]. **off** [23]. **off-diagonal** [23]. **Old** [185]. **One** [27, 154].

Only [209]. **Ontario** [352, 345]. **Open** [299]. **Operands** [259]. **Operations** [168, 230]. **Optimal** [74, 335]. **Options** [68]. **Orbits** [317]. **orders** [156]. **Ordinary** [16, 268, 24, 156, 161]. **organized** [341]. **Orthogonality** [76]. **other** [236, 242]. **Our** [117, 179]. **Over/Underflow** [11]. **Overrelaxation** [285].

p754 [81, 82]. **Package** [86]. **Pairs** [201]. **Paper** [32]. **papers** [348]. **Paradoxes** [110, 116, 117]. **Parallel** [359, 136]. **Parlett** [335, 321]. **Part** [142, 56]. **Performance** [354, 355, 356, 112, 119, 120, 126, 327, 329]. **Personal** [63]. **Perturbation** [3, 9, 37, 31, 335]. **Pete** [308, 308]. **Physics** [157, 148]. **Pinchings** [223, 254]. **Pitfalls** [54]. **Plane** [270, 191, 282]. **Platforms** [225]. **Point** [84, 62, 164, 245, 11, 64, 65, 68, 69, 72, 81, 82, 89, 90, 98, 103, 106, 129, 143, 158, 170, 171, 241, 249, 250, 252, 259, 281, 284, 298, 306, 309, 333, 14, 185, 61, 85, 29, 97, 145, 152, 154, 236, 242, 308, 312, 318]. **Poisson** [1]. **Polynomial** [245, 27, 91, 313, 314]. **Polynomials** [320]. **Portable** [112, 119, 120, 126, 134]. **Posed** [42, 54, 336, 328]. **Post** [8, 358]. **Post-Mortem** [8]. **post-proceedings** [358]. **Pracniques** [12]. **practical** [35]. **Precimonious** [312]. **Precise** [295, 281, 300]. **Precision** [98, 109, 244, 13, 14, 273, 312, 318]. **prescribe** [114]. **presented** [348, 349]. **preserved** [338]. **Preserving** [74, 94]. **Press** [316]. **Presubstitution** [101, 297]. **Probabilistic** [151, 172]. **Probability** [107]. **Problem** [42, 40, 179, 181, 205, 210, 239, 240, 248, 50, 58, 94]. **Problems** [54, 179, 183, 215, 216, 221, 271, 291, 336, 328, 195]. **Procedure** [8]. **Proceedings** [342, 354, 344, 352, 345, 350, 351, 347, 348, 341, 353, 358, 343, 346, 340]. **process** [53, 59]. **Processing** [359, 341]. **Processors** [327, 329]. **Product** [327, 329]. **Products** [228, 276]. **Prof.** [288]. **Program** [71, 104, 269, 125, 251]. **Programmer** [134]. **Programming** [71, 76, 121, 253, 347]. **programs** [145, 264, 305]. **Project** [294]. **Prominence** [167]. **Proof** [303, 147]. **properties** [325, 326]. **Proposal** [164]. **Proposed** [84, 85, 62, 64, 65, 68, 69, 81, 82, 259]. **Prospectus** [112, 304]. **Proven** [322]. **Pseudo** [7, 10, 250]. **Pseudo-Division** [250]. **Pseudo-Inverse** [10, 7]. **Purposes** [243].

QDRTC [17]. **QR** [274]. **Quadratic** [232, 331]. **Quadrature** [323, 66, 337]. **Quasi** [13, 14]. **Question** [299]. **quotient** [251]. **quotient-digit** [251].

Radix [84, 85]. **Radix-** [84, 85]. **raising** [156]. **randomized** [336]. **Rank** [260]. **Rank-Deficient** [260]. **Rational** [90, 211]. **Real** [46, 93, 174, 175, 286]. **Rechner** [60]. **Reciprocal** [272]. **Recognize** [232]. **record** [349]. **recurrence** [36]. **Reduced** [180]. **Reducing** [12]. **reduction** [328]. **Refine** [269]. **Refineig** [269]. **Refinement** [295, 300]. **Refutation** [122, 127]. **Relationship** [347]. **Relative** [102]. **Relaxation** [20, 21]. **reliably** [224, 255]. **Remarks** [12]. **Remedies** [309]. **Reminiscences** [185]. **Removable** [111]. **Residual** [77]. **Revised** [248]. **Revision** [164]. **Riccati** [334, 311]. **Robustness** [71]. **Root** [339, 174, 175, 217, 286]. **Root-Finding** [174, 175, 286]. **Roots** [289]. **Rotation** [3, 9, 37]. **Rotations** [228, 276, 224, 255]. **Round** [147]. **Rounded** [106, 153, 97]. **Rounding** [301]. **Roundoff** [45, 91, 131, 160, 284]. **Routine** [11]. **Row** [180]. **Row-Echelon** [180]. **Ruminations** [236, 241, 242].

S [48]. **S.O.R.** [73]. **San** [354, 349]. **Sand** [80]. **Satisfies** [46]. **say** [310]. **SC2000** [356].

SC97 [354, 354]. **ScaLAPACK** [304]. **Scalar** [327, 329]. **scaled** [223, 254]. **SCAN** [358]. **schemes** [156, 161]. **Science** [267, 306, 309, 345]. **Scientific** [105, 358, 115]. **search** [338]. **section** [348]. **Sections** [191]. **Seidel** [2]. **selection** [251]. **Semantics** [164, 76]. **semi** [21]. **semi-definite** [21]. **Semiannual** [352]. **Separation** [270]. **September** [344, 358]. **Series** [293]. **sessions** [349]. **Set** [179, 181]. **Sharp** [146]. **Should** [100, 53, 59]. **SIAM** [351]. **sich** [60]. **sided** [335]. **Sign** [96]. **Significance** [104, 150]. **SIGSAM** [58]. **Simply** [133]. **Singular** [102, 113, 332, 7, 10]. **Singularity** [111]. **Skew** [292, 302]. **Small** [102, 302]. **Software** [69, 124, 299, 310, 56]. **solution** [336, 58, 94]. **Solutions** [181, 182, 183, 197, 198, 199, 200, 202, 210, 213, 215, 216, 220, 239, 240, 248]. **Solve** [63, 93, 218, 279]. **Solver** [293]. **SOLVEzag** [218]. **solving** [1, 2]. **Some** [31, 214, 88, 305]. **something** [57]. **Space** [179]. **Spaces** [178, 184, 227, 228, 276]. **Sparse** [344, 332, 344]. **Spectra** [51]. **Spectrum** [46]. **Spring** [208]. **SQRT** [92, 153]. **Square** [339, 217, 289]. **Squares** [176, 289]. **SR** [57]. **SR-52** [57]. **SRT** [144, 251]. **SRTEST** [251]. **Stack** [138]. **Stamps** [190]. **Standard** [84, 85, 62, 64, 65, 72, 81, 82, 98, 152, 158, 252, 259, 308, 61, 68, 69, 143]. **Standardized** [249]. **Standards** [186]. **Stanford** [357, 357]. **stars** [280]. **State** [357, 351]. **statistical** [348]. **statistics** [345]. **Status** [143, 158, 152]. **Stewart** [308]. **storing** [279]. **Study** [155, 187]. **subroutine** [17]. **Subspaces** [230, 31, 335]. **subtended** [280]. **suitable** [1]. **Suite** [275, 145]. **Summation** [133, 34, 83, 39, 136]. **Summer** [30]. **Summierungsverfahren** [34, 39]. **Sunk** [247]. **Super** [192]. **Support** [18, 25, 105, 307]. **Survey** [41, 1]. **SVD** [336]. **Syllabus** [207, 208]. **Symbolic** [245, 118, 212, 95]. **Symmetric** [15, 49, 22, 23]. **symplectic** [141]. **Symposium** [344, 350, 358, 346, 345, 343]. **Syntax** [76]. **System** [18, 25, 105, 307]. **Systems** [147, 16, 118, 78, 95, 2, 21, 24, 56].

Take [182, 290]. **Take-Home** [182, 290]. **talk** [308]. **tanpi** [319]. **Taylor** [293]. **TC2** [347]. **tensor** [337]. **Test** [106, 144, 153, 182, 183, 219, 220, 265, 266, 290, 251]. **Testing** [124, 244, 125, 145, 273]. **Tests** [313]. **Tetrahedron** [253]. **Texas** [57]. **text** [195]. **their** [74]. **Theorem** [146, 204, 155, 187, 335, 163]. **Theorems** [26]. **Theory** [234, 107]. **there** [292, 302]. **Thiele** [272]. **Three** [221, 291]. **Time** [245]. **titled** [230]. **Too** [287]. **Topics** [243]. **Toronto** [348, 352]. **Trace** [209]. **Trajectory** [257, 135]. **Transcription** [315]. **Transform** [292, 302]. **Transparencies** [288]. **Trap** [11]. **Travails** [134]. **Tri** [15, 23]. **Tri-Diagonal** [15, 23]. **Triangle** [108, 159, 235]. **Triangular** [271, 223, 254]. **Trick** [166]. **Tridiagonal** [134, 22]. **Tripleo** [70]. **Triplets** [332]. **Triplex** [34, 39, 34, 39]. **Triplex-ALGOL** [39, 34, 39, 34]. **Trisection** [246]. **Truncation** [12]. **Tuning** [312, 318]. **Turing** [188, 277, 310]. **Tutorial** [296]. **Twenty** [118]. **Two** [331, 22, 271, 28, 195, 335]. **two-sided** [335]. **TX** [356].

U [247]. **U-Boats** [247]. **UCBTEST** [145]. **Unconventional** [135, 161, 156, 141]. **Undebuggability** [309]. **Undebuggable** [306]. **Underflow** [11, 296]. **Unique** [180, 271]. **Universität** [346]. **University** [357, 345, 350, 351, 30]. **unsung** [308]. **Unum** [315, 316]. **upon** [148, 157]. **Urbana** [350]. **USA** [354, 356, 347]. **User** [352]. **Using** [338, 318, 320].

V [188]. **Validated** [358]. **Validating** [124]. **Validating/Testing/Confirming/Checking/Correcting**

[124]. **Values** [102, 113, 7, 10]. **Vector** [179, 184, 227, 238, 331]. **verlassen** [60]. **Version** [146]. **Versus** [89, 139, 236, 242]. **Visions** [142]. **Volume** [253]. **Vries** [161]. **vs** [336, 315, 193].

W [216, 308]. **W.** [48, 141]. **Waiting** [222]. **War** [247]. **Waterloo** [345]. **Week** [128]. **Weinberger** [94]. **Well** [42]. **West** [349, 56, 343]. **West-83** [349]. **Whether** [106, 97]. **Which** [27, 331]. **William** [188, 294, 321, 315, 277, 185, 186, 162]. **Winner** [277]. **Wisconsin** [340]. **Without** [217, 281, 279]. **Word** [84, 85]. **Word-length-independent** [84, 85]. **Working** [347, 22]. **Workshop** [355]. **World** [247]. **Would** [134]. **Would-be** [134]. **Written** [80].

Yugoslavia [341].

Zero [147, 27, 209, 292, 313, 314, 320, 302]. **Zero-Finders** [313]. **Zero-Knowledge** [147]. **ZERPOL** [320].

References

Kahan:1955:SMS

[1] William Morton Kahan. A survey of methods of solving Poisson's equation suitable for electronic computers. M.A., University of Toronto, Toronto, ON, Canada, 1955. ii + 44 + 8 pp.

Kahan:1958:GSM

[2] William Morton Kahan. *Gauss–Seidel methods of solving large systems of linear equations*. Ph.D. thesis, University of Toronto, Toronto, ON, Canada, 1958.

Davis:1963:REP

[3] Chandler Davis. The rotation of eigenvectors by a perturbation. I. *Journal of Mathematical Analysis and Applications*, 6:159–173, 1963. CODEN JMANAK. ISSN 0022-247x (print), 1096-0813 (electronic). See [9, 37].

Kahan:1963:ACC

[4] W. Kahan and I. Farkas. Algorithm 167: Calculation of confluent divided differences. *Communications of the Association for Computing Machinery*, 6(4):164–165, April 1963. CODEN CACMA2. ISSN 0001-0782 (print), 1557-7317 (electronic).

Kahan:1963:ANIa

[5] W. Kahan and I. Farkas. Algorithm 169: Newton interpolation with forward divided differences. *Communications of the Association for Computing Machinery*, 6(4):165, April 1963. CODEN CACMA2. ISSN 0001-0782 (print), 1557-7317 (electronic).

Kahan:1963:ANIb

[6] W. Kahan and I. Farkas. Algorithm 168: Newton interpolation with backward divided differences. *Communications of the Association for Computing Machinery*, 6(4):165, April 1963. CODEN CACMA2. ISSN 0001-0782 (print), 1557-7317 (electronic).

Golub:1964:CSV

[7] Gene H. Golub and William Kahan. Calculating the singular values and pseudoinverse of a matrix. Technical Report STAN-CS-64-8 (AD603116), Stanford University, Department of Computer Science, Stanford, CA, USA, May 1964. 33 pp.

Kahan:1964:FPM

[8] W. Kahan and J. J. Leppik. A FORTRAN post-mortem procedure. *Communications of the Association for Computing Machinery*, 7(1):15, January 1964. CODEN CACMA2. ISSN 0001-0782 (print), 1557-7317 (electronic).

Davis:1965:REP

[9] Chandler Davis. The rotation of eigenvectors by a perturbation. II. *Journal of Mathematical Analysis and Applications*, 11:20–27, 1965. CODEN JMANAK. ISSN 0022-247x (print), 1096-0813 (electronic). See [3, 37].

Golub:1965:CSV

[10] G. H. Golub and W. Kahan. Calculating the singular values and pseudo-inverse of a matrix. *Journal of the Society for Industrial and Applied Mathematics: Series B, Numerical Analysis*, 2 (2):205–224, ???? 1965. ISSN 0887-459X (print), 1095-7170 (electronic).

Kahan:1965:FPO

[11] W. Kahan. The floating-point over/underflow trap routine `FPTRP`. In *Programmer's Reference Manual*. Institute of Computer Science, University of Toronto, Toronto, Ontario, Canada, 1965. LCCN ???? Section 4.1.

Kahan:1965:PFR

[12] W. Kahan. Pracniques: Further remarks on reducing truncation errors. *Communications of the Association for Computing Machinery*, 8(1):40, January 1965. CODEN CACMA2. ISSN 0001-0782 (print), 1557-7317 (electronic).

Moller:1965:NQD

[13] Ole Møller. Note on quasi double-precision. *Nordisk tidskrift for informationsbehandling*, 5(4):251–255, 1965. CODEN BITTEL, NBITAB. ISSN 0006-3835 (print), 1572-9125 (electronic). See [14].

Moller:1965:QDP

[14] Ole Møller. Quasi double-precision in floating point addition. *Nordisk tidskrift for informationsbehandling*, 5(1):37–50, 1965. CODEN BITTEL, NBITAB. ISSN 0006-3835 (print), 1572-9125 (electronic). See also [13].

Kahan:1966:AES

[15] William M. Kahan. Accurate eigenvalues of a symmetric tri-diagonal matrix. Technical Report CS-TR-66-41, Stanford University, Department of Computer Science, Stanford, CA, USA, July 22, 1966. iv + 53 pp. URL `http://i.stanford.edu/TR/CS-TR-66-41.html`. Revised June 1968.

Kahan:1966:CEB

[16] W. M. Kahan. A computable error-bound for systems of ordinary differential equations (abstract). *SIAM Review*, 8:568–569, 1966. CODEN SIREAD. ISSN 0036-1445 (print), 1095-7200 (electronic).

Kahan:1966:FIS

[17] W. Kahan. The FORTRAN IV subroutine QDRTC. Technical report, Computer library, McLennan Laboratories, University of Toronto, Toronto, ON, Canada, 1966.

Kahan:1966:ISS

[18] W. Kahan. 7094-II system support for numerical analysis. SHARE Secretary Distribution 159, C4537, December 12, 1966.

Kahan:1966:NLA

[19] W. M. Kahan. Numerical linear algebra. *Canadian mathematical bulletin = Bulletin canadien de mathématiques*, 9(??): 757–801, ???? 1966. CODEN CMBUA3. ISSN 0008-4395 (print), 1496-4287 (electronic).

Kahan:1966:RME

[20] William Kahan. Relaxation methods for an eigenproblem. Technical Report CS-TR-66-44, Stanford University, Department of Computer Science, Stanford, CA, USA, August 8, 1966. iv + 35 pp. URL `http://i.stanford.edu/TR/CS-TR-66-44.html`.

Kahan:1966:RMS

[21] William Kahan. Relaxation methods for semi-definite systems. Technical Report CS-TR-66-45, Stanford University, Department of Computer Science, Stanford, CA, USA, August 9, 1966. iv + 32 pp. URL `http://i.stanford.edu/TR/CS-TR-66-45.html`.

Kahan:1966:TWA

[22] William Kahan and James M. Varah. Two working algorithms for the eigenvalues of a symmetric tridiagonal matrix. Technical Report CS-TR-66-43, Stanford University, Department of Computer Science, Stanford, CA, USA, August 1, 1966. iv + 28 pp. URL `http://i.stanford.edu/TR/CS-TR-66-43.html`.

Kahan:1966:WND

[23] William Kahan. When to neglect off-diagonal elements of symmetric tridiagonal matrices. Technical Report CS-TR-66-42, Stanford University, Department of Computer Science, Stanford, CA, USA, July 25, 1966. i + 10 pp. URL `ftp://reports.stanford.edu/pub/cstr/reports/cs/tr/66/42/CS-TR-66-42.pdf`; `http://i.stanford.edu/TR/CS-TR-66-42.html`.

Kahan:1967:EEB

[24] W. M. Kahan. An ellipsoidal error bound for linear systems of ordinary differential equations. Report, Computer Science, University of Toronto, Toronto, Canada, 1967. ???? pp.

Kahan:1967:ISS

[25] W. M. Kahan. 7094-II system support for numerical analysis. In Anonymous [340], pages 175–208 + errata. URL `https://apps.dtic.mil/sti/tr/pdf/AD0825963.pdf`. ARO-D Report 67-3. Reprint of [18].

Kahan:1967:ITC

[26] W. Kahan. Inclusion theorems for clusters of eigenvalues of Hermitian matrices. Report, Computer Science, University of Toronto, Toronto, ON, Canada, 1967.

Kahan:1967:LMC

[27] W. Kahan. Laguerre's method and a circle which contains at least one zero of a polynomial. *SIAM Journal on Numerical Analysis*, 4(3):474–482, September 1967. CODEN SJNAAM. ISSN 0036-1429 (print), 1095-7170 (electronic).

Kahan:1968:CEA

[28] W. M. Kahan. Circumscribing an ellipsoid about the intersection of two ellipsoids. *Canadian mathematical bulletin = Bulletin canadien de mathématiques*, 11 (??):437–441, ???? 1968. CODEN CMBUA3. ISSN 0008-4395 (print), 1496-4287 (electronic).

Kahan:1968:FAC

[29] W. Kahan. Four aphorisms concerning floating point hardware design. *ACM SIGNUM Newsletter*, 3(2):??, July 1968. CODEN SNEWD6. ISSN 0163-5778 (print), 1558-0237 (electronic).

Kahan:1968:MCI

[30] W. M. Kahan. A more complete interval arithmetic: Lecture notes for an Engineering Summer Course in Numerical Analysis at the University of Michigan. Technical report, University of Michigan, 1968.

Davis:1969:SNB

[31] Chandler Davis and W. M. Kahan. Some new bounds on perturbation of subspaces. *Bulletin of the American Mathematical Society*, 75(4):863–868, ???? 1969. CODEN BAMOAD. ISSN 0002-9904 (print), 1936-881X (electronic). URL `http://projecteuclid.org/euclid.bams/1183530664`.

Kahan:1969:ICC

[32] W. M. Kahan. Invited commentary (concerning the invited paper of K. Nickel: Error bounds and computer arithmetic). In A. Morrell, editor, *Proc. of IFIP Congress 1968, Vol. I*, pages 60–62. North-Holland Publ. Comp., Amsterdam, New York, Oxford, 1969.

Nickel:1969:EBC

[33] K. Nickel. Error bounds and computer-arithmetic. In A. J. H. Morrell, editor, *Proc. of IFIP-Congress 1968, Vol. I*, pages 54–60. North-Holland Publ. Comp., Amsterdam, New York, Oxford, 1969. Cf.: Kahan, W. M., Invited Commentary, Ibidem 60-62.

Nickel:1969:KBS

[34] K. Nickel. Das Kahan-Babuska'sche Summierungsverfahren In Triplex-Algol 60. (German) [The Kahan-Babuška summation method in Triplex-Algol 60]. Interner Bericht Des Inst. F. Informatik 69/3, Universität Karlsruhe, Karlsruhe, Germany, 1969. Published in [39].

Parlett:1969:CPA

[35] B. N. Parlett and W. Kahan. On the convergence of a practical QR algorithm. (With discussion). In *Information Processing 68 (Proc. IFIP Congress, Edinburgh, 1968), Vol. 1: Mathematics, Software*, pages 114–118. North-Holland, Amsterdam, 1969.

Kahan:196x:ACM

[36] W. M. Kahan. Note on bounds for generating Bessel functions by recurrence. 196x.

Davis:1970:REP

[37] Chandler Davis and W. M. Kahan. The rotation of eigenvectors by a perturbation. III. *SIAM Journal on Numerical Analysis*, 7(1):1–46, March 1970. CODEN SJNAAM. ISSN 0036-1429 (print), 1095-7170 (electronic). See [3, 9].

Kahan:1970:ACM

[38] W. M. Kahan. Almost-commuting matrices are near commuting matrices. Manuscript, July 23, 1970.

Nickel:1970:KBS

[39] K. Nickel. Das Kahan-Babuškasche Summierungsverfahren in Triplex-ALGOL 60. (German) [The Kahan-Babuška summation method in Triplex-ALGOL 60]. *Zeitschrift für Angewandte Mathematik und Mechanik*, 50:369–373, 1970. CODEN ZAMMAX. ISSN 0044-2267 (print), 1521-4001 (electronic).

Kahan:1971:P

[40] W. Kahan. A problem. *ACM SIGNUM Newsletter*, 6(3):6, November 1971. CODEN SNEWD6. ISSN 0163-5778 (print), 1558-0237 (electronic). See response [45].

Kahan:1971:SEA

[41] W. M. Kahan. A survey of error analysis. In Freiman et al. [341], pages 1214–1239. ISBN 0-7204-2063-6. LCCN QA76 .I575 1971. URL `http://dblp.uni-trier.de/db/conf/ifip/ifip71-2.html#Kahan71`. Eight booklets in two volumes.

Anderson:1972:HHI

[42] Donald G. M. Anderson, Joseph Traub, and W. Kahan. How to help an ill-posed problem get well. In ACM '72 [342], page 663. LCCN TK 7885 A84p 1972. The first annual George Forsythe Memorial Lecture, presented by W. Kahan.

Kahan:1972:CCC

[43] W. Kahan. Conserving confluence curbs ill-condition. Technical Report 6, Computer Science Department, University of California, Berkeley, August 1972. ???? pp.

Kahan:1972:MHK

[44] W. Kahan. In memoriam: Hirondo Kuki: Apr. 25, 1925–Dec. 28, 1971. *ACM SIGNUM Newsletter*, 7(1): 8–10, April 1972. CODEN SNEWD6. ISSN 0163-5778 (print), 1558-0237 (electronic).

Dorr:1973:REC

[45] Fred W. Dorr and Cleve B. Moler. Roundoff error on the CDC 6600/7600 computers. *ACM SIGNUM Newsletter*, 8(2):24–26, April 1973. CODEN SNEWD6. ISSN 0163-5778 (print), 1558-0237 (electronic). See [40] for the original problem.

Kahan:1973:EMR

[46] W. Kahan. Every $n \times n$ matrix Z with real spectrum satisfies $\|Z - Z^*\| \leq \|Z + Z^*\|(\log_2 n + 0.038)$. *Proceedings of the American Mathematical Society*, 39:235–241, 1973. CODEN PAMYAR. ISSN 0002-9939 (print), 1088-6826 (electronic).

Kahan:1973:IAC

[47] W. M. Kahan. Implementation of algorithms (chapter 12). Technical Report AD 769-124, National Technical Information Service, Springfield, Virginia, 1973.

Kahan:1973:IAL

[48] W. Kahan. Implementation of algorithms (lecture notes by W. S. Haugeland and D. Hough). Technical Report 20, Department of Computer Science, University of California, Berkeley, CA, USA, 1973. ???? pp.

Kahan:1974:ALA

[49] W. Kahan and B. N. Parlett. An analysis of Lanczos algorithms for symmetric matrices. Memo ERL-M467, University of California, Berkeley, Berkeley, CA, USA, 1974.

Kahan:1975:EP

[50] W. Kahan. An ellipse problem. *SIGSAM Bulletin (ACM Special Interest Group on Symbolic and Algebraic Manipulation)*, 9(3):11–??, August 1975. CODEN SIGSBZ. ISSN 0163-5824 (print), 1557-9492 (electronic).

Kahan:1975:SNH

[51] W. Kahan. Spectra of nearly Hermitian matrices. *Proceedings of the American Mathematical Society*, 48:11–17, 1975. CODEN PAMYAR. ISSN 0002-9939 (print), 1088-6826 (electronic).

Laveuve:1975:DKA

[52] S. E. Laveuve. Definition Einer Kahan-Arithmetik Und Ihre Implementierung. (German) [Definition of a Kahan arithmetic and its implementation]. In Nickel [343], pages 236–245. CODEN LNCSD9. ISBN 0-387-07170-9. ISSN 0302-9743 (print), 1611-3349 (electronic). LCCN QA297 .I541. DM30.00. URL `http://link.springer-ny.com/link/service/series/0558/tocs/t0029.htm`; `http://www.springerlink.com/content/978-0-387-07170-1`; `http://www.springerlink.com/openurl.asp?genre=issue&issn=0302-9743&volume=29`; `https://link.springer.com/book/10.1007/3-540-07170-9`. German or English.

Kahan:1976:HFS

[53] W. Kahan and B. N. Parlett. How far should you go with the Lanczos process? In Bunch and Rose [344], pages 131–144. ISBN 0-12-141050-1. LCCN QA188 .S989 1975.

Kahan:1976:PIP

[54] W. M. Kahan. Pitfalls in ill-posed problems. *SIAM Review*, 18(4):810–811, ???? 1976. CODEN SIREAD. ISSN 0036-1445 (print), 1095-7200 (electronic).

Kahan:1977:CYC

[55] W. M. Kahan and B. N. Parlett. Can you count on your calculator? Memorandum UCB/ERL M77/21, Electronics Research Laboratory, College of Engineering, University of California, Berkeley, Berkeley, CA, USA, April 6, 1977. ii + 28 pp. URL `https://www.math.utah.edu/pub/bibnet/authors/k/kahan-william-m.bib`; `https://www.math.utah.edu/pub/bibnet/subjects/acc-stab-num-alg.bib`. German Transl. Published In: Jahrbuch Überblicke Mathematik 1978, Ed. by B. Fuchssteiner and others, Bibliographisches Institut, Mannheim-Wien-Zürich, 199–216, 1978.

Kahan:1977:ISS

[56] William Kahan. Implementation of software systems and modules, part 1, First West Coast Computer Faire. Audio tapes archived at the Computer History Museum, Mountain View, CA, USA., April 1977. URL `https://www.computerhistory.org/collections/catalog/102706817`. Kahan's talk begins at 26m50s on side A, and continues to side B.

Kahan:1977:NSC

[57] W. Kahan. And now for something completely different: The Texas Instruments SR-52. Memorandum No. UCB/ERL M77/23, Electronics Research Laboratory, College of Engineering, University of California, Berkeley, April 1977. ???? pp.

Lauer:1977:SKP

[58] Markus Lauer. A solution to Kahan's problem (SIGSAM problem no. 9). *SIGSAM Bulletin (ACM Special Interest Group on Symbolic and Algebraic Manipulation)*, 11(2):16–20, ???? 1977. CODEN SIGSBZ. ISSN 0163-5824 (print), 1557-9492 (electronic).

Kahan:1978:HFS

[59] W. Kahan and B. N. Parlett. How far should you go with the Lanczos process? Memorandum UCB/ERL M78/48, Electronics Research Laboratory, College of Engineering, University of California, Berkeley, Berkeley, CA, USA, 1978. 16 pp.

Kahan:1978:KSI

[60] W. Kahan and B. N. Parlett. Können Sie sich auf Ihren Rechner verlassen? (German) [can you count on your calculator?]. *Jahrbuch Überblicke Mathematik*, ??:199–216, 1978.

Stone:1978:DMF

[61] Harold Stone, William Kahan, and Jerome Coonen. Draft of material on a floating-point standard. First draft of what came to be known as the KCS proposal to the IEEE 754 subcommittee, with details connected to the early 8087 design., April 24, 1978. URL `https://ieeemilestones.ethw.org/w/images/9/96/Wk_hs_jc_draft_of_material_on_a_floating_point_standard_apr78.pdf`.

Coonen:1979:PSB

[62] Jerome Coonen, William Kahan, John Palmer, Tom Pittman, and David Stevenson. A proposed standard for binary floating point arithmetic: Draft 5.11. *ACM SIGNUM Newsletter*, 14 (3S (Special issue)):4–12, October 1979. CODEN SNEWD6. ISSN 0163-5778 (print), 1558-0237 (electronic).

Kahan:1979:PCK

[63] William M. Kahan. Personal calculator has key to solve any equation $f(x) = 0$. *Hewlett-Packard Journal: technical information from the laboratories of Hewlett-Packard Company*, 30(12):20–26, December 1979. CODEN HPJOAX. ISSN 0018-1153. URL `http://www.cs.berkeley.edu/~wkahan/Math128/SOLVEkey.pdf`. Lecture notes for Math 128.

Kahan:1979:PFP

[64] W. Kahan and J. Palmer. On a proposed floating-point standard. *ACM SIGNUM Newsletter*, 14(3S (Special issue)):13–21, October 1979. CODEN SNEWD6. ISSN 0163-5778 (print), 1558-0237 (electronic).

Kahan:1979:PIC

[65] W. Kahan, J. Palmer, and J. Coonen. Proposed IEEE-CS Standard for Binary Floating Point Arithmetic. In Gentleman [345], pages 32–36. LCCN QA276.4.

Kahan:1980:AEG

[66] W. Kahan. Aitken's extrapolation and Gaussian quadrature. IEEE Floating-Point Subcommittee Working Document P754/80-1.19, 1980.

Kahan:1980:HCE

[67] William M. Kahan. Handheld calculator evaluates integrals. *Hewlett-Packard Journal: technical information from the laboratories of Hewlett-Packard Company*, 31(8):23–32, August 1980. CODEN HPJOAX. ISSN 0018-1153. URL `http://www.cs.berkeley.edu/~wkahan/Math128/INTGTkey.pdf`. Lecture notes for Math 128.

Kahan:1980:IAO

[68] William M. Kahan. Interval arithmetic options in the proposed IEEE Floating Point Arithmetic Standard. In Nickel [346], pages 99–128. ISBN 0-12-518850-1. LCCN QA297.75 .I57 1980.

Kahan:1980:SPI

[69] W. Kahan. Software $\sqrt{x}$ for the proposed IEEE Floating-Point Standard. Manuscript, August 25, 1980.

Laveuve:1980:DKA

[70] S. E. Laveuve. *Definition Einer Kahan-Arithmetik Und Ihre Implementierung In Tripleo. (German) [Definition of a Kahan Arithmetic and its implementation in Tripleo]*. Academic Press, New York, NY, USA, 1980. 355–366 pp.

Kahan:1981:PEC

[71] W. Kahan. The programming environment's contribution to program robustness. *ACM SIGNUM Newsletter*, 16(4):10–??, October 1981. CODEN SNEWD6. ISSN 0163-5778 (print), 1558-0237 (electronic).

Kahan:1981:WDW

[72] W. Kahan. Why do we need a floating-point arithmetic standard? Technical report, University of California, Berkeley, CA, USA, February 12, 1981. 41 pp.

Neumann:1981:KRC

[73] M. Neumann. The Kahan S.O.R. convergence bound for nonsingular and irreducible M-matrices. *Linear Algebra and its Applications*, 39:205–222, 1981. CODEN LAAPAW. ISSN 0024-3795 (print), 1873-1856 (electronic).

Davis:1982:NPD

[74] Chandler Davis, W. M. Kahan, and H. F. Weinberger. Norm-preserving dilations and their applications to optimal error bounds. *SIAM Journal on Numerical Analysis*, 19(3):445–469, June 1982. CODEN SJNAAM. ISSN 0036-1429 (print), 1095-7170 (electronic). See [94].

Kahan:1982:BCC

[75] W. Kahan. Branch cuts for complex elementary functions. Technical Report PAM-105, Center for Pure and Applied Mathematics, University of California, Berkeley, CA, USA, October 1982.

Kahan:1982:NOS

[76] W. Kahan and Jerome T. Coonen. The near orthogonality of syntax, semantics, and diagnostics in numerical programming environments. In Reid [347], pages 103–115. ISBN 0-444-86377-X. LCCN QA297 .I34 1981.

Kahan:1982:RBA

[77] W. Kahan, B. N. Parlett, and E. Jiang. Residual bounds on approximate eigensystems of nonnormal matrices. *SIAM Journal on Numerical Analysis*, 19(3): 470–484, June 1982. CODEN SJNAAM. ISSN 0036-1429 (print), 1095-7170 (electronic).

Waser:1982:IAD

[78] Shlomo Waser and Michael J. Flynn. *Introduction to Arithmetic for Digital Systems Designers*. Holt, Rinehart and Winston, New York, 1982. ISBN 0-03-060571-7. xvii + 308 pp. LCCN TK7895.A65 W37 1982.

Kahan:1983:M

[79] W. Kahan. Minimizing $q \times m - n$. Technical report, Department of Mathematics and Department of Electrical Engineering and Computer Science, University of California, Berkeley, Berkeley, CA, USA, March 1983. URL `http://www.cs.berkeley.edu/~wkahan/testpi/nearpi.c`.

Kahan:1983:MWS

[80] W. Kahan. Mathematics written in sand — the HP-15C, Intel 8087, etc. In Anonymous [348], pages 12–26. ISBN ???? ISSN 0149-9963. LCCN QA276.4 .A43a. URL `http://www.cs.berkeley.edu/~wkahan/MathSand.pdf`.

Kahan:1983:PISa

[81] W. Kahan. The proposed IEEE Standard p754 for Floating-Point Arithmetic: What good is it? Manuscript, 1983.

Kahan:1983:PISb

[82] W. Kahan. The proposed IEEE Standard p754 for Floating-Point Arithmetic: What good is it? In IEEE [349], page ??

Ozawa:1983:AIK

[83] K. Ozawa. Analysis and improvement of Kahan's summation algorithm. *Journal of Information Processing (of Japan??)*, 6(4):226–230, 1983.

Cody:1984:PRW

[84] William J. Cody, Jr., Jerome T. Coonen, David M. Gay, K. Hanson, David Hough, W. Kahan, R. Karpinski, John F. Palmer, F. N. Ris, and D. Stevenson. A proposed radix- and word-length-independent standard for floating-point arithmetic. *IEEE Micro*, 4 (4):86–100, July/August 1984. CODEN IEMIDZ. ISSN 0272-1732 (print), 1937-4143 (electronic).

Cody:1985:PRW

[85] W. J. Cody, J. T. Coonen, D. M. Gay, K. Hanson, D. Hough, W. Kahan, R. Karpinski, J. Palmer, F. N. Ris, and D. Stevenson. A proposed radix- and word-length-independent standard for floating-point arithmetic. *ACM SIGNUM Newsletter*, 20(1):37–51, January 1985. CODEN SNEWD6. ISSN 0163-5778 (print), 1558-0237 (electronic).

Kahan:1985:AIA

[86] W. Kahan and E. LeBlanc. Anomalies in the IBM ACRITH package. In Hwang [350], pages 322–331. ISBN 0-8186-0632-0 (paperback), 0-8186-8632-4 (hard), 0-8186-4632-2 (microfiche). LCCN QA76.9.C62

S95 1985. URL http://www.acsel-lab.com/arithmetic/arith7/papers/ARITH7_Kahan_LeBlanc.pdf.

Kahan:1985:EFK

[87] William Kahan. Elementary functions from kernels and elementary inequalities among elementary functions. October 24, 1985. URL https://ieeemilestones.ethw.org/w/images/1/16/Wk_elems_from_kernels_oct85.pdf.

Kahan:1985:MSC

[88] W. Kahan. On the monotonicity of some computed functions. Technical Report PAM-261, Center for Pure and Applied Mathematics, University of California, Berkeley, CA, USA, January 1985.

Kahan:1986:DVB

[89] W. Kahan. Decimal versus binary floating-point arithmetic. Manuscript, November 12, 1986.

Kahan:1986:RAF

[90] W. Kahan. Rational arithmetic in floating-point. Technical Report PAM-343, Center for Pure and Applied Mathematics, University of California, Berkeley, CA, USA, September 1986. 8 pp.

Kahan:1986:RPE

[91] W. Kahan. Roundoff in polynomial evaluation. Manuscript, November 16, 1986.

Kahan:1986:S

[92] W. Kahan and K. C. Ng. SQRT. Web document., May 6, 1986. URL https://adampunk.com/documents/softsqrt.pdf.

Kahan:1986:SRC

[93] W. Kahan. To solve a real cubic equation. Technical Report PAM-352, Center for Pure and Applied Mathematics, University of California, Berkeley, CA, USA, November 1986. 20 pp. URL http://www.eecs.berkeley.edu/~wkahan/Math128/Cubic.pdf.

Meinguet:1986:DKW

[94] Jean Meinguet. On the Davis-Kahan-Weinberger solution of the norm-preserving dilation problem. *Numerische Mathematik*, 49(2/3):331–341, July 1986. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). Refers to the work [74].

Fateman:1987:IEI

[95] Richard J. Fateman and W. Kahan. Improving exact integrals from symbolic algebra systems. Technical Report PAM-261, Center for Pure and Applied Mathematics, University of California, Berkeley, CA, USA, August 1987. URL http://www.cybertester.com/data/iintegr.pdf.

Kahan:1987:BCC

[96] W. Kahan. Branch cuts for complex elementary functions or much ado about nothing's sign bit. In Iserles and Powell [351], pages 165–211. ISBN 0-19-853614-3. LCCN QA297.J65 1986. URL http://people.freebsd.org/~das/kahan86branch.pdf; http://www.cs.berkeley.edu/~dbindel/class/cs279/.

Kahan:1987:CWF

[97] W. Kahan. Checking whether floating-point division is correctly rounded. Lecture notes., 1987.

Kahan:1987:DPI

[98] W. Kahan. Doubled-precision IEEE standard 754 floating-point arithmetic. Manuscript, February 26, 1987.

Kahan:1987:HAE

[99] W. Kahan. Handling arithmetic exceptions. Report, Department of Mathematics and Department of Electrical Engineering and Computer Science, University of California, Berkeley, Berkeley, CA, USA, May 14, 1987. URL `http://www.arithmazium.org/classroom/lib//Kahan_Handling_Arithmetic_Exceptions.pdf`.

Kahan:1987:HSM

[100] W. Kahan. How should Max and Min be defined? Manuscript, August 19, 1987.

Kahan:1987:PCF

[101] W. Kahan. Presubstitution and continued fractions. Manuscript, revised 24 April 1987 (shortened to 7 pages)., March 17, 1987. URL `http://www.arithmazium.org/classroom/lib/Kahan_Presubstitution_and_Continued_Fractions.pdf`.

Demmel:1988:CSS

[102] J. Demmel and W. Kahan. Computing small singular values of bidiagonal matrices with guaranteed high relative accuracy. LAPACK Working Note 03, Mathematics and Computer Science Division, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, IL 60439-4801, USA, February 1988. URL `http://www.netlib.org/lapack/lawns/lawn03.ps`; `http://www.netlib.org/lapack/lawnspdf/lawn03.pdf`. ANL, MCS-TM-110, February 1988.

Kahan:1988:AFP

[103] William Kahan. Arithmazium: The floating point exposé. Web site, May/July 1988. URL `https://www.arithmazium.org/classroom/wk88_toc.html`. This site includes 27 lectures with notes and videos for CS 279 (Computer System Support for Scientific and Engineering Computation). The class handouts amount to more than 2000 pages.

Kahan:1988:CPA

[104] W. Kahan. A computer program with almost no significance. Manuscript, November 9, 1988.

Kahan:1988:CSS

[105] W. Kahan and David Goldberg. Computer system support for scientific and engineering computation. Report, Department of Computer Science, University of California, Berkeley, CA, USA, July 26, 1988. URL `http://www.arithmazium.org/classroom/lib//Lecture_25_notes_slides.pdf`. Revised 14 June 1990.

Kahan:1988:TWB

[106] W. Kahan. To test whether binary floating-point multiplication is correctly rounded. Manuscript, July 1988.

Lenstra:1988:PT

[107] H. W. Lenstra, Jr. Probability theory. World-Wide Web document, November 1988. URL `http://www.cs.berkeley.edu/~wkahan/Math55/Lenstra.pdf`. Lecture notes for Math 55.

Kahan:1989:CAA

[108] W. Kahan. Calculating area and angle of a needle-like triangle. Manuscript, January 26, 1989.

Kahan:1989:OFH

[109] W. Kahan. The occasional futility of higher-precision arithmetic. Manuscript, September 28, 1989.

Kahan:1989:PCA

[110] W. Kahan. Paradoxes in concepts of accuracy. Lecture notes from Joint Seminar on Issues and Directions in Scientific Computation, Berkeley, 1989.

Kahan:1989:SRN

[111] W. Kahan. A singularity removable numerically when arithmetic is clean. Manuscript, May 17, 1989.

Anderson:1990:PEL

[112] E. Anderson, C. Bischof, J. Demmel, J. Dongarra, J. Du Croz, S. Hammarling, and W. Kahan. Prospectus for an extension to LAPACK: A portable linear algebra library for high-performance computers. LAPACK Working Note and Computer Science Dept. Technical Report 26 and CS-90-118, Department of Computer Science, University of Tennessee, Knoxville, Knoxville, TN 37996, USA, November 1990. 10 pp. URL `http://www.netlib.org/lapack/lawns/lawn26.ps`; `http://www.netlib.org/lapack/lawnspdf/lawn26.pdf`. LAPACK Working Note #26. UT-CS-90-118, November 1990.

Demmel:1990:ASV

[113] James W. Demmel and W. Kahan. Accurate singular values of bidiagonal matrices. *SIAM Journal on Scientific and Statistical Computing*, 11(5):873–912, September 1990. CODEN SIJCD4. ISSN 0196-5204.

Kahan:1990:BPA

[114] W. Kahan. Better to prescribe arithmetic than describe it. Technical report, Department of Computer Science, University of California, Berkeley, CA, USA, February 21, 1990. Turing Award Lecture presented at ACM Conference, Washington.

Kahan:1990:HCA

[115] W. Kahan. How Cray's arithmetic hurts scientific computation (and what might be done about it). In CUG [352], page 42. ISBN ???? LCCN ???? URL `http://754r.ucbtest.org/issues/cray-hurts-uk.pdf`; `http://754r.ucbtest.org/issues/cray-hurts-ut.pdf`; `http://754r.ucbtest.org/issues/cray-hurts.pdf`. Manuscript prepared for the Cray User Group meeting in Toronto, Canada, April 10, 1990.

Kahan:1990:PCA

[116] William Kahan. Paradoxes in concepts of accuracy, 1990. 1 videocassette (60 min.).

Kahan:1990:POC

[117] W. Kahan. Paradoxes in our concepts of computational accuracy. Manuscript, October 1, 1990.

Kahan:1990:TCC

[118] W. Kahan. Twenty challenges for computerized symbolic algebra systems. Manuscript, August 16, 1990.

Demmel:1991:DPHa

[119] James Demmel, Jack Dongarra, and W. Kahan. On designing portable high

performance numerical libraries. LAPACK Working Note 39, Department of Computer Science, University of Tennessee, Knoxville, Knoxville, TN 37996, USA, July 1991. URL `http://www.netlib.org/lapack/lawns/lawn39.ps`; `http://www.netlib.org/lapack/lawnspdf/lawn39.pdf`. UT-CS-91-141, July, 1991.

Demmel:1991:DPHb

[120] J. Demmel, J. Dongarra, and W. Kahan. On designing portable high performance numerical libraries. In Griffiths and Watson [353], page ?? ISBN 0-582-08908-5. LCCN QA297 .D85 1991.

Kahan:1991:APL

[121] William Kahan and J. W. Thomas. Augmenting a programming language with complex arithmetic. Technical Report NCEG/91-039, UCB/CSD 91/667, Department of Computer Science, University of California, Berkeley, CA, USA, November 15, 1991. 8 pp. Manuscript.

Kahan:1991:ARL

[122] W. Kahan. Analysis and refutation of the LCAS. *ACM SIGNUM Newsletter*, 26(3):2–15, July 1991. CODEN SNEWD6. ISSN 0163-5778 (print), 1558-0237 (electronic).

Kahan:1991:CMA

[123] W. Kahan. Contracted multiply-adds. Manuscript, September 20, 1991.

Kahan:1991:VTC

[124] W. Kahan. Validating/testing/confirming/checking/correcting numerical software. Manuscript, November 26, 1991.

Paxson:1991:PTI

[125] Vern Paxson and W. Kahan. A program for testing IEEE binary–decimal conversion. World-Wide Web document, May 1991. URL `ftp://ftp.ee.lbl.gov/testbase-report.ps.Z`; `ftp://ftp.ee.lbl.gov/testbase.tar.Z`.

Demmel:1992:DPH

[126] James W. Demmel, J. J. Dongarra, and W. Kahan. On designing portable high performance numerical libraries. In D. F. Griffiths and G. A. Watson, editors, *Numerical Analysis 1991, Proceedings of the 14th Dundee Conference*, volume 260 of *Pitman Research Notes in Mathematics*, pages 69–84. Longman Scientific and Technical, Harlow, Essex, UK, 1992.

Kahan:1992:ARL

[127] W. Kahan. Analysis and refutation of the LCAS. *ACM SIGPLAN Notices*, 27 (1):61–74, January 1992. CODEN SINODQ. ISSN 0362-1340 (print), 1523-2867 (print), 1558-1160 (electronic).

Kahan:1992:DCD

[128] W. Kahan. DAYDATE: Computing days between dates, the day of the week, etc. World-Wide Web document, September 16, 1992. URL `http://www.cs.berkeley.edu/~wkahan/daydate/`.

Kahan:1992:FPE

[129] W. Kahan. Floating-point exception-handling. Manuscript, July 31, 1992.

Kahan:1992:NLI

[130] W. Kahan. Notes on Laguerre's iteration. Manuscript, December 4, 1992.

Kahan:1992:RCM

[131] W. Kahan. Roundoff in complex multiplication. Manuscript, November 11, 1992.

Kahan:1992:WN

[132] W. Kahan. What numbers? Manuscript, September 9, 1992.

Kahan:1993:AAS

[133] W. Kahan. Analysis and application of simply compensated summation. Manuscript, September 7, 1993.

Kahan:1993:TIE

[134] W. Kahan. A tridiagonal inverse eigenproblem and the travails of a would-be portable programmer. Manuscript, June 1, 1993.

Kahan:1993:UNM

[135] W. Kahan. Unconventional numerical methods for trajectory calculations. 1993.

Ozawa:1993:SAE

[136] K. Ozawa and M. Miyazaki. A summation algorithm with error correction for parallel computers. *Systems and Computers in Japan*, 24(7):62–68, ???? 1993. CODEN SCJAEP. ISSN 0882-1666 (print), 1520-684X (electronic). See [12].

Axler:1994:DD

[137] Sheldon Axler. Down with determinants! World-Wide Web document, December 21, 1994. URL `http://www.cs.berkeley.edu/~wkahan/MathH110/DownDets.pdf`. Lecture notes for Math H110.

Kahan:1994:AS

[138] W. Kahan. On the advantages of the 8087's stack. Manuscript, August 23, 1994.

Kahan:1994:CBV

[139] W. Kahan. Computer benchmarks versus accuracy. Draft manuscript, June 1994.

Kahan:1994:W

[140] W. Kahan. When is $x * [1/x] < x/x = 1$? Manuscript, January 1, 1994.

Sanz-Serna:1994:USI

[141] J. M. Sanz-Serna. An unconventional symplectic integrator of W. Kahan. *Applied Numerical Mathematics: Transactions of IMACS*, 16(1–2):245–250, December 1, 1994. CODEN ANMAEL. ISSN 0168-9274 (print), 1873-5460 (electronic). URL `http://www.elsevier.com/cgi-bin/cas/tree/store/apnum/cas_sub/browse/browse.cgi?year=1994&volume=16&issue=1-2&aid=506`. A Festschrift to honor Professor Robert Vichnevetsky on his 65th birthday.

Woehr:1994:LVP

[142] Jack Woehr. Lotfi visions, part 2. *Dr. Dobb's Journal of Software Tools*, 19(8): 52–??, August 1994. CODEN DDJOEB. ISSN 1044-789X.

Kahan:1995:LNS

[143] W. Kahan. Lecture notes on the status of IEEE Standard 754 for binary floating-point arithmetic. Manuscript, May 23, 1995.

Kahan:1995:TSD

[144] W. Kahan. A test for SRT division. Lecture notes, 1995. URL http://www.cs.berkeley.edu/~wkahan/srtest.

Kahan:1995:USP

[145] Students of Prof.W.Kahan. UCBTEST: a suite of programs for testing certain difficult cases of IEEE 754 floating-point arithmetic. World-Wide Web document, March 12, 1995. URL http://www.netlib.org/fp/ucbtest.tgz.

Cao:1996:SVK

[146] Zhi hao Cao, Jin jun Xie, and Ren-Cang Li. A sharp version of Kahan's theorem on clustered eigenvalues. *Linear Algebra and its Applications*, 245(1–3):147–155, September 15, 1996. CODEN LAAPAW. ISSN 0024-3795 (print), 1873-1856 (electronic). URL http://www.elsevier.com/cgi-bin/cas/tree/store/laa/cas_sub/browse/browse.cgi?year=1996&volume=245&issue=1-3&aid=9400226.

Goldreich:1996:HCC

[147] Oded Goldreich and Ariel Kahan. How to construct constant-round zero-knowledge proof systems for NP. *Journal of Cryptology: the journal of the International Association for Cryptologic Research*, 9(3):167–189, Summer 1996. CODEN JOCREQ. ISSN 0933-2790 (print), 1432-1378 (electronic). URL http://link.springer.de/link/service/journals/00145/bibs/9n3p167.html; http://link.springer.de/link/service/journals/00145/bibs/9n3p167.pdf; http://link.springer.de/link/service/journals/00145/bibs/9n3p167.tex; http://link.springer.de/link/service/journals/00145/tocs/00903.html.

Kahan:1996:BEC

[148] W. Kahan. The baleful effect of computer benchmarks upon applied mathematics, physics, and chemistry. World-Wide Web document., 1996. URL http://www.cs.berkeley.edu/~wkahan/ieee754status/baleful.ps.

Kahan:1996:BN

[149] W. Kahan. Beastly numbers. World-Wide Web document., January 13, 1996. URL http://www.cs.berkeley.edu/~wkahan/tests/; http://www.cs.berkeley.edu/~wkahan/tests/numbeast.ps.

Kahan:1996:CAN

[150] W. Kahan. A computation with almost no significance. Report, Department of Mathematics and Department of Electrical Engineering and Computer Science, University of California, Berkeley, Berkeley, CA, USA, May 6, 1996. 8 pp. URL http://www.eecs.berkeley.edu/~wkahan/CS279/Div754.pdf.

Kahan:1996:IPE

[151] W. Kahan. The improbability of probabilistic error analyses for numerical computations. Manuscript. This is an extended version of transparencies titled "The Improbability of Probabilistic Error Analysis", first presented in Hamburg at the third ICIAM Congress, 3–7 July, 1995., February 28, 1996. URL http://www.cs.berkeley.edu/~wkahan/improber.ps.

Kahan:1996:LNS

[152] W. Kahan. Lecture notes on the status of IEEE Standard 754 for binary floating-point arithmetic. World-Wide Web document., May 1996. URL `http://www.cs.berkeley.edu/~wkahan/ieee754status/ieee754.ps`.

Kahan:1996:TCR

[153] W. Kahan. A test for correctly rounded SQRT. Lecture notes., 1996. URL `http://www.cs.berkeley.edu/~wkahan/SQRTest.ps`.

Kahan:1996:WCY

[154] W. Kahan. What can you learn about floating-point arithmetic in one hour? Postscript version accessible electronically at `http://http.cs.berkeley.edu/~wkahan/ieee754status`., 1996. URL `http://www.cs.berkeley.edu/~wkahan/ieee754status/cs267fp.ps`.

Zheng:1996:FSG

[155] Dao-Sheng Zheng. Further study and generalization of Kahan's matrix extension theorem. *SIAM Journal on Matrix Analysis and Applications*, 17(3): 621–631, July 1996. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic). See note [187].

Kahan:1997:CCR

[156] William Kahan and Ren-Cang Li. Composition constants for raising the orders of unconventional schemes for ordinary differential equations. *Mathematics of Computation*, 66(219):1089–1099, July 1997. CODEN MCMPAF. ISSN 0025-5718 (print), 1088-6842 (electronic). URL `http://www.ams.org/jourcgi/jour-pbprocess?fn=110&arg1=S0025-5718-97-00873-9&u=/mcom/1997-66-219/`.

Kahan:1997:JNL

[157] W. Kahan. The John von Neumann lecture on the baleful effect of computer languages and benchmarks upon applied mathematics, physics and chemistry. World-Wide Web document., July 15, 1997. URL `http://www.cs.berkeley.edu/~wkahan/SIAMjvnl.ps`. Presented at the SIAM 45th annual meeting, Stanford University.

Kahan:1997:LNS

[158] W. Kahan. Lecture notes on the status of IEEE Standard 754 for Binary Floating-Point Arithmetic. World-Wide Web document, October 1, 1997. URL `http://www.cs.berkeley.edu/~wkahan/ieee754status/IEEE754.PDF`.

Kahan:1997:MAA

[159] W. Kahan. Miscalculating area and angles of a needle-like triangle. Manuscript, July 1997.

Kahan:1997:RDI

[160] W. Kahan and Melody Y. Ivory. Round-off degrades an idealized cantilever. Technical report, Department of Mathematics and Department of Electrical Engineering and Computer Science, University of California, Berkeley, Berkeley, CA, USA, July 3, 1997. 11 pp. URL `http://www.cs.berkeley.edu/~wkahan/Cantilever.pdf`; `http://www.cs.berkeley.edu/~wkahan/Cantilever.ps`.

Kahan:1997:USC

[161] William Kahan and Ren-Chang Li. Unconventional schemes for a class of ordi-

nary differential equations—with applications to the Korteweg–de Vries equation. *Journal of computational physics*, 134(2):316–331, July 1, 1997. CODEN JCTPAH. ISSN 0021-9991 (print), 1090-2716 (electronic). URL `http://www.sciencedirect.com/science/article/pii/S0021999197957107`.

Woehr:1997:CWK

[162] Jack Woehr. A conversation with William Kahan: How important is numerical accuracy? *Dr. Dobb's Journal of Software Tools*, 22(11):18–20, 22, 24, 26, 30, 32, November 1997. CODEN DDJOEB. ISSN 1044-789X. Kahan, the father of the IEEE 754 floating-point standard, talks about floating-point arithmetic issues, and numerical deficiencies in Java.

Xie:1997:NDK

[163] Jianjun Xie. A note on the Davis-Kahan $\sin\Theta$ theorem. *Linear Algebra and its Applications*, 258(1–3):129–135, June ??, 1997. CODEN LAAPAW. ISSN 0024-3795 (print), 1873-1856 (electronic). URL `http://www.elsevier.com/cgi-bin/cas/tree/store/laa/cas_sub/browse/browse.cgi?year=1997&volume=258&issue=1-3&aid=9600207`.

Darcy:1998:APE

[164] Joseph D. Darcy and William Kahan. Analysis of *Proposal for Extension to Java Floating Point Semantics, Revision 1*. Technical report, Java Grande Numerics Working Group, August 7, 1998. 18 pp. URL `http://www.sonic.net/~jddarcy/Research/jgrande.pdf`.

Kahan:1998:AFE

[165] W. Kahan. Answers for final examination. World-Wide Web document, December 19, 1998. URL `http://www.cs.berkeley.edu/~wkahan/MathH110/finexms.pdf`. Lecture notes for Math H110.

Kahan:1998:CTL

[166] W. Kahan. Chió's trick for linear equations with integer coefficients. World-Wide Web document, October 24, 1998. URL `http://www.cs.berkeley.edu/~wkahan/MathH110/chio.pdf`. Lecture notes for Math H110.

Kahan:1998:DP

[167] W. Kahan. Diagonal prominence. World-Wide Web document, October 25, 1998. URL `http://www.cs.berkeley.edu/~wkahan/MathH110/diagprom.pdf`. Lecture notes for Math H110.

Kahan:1998:GEO

[168] W. Kahan. Geometry of elementary operations. World-Wide Web document, September 22, 1998. URL `http://www.cs.berkeley.edu/~wkahan/MathH110/geo.pdf`. Lecture notes for Math H110.

Kahan:1998:GJI

[169] W. Kahan. Gauss–Jordan inversion of a matrix. World-Wide Web document, October 16, 1998. URL `http://www.cs.berkeley.edu/~wkahan/MathH110/gji.pdf`. Lecture notes for Math H110.

Kahan:1998:HJFa

[170] W. Kahan and Joseph D. Darcy. How Java's floating-point hurts everyone everywhere. Technical report, Department of Mathematics and Department of Electrical Engineering and Computer Science, University of California, Berkeley, Berkeley, CA, USA, June 18, 1998. 80 pp.

URL http://www.cs.berkeley.edu/~wkahan/JAVAhurt.pdf; http://www.cs.berkeley.edu/~wkahan/JAVAhurt.ps.

Kahan:1998:HJFb

[171] William Kahan. How Java's floating-point hurts everyone everywhere. In ACM [355], page ?? CODEN CPEXEI. ISSN 1040-3108 (print), 1096-9128 (electronic). LCCN ???? URL http://www.cs.ucsb.edu/conferences/java98/papers/javahurt.pdf. Also published as *Concurrency: Practice and Experience*, **10**(11–13), September 1998, CODEN CPEXEI, ISSN 1040-3108.

Kahan:1998:IPE

[172] W. Kahan. The improbability of probabilistic error analyses for numerical computations. Technical report, Department of Mathematics and Department of Electrical Engineering and Computer Science, University of California, Berkeley, Berkeley, CA, USA, June 10, 1998. 34 pp. URL http://www.cs.berkeley.edu/~wkahan/improber.pdf.

Kahan:1998:JFD

[173] W. Kahan. Jacobi's formula for the derivative of a determinant. World-Wide Web document, October 14, 1998. URL http://www.cs.berkeley.edu/~wkahan/MathH110/jacobi.pdf. Lecture notes for Math H110.

Kahan:1998:LNR

[174] W. Kahan. Lecture notes on real root-finding. World-Wide Web document, March 4, 1998. URL http://www.cs.berkeley.edu/~wkahan/Math128/LNRRabst.txt. Lecture notes for Math 128.

Kahan:1998:LRR

[175] W. Kahan. A lecture on real root-finding. World-Wide Web document, April 6, 1998. URL http://www.cs.berkeley.edu/~wkahan/Math128/LecRlRtF.pdf. Lecture notes for Math 128. Extracted from "Lecture Notes on Real Root-Finding" [174].

Kahan:1998:LSA

[176] W. Kahan. Least-squares approximation and bilinear forms. World-Wide Web document, September 20, 1998. URL http://www.cs.berkeley.edu/~wkahan/MathH110/lstsqrs.pdf. Lecture notes for Math H110.

Kahan:1998:MLN

[177] W. Kahan. Matlab's loss is nobody's gain. Technical report, Department of Mathematics and Department of Electrical Engineering and Computer Science, University of California, Berkeley, Berkeley, CA, USA, August 23, 1998. 35 pp. URL http://www.cs.berkeley.edu/~wkahan/MxMulEps.pdf; http://www.cs.berkeley.edu/~wkahan/MxMulEps.ps.

Kahan:1998:NDS

[178] W. Kahan. Notes on 2-dimensional spaces. World-Wide Web document, October 4, 1998. URL http://www.cs.berkeley.edu/~wkahan/MathH110/2dspaces.pdf. Lecture notes for Math H110.

Kahan:1998:PSP

[179] W. Kahan. Problem set 1: Problems about our axioms for a vector space. World-Wide Web document,

September 16, 1998. URL http://www.cs.berkeley.edu/~wkahan/MathH110/prblms1.pdf. Lecture notes for Math H110.

Kahan:1998:RRE

[180] W. Kahan. The reduced row-echelon form is unique. World-Wide Web document, September 12, 1998. URL http://www.cs.berkeley.edu/~wkahan/MathH110/RREF1.pdf. Lecture notes for Math H110.

Kahan:1998:SPS

[181] W. Kahan. Solutions for problem set 2. World-Wide Web document, October 1, 1998. URL http://www.cs.berkeley.edu/~wkahan/MathH110/prblms2.pdf. Lecture notes for Math H110.

Kahan:1998:THT

[182] W. Kahan. Take-home test's solutions. World-Wide Web document, October 5, 1998. URL http://www.cs.berkeley.edu/~wkahan/MathH110/tkhms.pdf. Lecture notes for Math H110.

Kahan:1998:TPS

[183] W. Kahan. Test problems and solutions. World-Wide Web document, December 4, 1998. URL http://www.cs.berkeley.edu/~wkahan/MathH110/testexam.pdf. Lecture notes for Math H110.

Kahan:1998:VSB

[184] W. Kahan. Vector spaces, bases, and dual spaces. World-Wide Web document, November 4, 1998. URL http://www.cs.berkeley.edu/~wkahan/MathH110/pts.pdf. Lecture notes for Math H110.

Severance:1998:IOM

[185] Charles Severance. An interview with the old man of floating-point. Reminiscences elicited from William Kahan. World-Wide Web document., February 1998. URL http://www.cs.berkeley.edu/~wkahan/ieee754status/754story.html. A shortened version appears in [186].

Severance:1998:SII

[186] Charles Severance. Standards: IEEE 754: An interview with William Kahan. *Computer*, 31(3):114–115, March 1998. CODEN CPTRB4. ISSN 0018-9162 (print), 1558-0814 (electronic). URL http://pdf.computer.org/co/books/co1998/pdf/r3114.pdf.

Zheng:1998:NFS

[187] Dao-Sheng Zheng. Note on "Further Study and Generalization of Kahan's Matrix Extension Theorem". *SIAM Journal on Matrix Analysis and Applications*, 19(1):277–278, January 1998. CODEN SJMAEL. ISSN 0895-4798 (print), 1095-7162 (electronic). URL http://epubs.siam.org/sambin/dbq/article/31443. See [155].

Anonymous:1999:AAM

[188] Anonymous. ACM Alan M. Turing Award: William V. Kahan. World Wide Web document, February 8, 1999. URL http://www.acm.org/awards/turing_citations/kahan.html.

Kahan:1999:C

[189] W. Kahan. Computing x^n. World-Wide Web document, March 20, 1999. URL http://www.cs.berkeley.edu/~wkahan/Math55/npower.pdf. Lecture notes for Math 55.

Kahan:1999:CS

[190] W. Kahan. Coins and stamps. World-Wide Web document, May 1, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math55/coins.pdf`. Lecture notes for Math 55.

Kahan:1999:CSC

[191] W. Kahan. Conic sections in the complex z-plane. World-Wide Web document, September 4, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math185/conics.pdf`. Lecture notes for Math 185.

Kahan:1999:CSL

[192] W. Kahan. California super lottery. World-Wide Web document, April 13, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math55/lotto.pdf`. Lecture notes for Math 55.

Kahan:1999:CVC

[193] W. Kahan. Complexity vs. cost. World-Wide Web document, August 24, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math55/cmplxty.pdf`. Lecture notes for Math 55.

Kahan:1999:D

[194] W. Kahan. Derangements. World-Wide Web document, June 9, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math55/derange.pdf`. Lecture notes for Math 55.

Kahan:1999:DTP

[195] W. Kahan. Discussion of two problems in the text. World-Wide Web document, February 3, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math55/m55jan28.pdf`. Lecture notes for Math 55.

Kahan:1999:EGA

[196] W. Kahan. Euclid's GCD algorithm. World-Wide Web document, May 10, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math55/gcd.pdf`. Lecture notes for Math 55.

Kahan:1999:EMSa

[197] W. Kahan. Exam model solutions. World-Wide Web document, February 10, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math55/feb10s.pdf`. Lecture notes for Math 55.

Kahan:1999:EMSb

[198] W. Kahan. Exam: Model solutions. World-Wide Web document, March 3, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math55/m55mar3s.pdf`. Lecture notes for Math 55.

Kahan:1999:EMSc

[199] W. Kahan. Exam: Model solutions. World-Wide Web document, March 18, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math55/m55mr18s.pdf`. Lecture notes for Math 55.

Kahan:1999:EMSd

[200] W. Kahan. Exam: Model solutions. World-Wide Web document, May 11, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math55/m55my11s.pdf`. Lecture notes for Math 55.

Kahan:1999:EPI

[201] W. Kahan. Enumerating pairs of integers. World-Wide Web document, April 30, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math55/pairs.pdf`. Lecture notes for Math 55.

Kahan:1999:FEM

[202] W. Kahan. Final exam: Model solutions. World-Wide Web document, May 14, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math55/m55finls.pdf`. Lecture notes for Math 55.

Kahan:1999:FI

[203] W. Kahan. The fragility of improbability. World-Wide Web document, June 9, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math55/correln.pdf`. Lecture notes for Math 55.

Kahan:1999:FLT

[204] W. Kahan. Fermat's little theorem. World-Wide Web document, March 1, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math55/fermat.pdf`. Lecture notes for Math 55.

Kahan:1999:HP

[205] W. Kahan. The halting problem. World-Wide Web document, March 13, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math55/halting.pdf`. Lecture notes for Math 55.

Kahan:1999:LLN

[206] W. Kahan. The Law of Large Numbers. World-Wide Web document, May 29, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math55/largenos.pdf`. Lecture notes for Math 55.

Kahan:1999:MS

[207] W. Kahan. Math 55 syllabus. World-Wide Web document, June 20, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math55/syllabus.pdf`. Lecture notes for Math 55.

Kahan:1999:MSS

[208] W. Kahan. Math 55 Spring 1999 syllabus. World-Wide Web document, May 6, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math55/math55.pdf`. Lecture notes for Math 55.

Kahan:1999:OCT

[209] W. Kahan. Only commutators have trace zero. World-Wide Web document, June 10, 1999. URL `http://www.cs.berkeley.edu/~wkahan/MathH110/trace0.pdf`. Lecture notes for Math H110.

Kahan:1999:PS

[210] W. Kahan. Problems' solutions. World-Wide Web document, December 15, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math185/probsoln.pdf`. Lecture notes for Math 185.

Kahan:1999:RAI

[211] W. Kahan. Rational approximations of irrationals. World-Wide Web document, April 8, 1999. URL `http://www.cs.berkeley.edu/~wkahan/Math55/p249n17.pdf`. Lecture notes for Math 55.

Kahan:1999:SCD

[212] W. Kahan and Richard J. Fateman. Symbolic computation of divided differences. *SIGSAM Bulletin (ACM Special Interest Group on Symbolic and Algebraic Manipulation)*, 33(2):7–28, June 1999. CODEN SIGSBZ. ISSN 0163-5824 (print), 1557-9492 (electronic).

Kahan:1999:SFE

[213] W. Kahan. Solutions for final exam. World-Wide Web document, December 11, 1999. URL `http://www.`

cs.berkeley.edu/~wkahan/Math185/xm11decs.pdf. Lecture notes for Math 185.

Kahan:1999:SI

[214] W. Kahan. Some inequalities. World-Wide Web document, May 9, 1999. URL http://www.cs.berkeley.edu/~wkahan/Math55/ineq.pdf. Lecture notes for Math 55.

Kahan:1999:SP

[215] W. Kahan. Solutions to problems. World-Wide Web document, December 12, 1999. URL http://www.cs.berkeley.edu/~wkahan/Math185/31aug99s.pdf. Lecture notes for Math 185.

Kahan:1999:SPH

[216] W. Kahan. Solutions to problems in H. W. Lenstra's notes. World-Wide Web document, July 9, 1999. URL http://www.cs.berkeley.edu/~wkahan/Math55/lenstras.pdf. Lecture notes for Math 55.

Kahan:1999:SRD

[217] W. Kahan. Square root without division. World-Wide Web document, February 23, 1999. URL http://www.cs.berkeley.edu/~wkahan/ieee754status/reciprt.pdf.

Kahan:1999:SSE

[218] W. Kahan. SOLVEzag: Solve the equation $z = (1 - exp(-pz))/(pz)$ for $z \geq 0$ as a function of $p \geq 0$. World-Wide Web document, August 1, 1999. URL http://www.cs.berkeley.edu/~wkahan/Math128/SOLVEzag.pdf; http://www.cs.berkeley.edu/~wkahan/Math128/SOLVEzag.ps. Lecture notes for Math 128.

Kahan:1999:T

[219] W. Kahan. Test. World-Wide Web document, January 27, 1999. URL http://www.cs.berkeley.edu/~wkahan/Math55/jan27s.pdf. Lecture notes for Math 55.

Kahan:1999:TMS

[220] W. Kahan. Test: Model solutions. World-Wide Web document, April 26, 1999. URL http://www.cs.berkeley.edu/~wkahan/Math55/m55ap26s.pdf. Lecture notes for Math 55.

Kahan:1999:TPA

[221] W. Kahan. Three problems about combinatorial coefficients. World-Wide Web document, April 26, 1999. URL http://www.cs.berkeley.edu/~wkahan/Math55/ncr.pdf. Lecture notes for Math 55.

Kahan:1999:WB

[222] W. Kahan. Waiting for a bus. World-Wide Web document, April 12, 1999. URL http://www.cs.berkeley.edu/~wkahan/Math55/bus.pdf. Lecture notes for Math 55.

Bhatia:2000:PNS

[223] Rajendra Bhatia, William Kahan, and Ren-Cang Li. Pinchings and norms of scaled triangular matrices. Technical Report 2000-23, Department of Mathematics, University of Kentucky, Lexington, KY, USA, 2000. URL http://www.cs.uky.edu/~rcli/papers/kablrep.ps.

Bindel:2000:CGR

[224] D. Bindel, J. Demmel, W. Kahan, and O. Marques. On computing

Givens rotations reliably and efficiently. LAPACK Working Note 148, Department of Computer Science, University of Tennessee, Knoxville, Knoxville, TN 37996, USA, October 2000. URL http://www.netlib.org/lapack/lawns/lawn148.ps; http://www.netlib.org/lapack/lawnspdf/lawn148.pdf. UT-CS-00-449, October 2000. Published in [255].

He:2000:PAA

[225] Yun (Helen) He and Chris H. Q. Ding. Platforms: An accurate arithmetics approach. In ACM [356], page 150. ISBN 0-7803-9802-5. LCCN QA76.88 2000. URL http://csdl.computer.org/comp/proceedings/sc/2000/9802/00/9802toc.htm; http://www.sc2000.org/proceedings/info/fp.pdf.

Kahan:2000:AFE

[226] W. Kahan. Answers for final examination. World-Wide Web document, December 21, 2000. URL http://www.cs.berkeley.edu/~wkahan/MathH110/finals.pdf. Lecture notes for Math H110.

Kahan:2000:AFV

[227] W. Kahan. Axioms for fields and vector spaces. World-Wide Web document, May 17, 2000. URL http://www.cs.berkeley.edu/~wkahan/MathH110/Axioms.pdf. Lecture notes for Math H110.

Kahan:2000:CPR

[228] W. Kahan. Cross-products and rotations in 2- and 3-dimensional Euclidean spaces: Notes for math. H110. World-Wide Web document, October 11, 2000. URL http://www.cs.berkeley.edu/~wkahan/Math128/Cross.pdf. Lecture notes for Math 128.

Kahan:2000:EGA

[229] W. Kahan. Euclid's GCD algorithm. World-Wide Web document, October 5, 2000. URL http://www.cs.berkeley.edu/~wkahan/MathH110/gcd5.pdf. Lecture notes for Math H110.

Kahan:2000:GEO

[230] W. Kahan. Geometry of elementary operations and subspaces: A continuation of notes titled "Geometry of elementary operations". World-Wide Web document, December 14, 2000. URL http://www.cs.berkeley.edu/~wkahan/MathH110/geos.pdf. Lecture notes for Math H110.

Kahan:2000:GMH

[231] W. Kahan. Grades for Math. H110. World-Wide Web document, 2000. URL http://www.cs.berkeley.edu/~wkahan/MathH110/h110_00.pdf. Lecture notes for Math H110.

Kahan:2000:HRQ

[232] W. Kahan. How to recognize a quadratic form. World-Wide Web document, October 31, 2000. URL http://www.cs.berkeley.edu/~wkahan/MathH110/qf.pdf. Lecture notes for Math H110.

Kahan:2000:JNF

[233] W. Kahan. Jordan's normal form. World-Wide Web document, December 7, 2000. URL http://www.cs.berkeley.edu/~wkahan/MathH110/jordan.pdf. Lecture notes for Math H110.

Kahan:2000:LAM

[234] W. Kahan. Linear algebra and matrix theory. World-Wide Web document, Fall 2000. URL http://www.cs.berkeley.edu/~wkahan/MathH110/Topics.pdf. Lecture notes for Math H110.

Kahan:2000:MAA

[235] W. Kahan. Miscalculating area and angles of a needle-like triangle. World-Wide Web lecture notes for introductory numerical analysis classes., March 24, 2000. URL http://www.cs.berkeley.edu/~wkahan/Triangle.pdf.

Kahan:2000:MVM

[236] W. Kahan. Marketing versus mathematics and other ruminations on the design of floating-point arithmetic. Technical report, Mathematics Department and Electrical Engineering and Computer Science Department, University of California, Berkeley, Berkeley, CA, USA, August 27, 2000. 48 pp. URL http://www.cs.berkeley.edu/~wkahan/MktgMath.pdf; http://www.cs.nyu.edu/cs/faculty/overton/book/docs/KahanTalk.pdf.

Kahan:2000:NJI

[237] W. Kahan. Notes on Jensen's inequality for Math. H90. World-Wide Web document, September 27, 2000. URL http://www.cs.berkeley.edu/~wkahan/MathH110/jensen.pdf. Lecture notes for Math H110.

Kahan:2000:NVN

[238] W. Kahan. Notes on vector norms. World-Wide Web document, December 6, 2000. URL http://www.cs.berkeley.edu/~wkahan/MathH110/normlite.pdf. Lecture notes for Math H110.

Kahan:2000:PSa

[239] W. Kahan. Problems' solutions. World-Wide Web document, October 19, 2000. URL http://www.cs.berkeley.edu/~wkahan/MathH110/s10oct.pdf. Lecture notes for Math H110.

Kahan:2000:PSb

[240] W. Kahan. Problems' solutions. World-Wide Web document, November 27, 2000. URL http://www.cs.berkeley.edu/~wkahan/MathH110/s21nov.pdf. Lecture notes for Math H110.

Kahan:2000:RDFa

[241] W. Kahan. Ruminations on the design of floating-point arithmetic. World-Wide Web document, April 25, 2000. URL http://cs.nyu.edu/cs/faculty/overton/book/docs/KahanTalk.pdf.

Kahan:2000:RDFb

[242] W. Kahan. Marketing versus mathematics and other ruminations on the design of floating-point arithmetic. Technical report, Mathematics Department and Electrical Engineering and Computer Science Department, University of California, Berkeley, Berkeley, CA, USA, August 27, 2000. 48 pp. URL http://www.cs.berkeley.edu/%7Ewkahan/MktgMath.pdf; http://www.cs.nyu.edu/cs/faculty/overton/book/docs/KahanTalk.pdf.

Kahan:2000:TCE

[243] W. Kahan. Topics covered for exam purposes. World-Wide Web document,

December 12, 2000. URL http://www.cs.berkeley.edu/~wkahan/MathH110/covered.pdf. Lecture notes for Math H110.

Li:2000:DIT

[244] X. S. Li, J. W. Demmel, D. H. Bailey, G. Henry, Y. Hida, J. Iskandar, W. Kahan, A. Kapur, M. C. Martin, T. Tung, and D. J. Yoo. Design, implementation and testing of extended and mixed precision BLAS. LAPACK Working Note and University of Tennessee report 149 and CS-00-451, Department of Computer Science, University of Tennessee, Knoxville, Knoxville, TN 37996, USA, October 2000. 61 pp. URL http://www.netlib.org/lapack/lawns/lawn149.ps; http://www.netlib.org/lapack/lawnspdf/lawn149.pdf.

Demmel:2001:CAF

[245] J. Demmel, Ben Diament, W. Kahan, Plamen Koev, Ming Gu, Stan Eisenstat, Ivan Slapničar, Kresimir Veselić, and Zlatko Drmač. The complexity of accurate floating point computation and symbolic computing, or, can we do numerical linear algebra in polynomial time? Lecture slides, 2001. URL http://www.cs.berkeley.edu/~demmel/ISSAC2001_2.pdf.

Kahan:2001:ATA

[246] W. Kahan. Approximate trisection of an angle. World-Wide Web document, January 31, 2001. URL http://www.cs.berkeley.edu/~wkahan/trisect.pdf; http://www.cs.berkeley.edu/~wkahan/trisect.ps.

Kahan:2001:HBM

[247] W. Kahan. How blabber-mouth U-boats got sunk in World War II. World-Wide Web document, November 24, 2001. URL http://www.cs.berkeley.edu/~wkahan/BlaUboat.pdf.

Kahan:2001:MBR

[248] W. Kahan. M. Brand's 2nd revised problem has infinitely many solutions. World-Wide Web document, April 13, 2001. URL http://www.cs.berkeley.edu/~wkahan/Math128/Brand2.pdf. Lecture notes for Math 128.

Kahan:2001:NSF

[249] W. Kahan. Names for standardized floating-point formats. Technical report, Mathematics Department and Electrical Engineering and Computer Science Department, University of California, Berkeley, Berkeley, CA, USA, May 17, 2001. 4 pp. URL http://www.cs.berkeley.edu/~wkahan/ieee754status/Names.pdf.

Kahan:2001:PDA

[250] William Kahan. Pseudo-division algorithms for floating-point logarithms and exponentials. May 20, 2001. URL https://ieeemilestones.ethw.org/w/images/3/30/Wk_pseudo_division_log_exp_may01.pdf.

Kahan:2001:SFP

[251] W. Kahan. SRTEST: A Fortran program to test any SRT divider's logic for quotient-digit selection. World-Wide Web document, August 6, 2001. URL http://www.cs.berkeley.edu/~wkahan/srtest/.

Kahan:2001:WDW

[252] W. Kahan. Why do we need a floating-point arithmetic standard? Technical report, University of California, Berkeley, CA, USA, March 2001. 49 pp. URL `http://www.cs.berkeley.edu/~wkahan/ieee754status/why-ieee.pdf`.

Kahan:2001:WVT

[253] W. Kahan. What has the volume of a tetrahedron to do with computer programming languages? Technical report, Department of Mathematics and Department of Electrical Engineering and Computer Science, University of California, Berkeley, Berkeley, CA, USA, April 20, 2001. 31 pp. URL `http://www.cs.berkeley.edu/~wkahan/VtetLang.pdf`.

Bhatia:2002:PNS

[254] Rajendra Bhatia, William Kahan, and Ren-Cang Li. Pinchings and norms of scaled triangular matrices. *Linear Multilinear Algebra*, 50(1):15–21, 2002. CODEN LNMLAZ. ISSN 0308-1087.

Bindel:2002:CGR

[255] David Bindel, James Demmel, William Kahan, and Osni Marques. On computing Givens rotations reliably and efficiently. *ACM Transactions on Mathematical Software*, 28(2):206–238, June 2002. CODEN ACMSCU. ISSN 0098-3500 (print), 1557-7295 (electronic).

Kahan:2002:AI

[256] W. Kahan. About infinity. World-Wide Web document, March 7, 2002. URL `http://www.cs.berkeley.edu/~wkahan/Infinity.pdf`.

Kahan:2002:ALN

[257] W. Kahan. Abbreviated lecture notes on ellipsoidal error bounds for trajectory calculations. World-Wide Web document, March 9, 2002. URL `http://www.cs.berkeley.edu/~wkahan/Math128/Ellipsoi.pdf`. Lecture notes for Math 128.

Kahan:2002:CA

[258] W. Kahan. Computing an adjugate. World-Wide Web document, March 19, 2002. URL `http://www.cs.berkeley.edu/~wkahan/MathH110/Adjx.pdf`. Lecture notes for Math H110.

Kahan:2002:FPC

[259] W. Kahan. Fclass: a proposed classification of standard floating-point operands. World-Wide Web document, March 23, 2002. URL `http://www.cs.berkeley.edu/%7Ewkahan/ieee754status/Fclass.pdf`.

Kahan:2002:HGI

[260] W. Kahan. Huge generalized inverses of rank-deficient matrices. World-Wide Web document, May 2, 2002. URL `http://www.cs.berkeley.edu/~wkahan/MathH110/GIlite.pdf`. Lecture notes for Math H110.

Kahan:2002:IBD

[261] W. Kahan. Idempotent binary → decimal → binary conversion. World-Wide Web document, February 2, 2002. URL `http://www.cs.berkeley.edu/~wkahan/Math128/BinDecBin.pdf`. Lecture notes for Math 128.

Kahan:2002:MFE

[262] W. Kahan. Math. 110 final exam. World-Wide Web document, May 27,

2002. URL http://www.cs.berkeley.edu/~wkahan/MathH110/Final02.pdf. Lecture notes for Math H110.

Kahan:2002:MIH

[263] W. Kahan. Matlab's inverses of Hilbert matrices. World-Wide Web document, May 2, 2002. URL http://www.cs.berkeley.edu/~wkahan/MathH110/HilbMats.pdf. Lecture notes for Math H110.

Kahan:2002:MPI

[264] W. Kahan. Matlab programs for interpolation and extrapolation. World-Wide Web document, February 11, 2002. URL http://www.cs.berkeley.edu/~wkahan/Math128/XPOLATE. Lecture notes for Math 128.

Kahan:2002:MTa

[265] W. Kahan. MidTerm test. World-Wide Web document, March 5, 2002. URL http://www.cs.berkeley.edu/~wkahan/MathH110/MidTerm.pdf. Lecture notes for Math H110.

Kahan:2002:MTb

[266] W. Kahan. MidTerm test. World-Wide Web document, April 29, 2002. URL http://www.cs.berkeley.edu/~wkahan/MathH110/MidTerm2.pdf. Lecture notes for Math H110.

Kahan:2002:NAC

[267] W. Kahan. The numerical analyst as computer science curmudgeon. World-Wide Web document, September 11, 2002. URL http://www.cs.berkeley.edu/~wkahan/Curmudge.pdf.

Kahan:2002:ODE

[268] W. Kahan. An ordinary differential equation in interval-arithmetic. World-Wide Web document, March 9, 2002. URL http://www.cs.berkeley.edu/~wkahan/Math128/ODEintvl.pdf. Lecture notes for Math 128.

Kahan:2002:RPR

[269] W. Kahan. Refineig: a program to refine eigensystems. World-Wide Web document, May 29, 2002. URL http://www.cs.berkeley.edu/~wkahan/Math128/refineig.abs; http://www.cs.berkeley.edu/~wkahan/Math128/RefinEig.pdf. Lecture notes for Math 128. Work in progress: not for redistribution.

Kahan:2002:SCP

[270] W. Kahan. Separation of clouds by a plane. World-Wide Web document, May 17, 2002. URL http://www.cs.berkeley.edu/~wkahan/Math128/Separate.pdf; http://www.cs.berkeley.edu/~wkahan/MathH110/Separate.pdf. Lecture notes for Math H110 and Math 128.

Kahan:2002:TPM

[271] W. Kahan. Two problems: Must triangular matrices have triangular inverses? When are triangular factorizations unique? World-Wide Web document, February 20, 2002. URL http://www.cs.berkeley.edu/~wkahan/MathH110/TriFact.pdf. Lecture notes for Math H110.

Kahan:2002:TRD

[272] W. Kahan. Thiele's reciprocal differences and derivatives. World-Wide Web document, February 14, 2002. URL http://www.cs.berkeley.edu/~wkahan/Math128/THIELEDF. Lecture notes for Math 128.

Li:2002:DIT

[273] Xiaoye S. Li, James W. Demmel, David H. Bailey, Greg Henry, Yozo Hida, Jimmy Iskandar, William Kahan, Suh Y. Kang, Anil Kapur, Michael C. Martin, Brandon J. Thompson, Teresa Tung, and Daniel J. Yoo. Design, implementation and testing of extended and mixed precision BLAS. *ACM Transactions on Mathematical Software*, 28(2): 152–205, June 2002. CODEN ACMSCU. ISSN 0098-3500 (print), 1557-7295 (electronic).

Parlett:2002:QA

[274] Beresford N. Parlett. The QR algorithm. World-Wide Web document, April 22, 2002. URL `http://www.cs.berkeley.edu/~wkahan/Math128/Parlett.pdf`. Lecture notes for Math 128.

Shampine:2002:MOS

[275] Lawrence F. Shampine and Mark W. Reichelt. The Matlab ODE suite. World-Wide Web document, February 27, 2002. URL `http://www.cs.berkeley.edu/~wkahan/Math128/ODEsuite.pdf`. Lecture notes for Math 128.

Kahan:2003:CPR

[276] W. Kahan. Cross-products and rotations in 2- and 3-dimensional Euclidean spaces. World-Wide Web document, November 23, 2003. URL `http://www.cs.berkeley.edu/~wkahan/MathH110/Cross.pdf`. Lecture notes for Math H110.

Randolph:2003:WKT

[277] Dan W. Randolph. William Kahan: 1989 Turing Award winner. Cosc 5000 class report, Department of Computer Science University of Wyoming, Laramie, WY, USA, May 16, 2003. 7 pp. URL `http://www.mapsharecorp.com/kahan.pdf`.

Kahan:2004:A

[278] W. Kahan. Abstracts. World-Wide Web document, November 1, 2004. URL `http://www.cs.berkeley.edu/~wkahan/abstrcts`. Abstracts of some of the online documents.

Kahan:2004:ASC

[279] W. Kahan. Assignment: Solve $A_4 z = b$ by conjugate gradient iteration without ever storing the matrix A_4. World-Wide Web document, April 19, 2004. URL `http://www.cs.berkeley.edu/~wkahan/Math128/a4d2.txt`. Lecture notes for Math 128.

Kahan:2004:ASE

[280] W. Kahan. Angle subtended at the eye by neighboring stars. World-Wide Web document, September 17, 2004. URL `http://www.cs.berkeley.edu/~wkahan/Math128/angle.pdf`. Lecture notes for Math 128.

Kahan:2004:CFP

[281] W. Kahan. On the cost of floating-point computation without extra-precise arithmetic. World-Wide Web document, November 20, 2004. URL `http://www.cs.berkeley.edu/~wkahan/Qdrtcs.pdf`. See [322] for a proof of this algorithm for accurate computation of the discriminant needed for the solution of quadratic equations.

Kahan:2004:DCP

[282] W. Kahan. Derivatives in the complex z-plane. World-Wide Web docu-

ment, May 26, 2004. URL http://www.cs.berkeley.edu/~wkahan/Math185/Derivative.pdf. Lecture notes for Math 185.

Kahan:2004:FMD

[283] W. Kahan. Failure mode: Do MATLAB's lu(...), inv(...), / and \ have a failure mode? World-Wide Web document, February 17, 2004. URL http://www.cs.berkeley.edu/~wkahan/Math128/FailMode.pdf. Lecture notes for Math 128.

Kahan:2004:HFM

[284] W. Kahan. How futile are mindless assessments of roundoff in floating-point computation? World-Wide Web document, November 1, 2004. URL http://www.cs.berkeley.edu/~wkahan/Mind1ess.pdf; http://www.cs.berkeley.edu/~wkahan/Mindless.pdf.

Kahan:2004:ICG

[285] W. Kahan. Iterate: Conjugate gradients and overrelaxation. World-Wide Web document, April 7, 2004. URL http://www.cs.berkeley.edu/~wkahan/Math128/Iterate.pdf. Lecture notes for Math 128.

Kahan:2004:LNR

[286] W. Kahan. Lecture notes on real root-finding. World-Wide Web document, June 23, 2004. URL http://www.cs.berkeley.edu/~wkahan/Math128/RealRoots.pdf. Lecture notes for Math 128. Work in progress: not for redistribution.

Kahan:2004:LTC

[287] W. Kahan. A logarithm too clever by half. World-Wide Web document, August 9, 2004. URL http://www.cs.berkeley.edu/~wkahan/LOG10HAF.TXT.

Kahan:2004:PMG

[288] W. Kahan. Prof. Ming Gu's transparencies. World-Wide Web document, May 5, 2004. URL http://www.cs.berkeley.edu/~wkahan/Math128/MGu; http://www.cs.berkeley.edu/~wkahan/Math128/MGu/kahanbvp.pdf; http://www.cs.berkeley.edu/~wkahan/Math128/MGu/kahanss.pdf; http://www.cs.berkeley.edu/~wkahan/Math128/MGu/pendi.pdf; http://www.cs.berkeley.edu/~wkahan/Math128/MGu/tridi.pdf. Lecture notes for Math 128.

Kahan:2004:SSR

[289] W. Kahan. 128 squares of 128 square roots. World-Wide Web document, January 29, 2004. URL http://www.cs.berkeley.edu/~wkahan/Math128/SqSqrts.pdf. Lecture notes for Math 128.

Kahan:2004:THT

[290] W. Kahan. Take-home test for math. 128B. World-Wide Web document, March 8, 2004. URL http://www.cs.berkeley.edu/~wkahan/Math128/M128Bprob5Mar04.pdf. Lecture notes for Math 128.

Kahan:2004:TPM

[291] W. Kahan. Three problems for math. 128B. World-Wide Web document, February 10, 2004. URL http://www.cs.berkeley.edu/~wkahan/Math128/M128Bsoln09Feb04.pdf. Lecture notes for Math 128.

Kahan:2004:TSC

[292] W. Kahan. Is there a skew Cayley transform with zero diagonal? World-

Wide Web document, August 6, 2004. URL `http://www.cs.berkeley.edu/~wkahan/skcayley.pdf`.

Kahan:2004:TSD

[293] W. Kahan. Taylor series for differential equation solvers' local error. World-Wide Web document, August 25, 2004. URL `http://www.cs.berkeley.edu/~wkahan/Math128/Truncate.pdf`. Lecture notes for Math 128.

Anonymous:2005:MGP

[294] Anonymous. The Mathematics Genealogy Project: William Morton Kahan. World-Wide Web document, 2005. URL `http://genealogy.math.ndsu.nodak.edu/html/id.phtml?id=16049`.

Demmel:2005:EBE

[295] James Demmel, Yozo Hida, W. Kahan, Xiaoye S. Li, Soni Mukherjee, and E. Jason Riedy. Error bounds from extra precise iterative refinement. LAPACK Working Note 165, Department of Computer Science, University of Tennessee, Knoxville, Knoxville, TN 37996, USA, February 2005. URL `http://www.netlib.org/lapack/lawns/lawn165.ps`; `http://www.netlib.org/lapack/lawnspdf/lawn165.pdf`. UT-CS-05-547, February 2005.

Kahan:2005:BTG

[296] William Kahan. A brief tutorial on gradual underflow. World-Wide Web lecture notes., July 8, 2005. URL `http://www.cs.berkeley.edu/~wkahan/ARITH_17U.pdf`. Prepared for ARITH 17, Tues. 28 June 2005, and subsequently augmented.

Kahan:2005:DP

[297] William Kahan. *A Demonstration of Presubstitution for* ∞/∞, July 5, 2005. 10 pp. URL `http://www.cs.berkeley.edu/~wkahan/Grail.pdf`.

Kahan:2005:FPA

[298] William Kahan. Floating-point arithmetic besieged by "Business decisions". World-Wide Web lecture notes., July 5, 2005. URL `http://www.cs.berkeley.edu/~wkahan/ARITH_17.pdf`. A Keynote Address, prepared for the IEEE-Sponsored ARITH 17 Symposium on Computer Arithmetic, delivered on Mon. 27 June 2005 in Hyannis, Massachusetts.

Kahan:2005:OQD

[299] William Kahan and Dan Zuras. An open question to developers of numerical software. *Computer*, 38(5): 91–94, May 2005. CODEN CPTRB4. ISSN 0018-9162 (print), 1558-0814 (electronic). URL `http://csdl.computer.org/comp/mags/co/2005/05/r5091abs.htm`; `http://csdl.computer.org/comp/mags/co/2005/05/r5toc.htm`; `http://csdl.computer.org/dl/mags/co/2005/05/r5091.pdf`.

Demmel:2006:EBE

[300] James Demmel, Yozo Hida, William Kahan, Xiaoye S. Li, Sonil Mukherjee, and E. Jason Riedy. Error bounds from extra-precise iterative refinement. *ACM Transactions on Mathematical Software*, 32(2):325–351, June 2006. CODEN ACMSCU. ISSN 0098-3500 (print), 1557-7295 (electronic).

Kahan:2006:AIR

[301] William Kahan. Applications of IEEE 754r's rounding modes. World-Wide Web document., February 16, 2006. URL `http://nonabelian.com/754/RNDGMODE.TXT`.

Kahan:2006:TSS

[302] W. Kahan. Is there a small skew Cayley transform with zero diagonal? *Linear Algebra and its Applications*, 417(2–3):335–341, 2006. CODEN LAAPAW. ISSN 0024-3795 (print), 1873-1856 (electronic).

Boldo:2007:PCA

[303] Sylvie Boldo, Marc Daumas, William Kahan, and Guillaume Melquiond. Proof and certification of an accurate discriminant. In Luther and Otten [358], page ?? ISBN 0-7695-2821-X. LCCN QA297.I5 2007. URL `http://ieeexplore.ieee.org/servlet/opac?punumber=4402381`. IEEE Computer Society Order Number E2821.

Demmel:2007:PNL

[304] James W. Demmel, Jack J. Dongarra, Beresford N. Parlett, William Kahan, Ming Gu, David S. Bindel, Yozo Hida, Xiaoye S. Li, Osni A. Marques, E. Jason Riedy, Christof Vömel, Julien Langou, Piotr Luszczek, Jakub Kurzak, Alfredo Buttari, Julie Langou, and Stanimire Tomov. Prospectus for the next LAPACK and ScaLAPACK libraries. LAPACK Working Note 181, Department of Computer Science, University of Tennessee, Knoxville, Knoxville, TN 37996, USA, March 11, 2007. URL `http://www.netlib.org/lapack/lawnspdf/lawn181.pdf`.

Kahan:2007:WCD

[305] William Kahan. Why I can debug some programs and you can't. In Du et al. [357], page ?? ISBN ???? LCCN ???? URL `http://www.stanford.edu/group/compmath50/docs/CompMath50Pgm21.pdf`.

Kahan:2008:BFU

[306] William Kahan. Back to the future of undebuggable floating-point computation in science and engineering. Web document, March 30, 2008. URL `http://math.berkeley.edu/bascd08; http://www.eecs.berkeley.edu/~wkahan/BASCD08K.pdf`. The Bay Area Scientific Computing Day, BASCD08, honoring Profs. Kahan and Parlett, 29–30 March, 2008.

Kahan:2010:ISS

[307] W. Kahan. 7094-II system support for numerical analysis. Report, Department of Computer Science, University of Toronto, Toronto, ON, Canada, July 11, 2010. 62 pp. URL `https://people.eecs.berkeley.edu/~wkahan/7094II.pdf`.

Kahan:2010:PUC

[308] W. Kahan. Pete's unsung contribution to IEEE Standard 754 for binary floating-point: a talk at a conference to celebrate G. W. "Pete" Stewart's 70th birthday. Lecture slides, July 19, 2010. URL `https://people.eecs.berkeley.edu/~wkahan/19July10.pdf`.

Kahan:2012:DNR

[309] W. Kahan. Desperately needed remedies for the undebuggability of large floating-

point computations in science and engineering. Report, Department of Electrical Engineering and Computer Science, University of California, Berkeley, Berkeley, CA, USA, April 24, 2012. 90 pp. URL `https://people.eecs.berkeley.edu/~wkahan/Boulder.pdf`.

Kahan:2012:WMA

[310] W. Kahan. What might Alan Turing say about the inevitable fallibility of software? Report, Department of Mathematics and Department of Electrical Engineering and Computer Science, University of California, Berkeley, Berkeley, CA, USA, June 15, 2012. 1–12 pp. URL `https://people.eecs.berkeley.edu/~wkahan/15June12.pdf`. Prepared for the ACM's Celebration in San Francisco, 15–16 June 2012, of the Centennial of Alan Turing's Birth.

Li:2012:FAN

[311] Ren-Cang Li and William Kahan. A family of Anadromic numerical methods for matrix Riccati differential equations. *Mathematics of Computation*, 81 (277):233–265, ???? 2012. CODEN MCMPAF. ISSN 0025-5718 (print), 1088-6842 (electronic). URL `http://www.ams.org/journals/mcom/2012-81-277/S0025-5718-2011-02498-1; http://www.ams.org/journals/mcom/2012-81-277/S0025-5718-2011-02498-1/S0025-5718-2011-02498-1.pdf`.

Rubio-Gonzalez:2013:PTA

[312] Cindy Rubio-González, Cuong Nguyen, Hong Diep Nguyen, James Demmel, William Kahan, Koushik Sen, David H. Bailey, Costin Iancu, and David Hough. Precimonious: Tuning assistant for floating-point precision. In *Proceedings of the International Conference on High Performance Computing, Networking, Storage and Analysis*, page 27. ACM Press, New York, NY 10036, USA, 2013.

Kahan:2015:ATP

[313] W. Kahan. Accuracy tests for polynomials' zero-finders. Report, Department of Mathematics and Department of Electrical Engineering and Computer Science, University of California, Berkeley, Berkeley, CA, USA, September 13, 2015. 17 pp. URL `http://www.eecs.berkeley.edu/~wkahan/Math128/Fibs_2_6.pdf`.

Kahan:2015:EBZ

[314] W. Kahan. Error-bounds for a zero of a polynomial. Report, Department of Mathematics and Department of Electrical Engineering and Computer Science, University of California, Berkeley, Berkeley, CA, USA, October 30, 2015. 6 pp. URL `http://www.eecs.berkeley.edu/~wkahan/Math128/PolyZbnd.pdf`.

Gustafson:2016:TGD

[315] John Gustafson and William Kahan. Transcription of "The great debate": John Gustafson vs. William Kahan on unum arithmetic. Web document., July 12, 2016. URL `http://www.johngustafson.net/pdfs/DebateTranscription.pdf`.

Kahan:2016:CEE

[316] W. Kahan. Commentary on *The End of Error — Unum Computing*, by John L. Gustafson, (2015) CRC Press. Report, Department of Mathematics and Department of Electrical Engineering and Computer Science, University of California, Berkeley, Berkeley, CA, USA,

July 15, 2016. 39 pp. URL `https://people.eecs.berkeley.edu/~wkahan/EndErErs.pdf`.

Kahan:2016:KO

[317] W. Kahan. Keplerian orbits. Report, Department of Mathematics and Department of Electrical Engineering and Computer Science, University of California, Berkeley, Berkeley, CA, USA, June 21, 2016. 2 pp. URL `http://www.eecs.berkeley.edu/~wkahan/Math128/KeplerOrbits.pdf`.

Rubio-Gonzalez:2016:FPP

[318] Cindy Rubio-González, Cuong Nguyen, Benjamin Mehne, Koushik Sen, James Demmel, William Kahan, Costin Iancu, Wim Lavrijsen, David H. Bailey, and David Hough. Floating-point precision tuning using blame analysis. In *Proceedings of the 38th International Conference on Software Engineering*, pages 1074–1085. ACM Press, New York, NY 10036, USA, 2016.

Kahan:2018:TD

[319] William Kahan. The tanpi dilemma. Web document., April 16, 2018. URL `http://754r.ucbtest.org/background/tanpi.txt`; `https://www.math.utah.edu/pub/tex/bib/elefunt.bib`.

Smith:1967:ZZF

[320] Brian Thomas Smith. ZERPOL, a zero finding algorithm for polynomials using Laguerre's method. In Anonymous [340], pages 153–174. URL `https://apps.dtic.mil/sti/tr/pdf/AD0825963.pdf`.

Bunch:1995:EDB

[321] James R. Bunch. Editorial: Dedicated to Beresford Parlett and William Kahan. *Numerical Linear Algebra with Applications*, 2(2):85, 1995. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic).

Boldo:2009:KAC

[322] S. Boldo. Kahan's algorithm for a correct discriminant computation at last formally proven. *IEEE Transactions on Computers*, 58(2):220–225, February 2009. CODEN ITCOB4. ISSN 0018-9340 (print), 1557-9956 (electronic). See [281] for the original algorithm.

Golub:2010:MMQ

[323] Gene H. Golub and Gérard Meurant. *Matrices, Moments and Quadrature with Applications*. Princeton Series in Applied Mathematics. Princeton University Press, Princeton, NJ, USA, 2010. ISBN 0-691-14341-2. xii + 363 pp.

Jeannerod:2013:FAK

[324] Claude-Pierre Jeannerod, Nicolas Louvet, and Jean-Michel Muller. Further analysis of Kahan's algorithm for the accurate computation of 2×2 determinants. *Mathematics of Computation*, 82(284):2245–2264, 2013. CODEN MCMPAF. ISSN 0025-5718 (print), 1088-6842 (electronic). URL `http://www.ams.org/journals/mcom/2013-82-284/S0025-5718-2013-02679-8`; `http://www.ams.org/journals/mcom/2013-82-284/S0025-5718-2013-02679-8/S0025-5718-2013-02679-8.pdf`.

Celledoni:2014:IPKa

[325] Elena Celledoni, Robert I. McLachlan, David I. McLaren, Brynjulf Owren, and

G. R. W. Quispel. Integrability properties of Kahan's method. *arXiv.org*, ??(??):1–17, May 15, 2014. URL `https://arxiv.org/pdf/1405.3740`.

Celledoni:2014:IPKb

[326] Elena Celledoni, Robert I. McLachlan, David I. McLaren, Brynjulf Owren, and G. R. W. Quispel. Integrability properties of Kahan's method. *Journal of Physics A: Mathematical and Theoretical*, 47(36):365202, August 2014. CODEN JPAMB5. ISSN 1751-8121. URL `https://doi.org/10.1088/1751-8113/47/36/365202`.

Hofmann:2015:PAK

[327] Johannes Hofmann, Dietmar Fey, Michael Riedmann, Jan Eitzinger, Georg Hager, and Gerhard Wellein. Performance analysis of the Kahan-enhanced scalar product on current multicore processors. *arXiv.org*, ??(??):1–10, May 11, 2015. URL `https://arxiv.org/abs/1505.02586`.

Gazzola:2016:LGK

[328] Silvia Gazzola, Enyinda Onunwor, Lothar Reichel, and Giuseppe Rodriguez. On the Lanczos and Golub–Kahan reduction methods applied to discrete ill-posed problems. *Numerical Linear Algebra with Applications*, 23(1):187–204, January 2016. CODEN NLAAEM. ISSN 1070-5325 (print), 1099-1506 (electronic).

Hofmann:2016:PAK

[329] Johannes Hofmann, Dietmar Fey, Michael Riedmann, Jan Eitzinger, Georg Hager, and Gerhard Wellein. Performance analysis of the Kahan-enhanced scalar product on current multicore processors. In Wyrzykowski et al. [359], pages 63–73. ISBN 3-319-32148-X, 3-319-32149-8, 3-319-32151-X, 3-319-32152-8. ISSN 0302-9743. LCCN QA76.58 .P373 2016; QA76.758.

Zander:2016:CAI

[330] René Zander. A combinatorial approach to integrals of Kahan–Hirota–Kimura discretizations. *arXiv.org*, ??(??):1–16, 2016. URL `https://arxiv.org/abs/1611.02651`.

Celledoni:2017:TCQ

[331] Elena Celledoni, Robert I. McLachlan, David I. McLaren, Brynjulf Owren, and G. R. W. Quispel. Two classes of quadratic vector fields for which the Kahan discretization is integrable. *arXiv.org*, ??(??):1–3, 2017. URL `https://arxiv.org/abs/1702.00280`.

Goldenberg:2019:GKD

[332] Steven Goldenberg, Andreas Stathopoulos, and Eloy Romero. A Golub–Kahan Davidson method for accurately computing a few singular triplets of large sparse matrices. *SIAM Journal on Scientific Computing*, 41(4):A2172–A2192, ???? 2019. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic).

Moler:2019:CCF

[333] Cleve Moler. Cleve's corner: Floating point arithmetic before IEEE 754. MathWorks Web site., January 18, 2019. URL `https://blogs.mathworks.com/cleve/2019/01/18/floating-point-arithmetic-before-ieee-754/`.

Asgari:2020:EBG

[334] Z. Asgari, F. Toutounian, E. Babolian, and E. Tohidi. An extended

block Golub–Kahan algorithm for large algebraic and differential matrix Riccati equations. *Computers and Mathematics with Applications*, 79(8):2447–2457, April 15, 2020. CODEN CMAPDK. ISSN 0898-1221 (print), 1873-7668 (electronic). URL `http://www.sciencedirect.com/science/article/pii/S0898122119305437`.

Wang:2020:KPJ

[335] Yunjie Wang and Gang Wu. On the Kahan–Parlett–Jiang theorem — a globally optimal backward perturbation error for two-sided invariant subspaces. *Linear Algebra and its Applications*, 602 (??):73–92, October 1, 2020. CODEN LAAPAW. ISSN 0024-3795 (print), 1873-1856 (electronic). URL `http://www.sciencedirect.com/science/article/pii/S0024379520302342`.

Bai:2021:GKV

[336] Xianglan Bai, Alessandro Buccini, and Lothar Reichel. Golub–Kahan vs. Monte Carlo: a comparison of bidiagonalization and a randomized SVD method for the solution of linear discrete ill-posed problems. *BIT Numerical Mathematics*, 61(4):1093–1114, December 2021. CODEN BITTEL, NBITAB. ISSN 0006-3835 (print), 1572-9125 (electronic). URL `https://link.springer.com/article/10.1007/s10543-021-00857-0`.

Bentbib:2023:GGK

[337] A. H. Bentbib, M. El Ghomari, K. Jbilou, and L. Reichel. The global Golub–Kahan method and Gauss quadrature for tensor function approximation. *Numerical Algorithms*, 92(1):5–34, January 2023. CODEN NUALEG. ISSN 1017-1398 (print), 1572-9265 (electronic). URL `https://link.springer.com/article/10.1007/s11075-022-01392-x`.

Bogfjellmo:2024:UAS

[338] Geir Bogfjellmo, Elena Celledoni, Robert I. McLachlan, Brynjulf Owren, and G. R. W. Quispel. Using aromas to search for preserved measures and integrals in Kahan's method. *Mathematics of Computation*, 93(348):1633–1653, October 2024. CODEN MCMPAF. ISSN 0025-5718 (print), 1088-6842 (electronic). URL `https://www.ams.org/journals/mcom/2024-93-348/S0025-5718-2023-03921-7`.

Hyland:20xx:FIS

[339] Adam Hyland. The fast inverse square root. Web site., 20xx. URL `https://0x5f37642f.com/`.

Anonymous:1967:PAN

[340] Anonymous, editor. *Proceedings of the 1967 Army Numerical Analysis Conference, Madison, Wisconsin*. U.S. Army Research Office, Research Triangle Park, NC, 1967. URL `https://apps.dtic.mil/sti/tr/pdf/AD0825963.pdf`.

Freiman:1971:PIC

[341] C. V. Freiman, J. E. Griffith, and J. L. Rosenfeld, editors. *Information processing 71: proceedings of IFIP Congress 71 organized by the International Federation for Information Processing, Ljubljana, Yugoslavia, August 23–28, 1971*. North-Holland, Amsterdam, The Netherlands, 1971. ISBN 0-7204-2063-6. LCCN QA76 .I575 1971. Eight booklets in two volumes.

ACM:1972:PAA

[342] *Proceedings of the ACM Annual Conference, August 1972, Boston*. ACM Press, New York, NY 10036, USA, 1972. LCCN TK 7885 A84p 1972. Two volumes.

Nickel:1975:IMP

[343] Karl Nickel, editor. *Interval mathematics: proceedings of the international symposium, Karlsruhe, West Germany, May 20–24, 1975*, volume 29 of *Lecture Notes in Computer Science*. Springer-Verlag, Berlin, Germany / Heidelberg, Germany / London, UK / etc., 1975. CODEN LNCSD9. ISBN 0-387-07170-9. ISSN 0302-9743 (print), 1611-3349 (electronic). LCCN QA297 .I541. DM30.00. URL `http://link.springer-ny.com/link/service/series/0558/tocs/t0029.htm`; `http://www.springerlink.com/content/978-0-387-07170-1`; `http://www.springerlink.com/openurl.asp?genre=issue&issn=0302-9743&volume=29`; `https://link.springer.com/book/10.1007/3-540-07170-9`. German or English.

Bunch:1976:SMC

[344] James R. Bunch and Donald J. Rose, editors. *Sparse Matrix Computations: Proceedings of the Symposium on Sparse Matrix Computations at Argonne National Laboratory on September 9–11, 1975*. Academic Press, New York, NY, USA, 1976. ISBN 0-12-141050-1. LCCN QA188 .S989 1975.

Gentleman:1979:PCS

[345] Jane F. Gentleman, editor. *Proceedings of the Computer science and statistics: 12th annual symposium on the interface, May 10–11, 1979, University of Waterloo, Waterloo, Ontario, Canada*. University of Waterloo, Waterloo, ON, Canada, 1979. LCCN QA276.4.

Nickel:1980:IMP

[346] Karl L. E. Nickel, editor. *Interval mathematics 1980: proceedings of an International Symposium on Interval Mathematics, held at the Institut für Angewandte Mathematik, Universität Freiburg i. Br., Germany, May 27–31, 1980*. Academic Press, New York, NY, USA, 1980. ISBN 0-12-518850-1. LCCN QA297.75 .I57 1980.

Reid:1982:RBN

[347] John K. Reid, editor. *The Relationship Between Numerical Computation and Programming Languages: Proceedings of the IFIP TC2 Working Conference on the Relationship between Numerical Computation and Programming Languages, Boulder, Colorado, USA, 3–7 August, 1981*. Elsevier North-Holland, Inc., New York, NY, USA, 1982. ISBN 0-444-86377-X. LCCN QA297 .I34 1981.

Anonymous:1983:PSC

[348] Anonymous, editor. *1983 proceedings of the statistical computing section: papers presented at the annual meeting of the American Statistical Association, Toronto, Canada, August 15–18, 1983*. American Statistical Association, Washington, DC, USA, 1983. ISBN ???? ISSN 0149-9963. LCCN QA276.4 .A43a.

IEEE:1983:MMW

[349] IEEE, editor. *Mini/Micro West '83: conference record: sessions presented at Mini/Micro West-83, San Francisco, California, November 8, 9, 10, 11, 1983*. IEEE Computer Society Press, 1109

Spring Street, Suite 300, Silver Spring, MD 20910, USA, 1983.

Hwang:1985:PSC

[350] Kai Hwang, editor. *Proceedings: 7th Symposium on Computer Arithmetic, June 4–6, 1985, University of Illinois, Urbana, Illinois*. IEEE Computer Society Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 1985. ISBN 0-8186-0632-0 (paperback), 0-8186-8632-4 (hard), 0-8186-4632-2 (microfiche). LCCN QA76.9.C62 S95 1985.

Iserles:1987:SAN

[351] A. Iserles and M. J. D. Powell, editors. *State of the Art in Numerical Analysis. Proceedings of the Joint IMA/SIAM Conference held at the University of Birmingham, 14–18 April 1986*, volume 9 of *The Institute of Mathematics and Its Applications conference series; new series*. Oxford University Press, Walton Street, Oxford OX2 6DP, UK, 1987. ISBN 0-19-853614-3. LCCN QA297.J65 1986. URL `http://www.gbv.de/dms/hbz/toc/ht002967923.pdf`; `http://zbmath.org/?q=an:0611.00024`.

CUG:1990:PSC

[352] CUG, editor. *Proceedings, 25th Semiannual Cray User Group Meeting, Toronto, Ontario, June 1990*. Cray User Group, 186 Mandela Road, Shepherdstown, WV 25443, USA, 1990. ISBN ???? LCCN ????

Griffiths:1991:NAP

[353] D. F. Griffiths and G. A. Watson, editors. *Numerical analysis, 1991: proceedings of the 14th Dundee Conference, June 1991*. Longman Scientific and Technical, Harlow, Essex, UK, 1991. ISBN 0-582-08908-5. LCCN QA297 .D85 1991.

ACM:1997:SHP

[354] ACM, editor. *SC'97: High Performance Networking and Computing: Proceedings of the 1997 ACM/IEEE SC97 Conference: November 15–21, 1997, San Jose, California, USA*. ACM Press and IEEE Computer Society Press, New York, NY 10036, USA and 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 1997. ISBN 0-89791-985-8. LCCN QA76.88 1997. URL `http://www.supercomp.org/sc97/proceedings/`. ACM SIGARCH order number 415972. IEEE Computer Society Press order number RS00160.

ACM:1998:AWJ

[355] ACM, editor. *ACM 1998 Workshop on Java for High-Performance Network Computing*, Concurrency: Practice and Experience. ACM Press, New York, NY 10036, USA, 1998. CODEN CPEXEI. ISSN 1040-3108 (print), 1096-9128 (electronic). LCCN ???? URL `http://www.cs.ucsb.edu/conferences/java98/program.html`. Also published as *Concurrency: Practice and Experience*, **10**(11–13), September 1998, CODEN CPEXEI, ISSN 1040-3108.

ACM:2000:SHP

[356] ACM, editor. *SC2000: High Performance Networking and Computing. Dallas Convention Center, Dallas, TX, USA, November 4–10, 2000*. ACM Press and IEEE Computer Society Press, New York, NY 10036, USA and 1109 Spring Street, Suite

300, Silver Spring, MD 20910, USA, 2000. ISBN 0-7803-9802-5. LCCN QA76.88 2000. URL `http://csdl.computer.org/comp/proceedings/sc/2000/9802/00/9802toc.htm`; `http://www.sc2000.org/proceedings/info/fp.pdf`.

Du:2007:SSA

[357] Ding-Zhu Du, Charles Farbat, Walter Murray, Michael Overton, Haesun Park, Michael Saunders, and James Varah, editors. *STANFORD 50: State of the Art & Future Directions of Computational Mathematics & Numerical Computing: A conference celebrating the 50th anniversary George Forsythe's arrival at Stanford and Gene Golub's 75th birthday, Stanford University, March 29–31, 2007*. ????, ????, 2007. ISBN ???? LCCN ????

Luther:2007:GII

[358] W. Luther and W. Otten, editors. *12th GAMM-IMACS International Symposium on Scientific Computing, Computer Arithmetic and Validated Numerics: SCAN 2006: conference post-proceedings: September 26–29, 2006, Duisburg, Germany*. IEEE Computer Society Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 2007. ISBN 0-7695-2821-X. LCCN QA297.I5 2007. URL `http://ieeexplore.ieee.org/servlet/opac?punumber=4402381`. IEEE Computer Society Order Number E2821.

Wyrzykowski:2016:PPA

[359] Roman Wyrzykowski, Ewa Deelman, Jack Dongarra, Konrad Karczewski, Jacek Kitowski, and Kazimierz Wiatr, editors. *Parallel Processing and Applied Mathematics*. Springer-Verlag, Berlin, Germany / Heidelberg, Germany / London, UK / etc., 2016. ISBN 3-319-32148-X, 3-319-32149-8, 3-319-32151-X, 3-319-32152-8. ISSN 0302-9743. xxiv + 622 + 198 pp. LCCN QA76.58 .P373 2016; QA76.758.