A Bibliography of Publications on Floating-Point Arithmetic

Norbert Juffa
2445 Mission College Blvd.
Santa Clara, CA 95054
USA
Tel: +1-408-727-1885
FAX: +1-408-727-1265
E-mail: juffa@ira.uka.de (Internet)

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
FAX: +1 801 581 4148
E-mail: beebe@math.utah.edu, beebe@acm.org, beebe@computer.org (Internet)
WWW URL: https://www.math.utah.edu/~beebe/

11 March 2024
Version 3.706

Introduction

This is a bibliography of material on floating-point arithmetic that I came up with while doing research on a floating-point package of my own. I don’t claim it to be anywhere near complete. The material listed is only what I myself possess.

My main interest was in software based, binary floating-point arithmetic on a microprocessor, so you won’t find much material about the hardware used in floating-point arithmetic (e.g. adders, carry propagation schemes, higher radix
representation for multiplication and division, etc.) in this list. There is also
not too much on non-binary floating-point arithmetic.

For most fields covered in this bibliography, the important or historically
relevant articles should be included. There is also some material on integer
arithmetic in this list as some of the methods used with integer arithmetic
contain interesting ideas that may be useful in the realization of a floating-point
arithmetic package.

Also, depending on the type of microprocessor used, one may need to imple-
ment integer multiplication and division for use in the floating-point package,
so articles about this topic are included as well.

As I am German, there is a bit of material in German in this bibliography.
However, English translations are provided for all non-English titles.

Thanks to the people who have helped me with previous versions of this
document by sending me papers or additional references:

• Steven Sommars (sesv@research.bell-labs.com),
• Jim Kiernan (jmk@teak.cray.com),
• Warren Ferguson (ferguson@seas.smu.edu),
• Nhuan Doduc (ndoduc@framentec.fr),
• K. C. Ng (kwok.ng@eng.sun.com),
• Nelson H. F. Beebe (beebe@math.utah.edu).

Bibliography entries in the Books section are ordered alphabetically by
author; ordering is by ascending year in the remaining sections.

[Warning: it has yet not been possible to bring this citation list up-to-date with the entries in the BibTeX]

Books, hardware oriented

[1721, 281, 1286, 1216, 3111, 3315, 1916, 841, 1164, 1000, 1457, 843, 1343, 7212,
7213, 1557]

Books, software oriented or theory

[1273, 466, 469, 470, 119, 1420, 2393, 908, 1049, 352, 2952, 2434, 2969, 2270,
320, 527, 7066]

Books, machine specific

[2175, 3217, 3113, 2436, 1767, 1903, 2289, 1935, 2471]
1 CHOICE OF BASE, FLOATING POINT FORMATS

Journal Publications, Conference Papers, Technical Reports, Ph.D. Dissertations, Book Contributions, etc.

1 Choice of base, floating point formats

1.1 Precision and Rounding

1.2 Determination of parameters of floating point arithmetic

1.3 IEEE standards for floating point arithmetic

1.4 Floating point arithmetic, general and implementation issues

1.5 Floating point packages

1.6 Floating point units
1.7 Test of floating point routines


2 Addition and Subtraction

[375, 1513]

2.1 Floating-point Summation

[325, 345, 362, 361, 570, 639, 677, 831, 1661, 2275, 2352]

2.2 Multiplication

[680, 1246, 1260, 1476, 1543, 1516, 1574, 1601, 1593, 1619, 1676, 1591, 1758]

2.3 Division

[209, 238, 223, 322, 348, 438, 1017, 1064, 1311, 1403, 1567, 1645, 1623, 1606, 1770, 1890, 2015, 1994, 2387, 2777, 2722, 2967, 3016, 7234, 2949]

3 Elementary functions, general

[384, 398, 586, 650, 615, 1122, 1265, 1656, 1756, 1719, 1717, 1794, 1840, 7153, 1945, 2051, 2154, 2098, 2277, 7172, 2560, 2597, 2547, 3334, 2549, 2518, 2697, 2850, 2661, 2812, 2813, 2690, 3367, 3335]

3.1 Elementary functions, CORDIC and related algorithms

[190, 191, 248, 264, 373, 523, 551, 659, 651, 667, 733, 855, 1068, 1084, 1293, 1451, 1699, 1897, 1708, 1811, 1963, 2159, 2381, 2310, 2541, 2567, 2716, 2810, 3010, 3005, 3128, 3068, 3114]

3.2 Elementary functions, function approximation

[240, 241, 481, 623, 768, 767, 983, 1021, 1162, 2000, 2052, 2610, 2685, 2783, 2784]

3.2.1 Polynomial evaluation

[259, 279, 304, 426, 1061, 1228, 2351]
3.3 Square root, general
[1082, 1187, 1481, 1598, 1651, 2565, 2677]

3.3.1 Square root, bit-oriented, iterative, and table methods of computation
[120, 153, 359, 1022, 1008, 1151, 1353, 1444, 1406, 1372, 1426, 1825, 1922, 1834, 1887, 1971, 1952, 2046, 2089, 2139, 2179, 2253, 2390, 2577, 2534, 2709, 3038]

3.3.2 Square root, Newton’s method

3.4 Sine and Cosine
[180, 1068, 1018, 1023, 1176, 1398, 1544, 1666, 1665, 1765, 1853, 1953, 2120, 2231, 2606, 2961, 2958, 2880, 2980, 3074]

3.5 Logarithm
[154, 271, 331, 690, 998, 1112, 1299, 1529, 2107, 2108, 2607, 2735]

3.6 Exponential function
[141, 409, 1183, 1361, 1518, 1748, 1847, 2470, 2608, 3002]

3.7 Arctangent
[143, 160, 207]

3.8 Other transcendental functions
[499, 613, 161, 1024, 365, 275, 360, 2100, 1157, 2860, 3054]

4 Binary-decimal conversion
5 BCD arithmetic

[674, 726, 777, 778, 779, 780, 781, 782, 783, 1382, 1492, 1705, 1640, 2037, 2646, 2960]

6 Multiple precision arithmetic

[292, 330, 410, 428, 632, 616, 953, 1002, 1099, 1098, 1265, 1350, 1430, 1542, 2805, 2789, 3033, 3224]

7 Conferences on computer arithmetic

[7092, 7102, 7107, 7116, 7119, 7132, 7150, 7151, 7193, 7223, 7231, 7257]

8 Additional contributions from Nelson H. F. Beebe


Title word cross-reference

#26 [5487].

\( (2^n)^m \) [3796]. \((10^{x_1} - 1)/9 \) [1976]. \((2^n) \) [4349, 4370, 4553, 4562, 4468]. \((2^n + 1) \) [1081, 4785, 3909]. \((2^n - 1) \) [5004]. \((2^n - 1, 2^{n+p}, 2^n + 1) \) [6266]. \((2^n+1) \) [6072]. \((2^n \pm 1) \) [5514, 4136]. \((2m) \) [4433]. \((2n + 3) \) [6520]. \((2n - (2p \pm 1)) \) [4847]. \((a \cdot x) \cdot x? \) [6792]. \((d, r) \) [789]. \((M, p, k) \) [5800]. \((\mathcal{R}) \) [2908]. \((p) \) [4349, 4433].
$(x + y) * (x - y) [6666]. -2 [743, 183, 206, 949, 801]. -\infty < n < +\infty [141, 160]. 0 [5632]. 0 < N < 1 [161], 0 / 0 [699]. \$1 [3739]. 1 [4984, 4342, 5149, 5633, 3694, 2165]. 1, 000, 000 [618], 1/\sqrt{x} [5771]. 1/t [2174]. 10 [530, 6003]. 116 [4018]. 128 [4853], 15 [530]. 16 [2504, 4183, 4071]. 17 \times 69 [3047]. 2 [1005, 4300, 2049, 5669, 3229, 3990, 618, 6036, 430, 4342, 5005, 3283, 4359, 1760, 3469, 3140, 3476, 5607, 3491, 530, 321, 3681, 3815, 4449, 3694, 5903, 3361, 4937]. 2, 576, 980, 370, 000 [5634]. 22n + 1 [2146]. 256 [4436]. 27 [433]. 2^n + 1) [3967]. 2^{2n+1} - 1 [6018]. 2^{2n+2} - 1 [6018]. 2^n - 1 [2856]. 2^k [4481, 4992, 5494, 5033, 5041]. 2^k + 1 [866]. 2^{k-1} [4481]. 2^n [4554]. 2^n [1568, 6018, 3967]. 2^n + 1 [3967, 4984, 5713, 4459]. 2^{n+1} - 1 [6510]. 2^{n+k} [6510]. 2^n - (2^{n-1} + 1) [5336]. 2^N - 1 [2987, 4820, 6510, 4212, 3967]. 2^n + 1 [6008]. 2^n [6008]. 2^p \pm 1 [6234]. 2 \times 2 [5906]. 3 [377, 4986, 4177, 430, 4033, 4201, 4038, 5025, 4870, 321, 6203, 4117, 6594, 4943, 4935]. 3 - j [298]. 32 [3983, 4436]. 3 \times 3 [2493], 4 [3967, 4314, 4657, 2521, 2522, 2540, 2918, 5330, 581, 6323, 5949, 5680, 4158, 6047, 1294, 3622].
$r \geq 8$ [5843]. $s$ [4874]. $\sin(BIG)$ [5230]. $\sin^{-1}$ [3128]. $\sin N$ [180]. $\sin x$ [373]. $\sqrt{a^2 + b^2}$ [6274]. $\sqrt{x}$ [1481]. $\sqrt{x/d}$ [3844]. $\sqrt{2}$ [6965]. $\sqrt{2}$ [1307, 451]. $\sqrt{x^2 + y^2}$ [5669]. $T$ [6558]. $\tan^{-1} x$ [373]. $\theta(\log N)$ [2354]. $\times$ [4064, 3914, 4130]. $w$ [4730]. $X$ [1542, 2893]. $x^2 + ny^2$ [3706]. $x^n$ [5972, 3307]. $y$ [4412]. $Z$ [5327].


.NET [6412, 5068].

/m [4863]. /spl [4863].

0.18-CMOS [5767]. 0.4.1rc [6413]. 0.80pJ [6546]. 0.80pJ/flop [6546]. '00 [7333, 7338, 2540]. '01 [7347]. '03 [7376]. '04 [7385, 7393]. '07 [7428, 7434, 7436, 7441]. '08 [7445, 3032, 5375].


8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE


8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE


= [2799, 2800, 3343, 7089].

8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

Algorithm [569, 2107, 262, 640, 4723, 2113, 6896, 762, 2947, 1649, 1890, 2115, 2254, 5330, 2566, 6423, 1654, 1897, 4410, 2774, 2960, 4412, 1532, 1661, 2777, 2778, 3660, 4894, 5424, 5758, 1157, 2589, 6099, 4900, 923, 2105].
ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

8

8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

Architecture

Arctan [160, 651].

Arctangent [1630, 3277].

Area

Area-Efficient

Area-Optimized

Area-Time

Area/Performance

Ariane

Arithmetic


Arithmetic [5463, 330, 1093, 1094, 2047, 2649, 2864, 5873, 6625, 6735, 6736, 6959, 5122, 3046, 1717, 5667, 6234, 6468, 6023, 728, 809, 861, 1097, 1098, 1099, 1192, 1264, 3971, 5668, 1375, 4311, 2866, 196, 6963, 7452, 5670, 6471, 7105, 2329, 6630, 7346, 7487, 4315, 1194, 23, 2195, 171, 2053, 2054, 1721, 5470, 3559, 2198, 6362, 612, 6966, 668, 1821, 669, 867, 1381,
8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

187, 1918, 587, 5543, 927, 928, 269, 212, 5769, 1779, 19, 22, 930, 1456, 1686, 2805, 3938, 4754, 5631, 2287, 6812, 3814, 5198, 6700, 6813, 1000, 1457, 2807, 789, 6926, 6927, 5199, 5200, 4612, 712, 656, 933, 934.

Arithmetic [1458, 1459, 5544, 4617, 6929, 4112, 844, 533, 1170, 1171, 1342, 1343, 1344, 1691, 1925, 7212, 789, 6926, 6927, 5199, 5200, 4614, 712, 656, 933, 934].

Arithmetic [1458, 1459, 5544, 4617, 6929, 4112, 844, 533, 1170, 1171, 1342, 1343, 1344, 1691, 1925, 7212, 789, 6926, 6927, 5199, 5200, 4614, 712, 656, 933, 934].
698, 3797, 3798, 3799, 4083, 4251, 4735, 2575, 2576, 5338, 700, 989, 3800, 2578, 2267, 2579, 3325, 837, 3327, 1329, 4899, 1535, 2976, 3666, 3667, 5339, 838, 5430].


Arithmetic-Based [6462].

Arithmetic-Centered [6752].

Arithmetic-Friendly [6510].

Arithmetic-Geometric [1717, 3632, 3970].

Arithmetic-Level [5185].

Arithmetic-Modular [4342].

Arithmetic-Type [482, 5251].

Arithmetic/Logic [2195].

Arithmetic/Logical [3021].

Arithmetical [6, 46, 512, 5826, 5915, 6070, 6305, 197, 4345, 400].

Arithmetick [3, 43].

arithmético [3970].

arithmético-géométrique [3970].

arithméticas [4788, 5400, 4225, 2756].


arithméiques [4788, 5400, 4225, 2756].

arithmetischen [1885].

arithometer [146].

Arithmos [4321].

arithmética [4588].

arithmetik [1739].

AritPIM [6990].

Arizona [7114].

ARM [5250, 6637, 6747, 6852, 6544, 6596, 5775, 3352].

ARMv8 [6299, 6596, 6577].

ARMv8-A [6596, 6577].

Army [7137].

ARPREC [4493].

Arrangement [198, 2324].


Array-Like [851].

Arrays [7384, 7401, 1186, 1823, 870, 5966, 3248, 6973, 2704, 1135, 6167, 4056, 2930, 5980, 3122, 3462, 978, 3470, 643, 1664, 2130, 2794, 5631, 7369, 6359, 2688, 2403, 3123, 3481, 3513, 4279, 3199, 3361].

Arrondi [5408, 5081].

Arsenal [272].

arsenide [3228].

Art [7165, 6552, 2270, 2972, 6101, 1178, 7099].

Article [1483].

Articles [53].

Artificial [6509, 43, 6795, 6708].

artificially [5685].

ary
ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE


calculated [29, 40, 108]. calculus [40, 3151]. calculus [7048]. Calgary [7465].
calibrating [4842]. Calif [7188]. California [7331, 7384, 7401, 7428, 7247,
7174, 7192, 7203, 7193, 7087, 7220, 7277, 7308, 7362, 7481, 7146, 3771, 7299,
7336, 7379, 7533, 7366, 7448, 7135, 7486, 7228, 7241, 7282, 7369, 7216, 7388,
7273, 7298, 7056, 7145, 7347, 7435, 7313, 7326, 7337, 7380, 7460, 7489, 7293,
7300, 7314, 7367, 7426, 7442, 7368]. Call [5235, 5236, 5456, 5650]. Call-for-
Papers [5456]. called [5]. calls [1190]. CalmRISC32 [4363]. calorimeter
[3593]. Cambridge [7197, 7209, 7234, 7227]. CAML [2944]. Can [5563,
4334, 1040, 1136, 2544, 2965, 3382, 5113, 4662, 2074, 1296, 3103, 3615, 6418].
Canada [7271, 7445, 7128, 7303, 7130, 7222, 7393, 7433, 7312, 3183, 7432].
Canadian [7465]. Cancellation [5879, 4322, 994, 3930, 6371, 5916, 2965,
3929]. Cancun [7453]. Canon [3572]. Canonical [1548, 2918, 3899, 5369].
Can’t [6492]. Cantilever [3760]. capabilities [1846, 2739]. Capability
[1565, 2866, 6893, 6894, 1372, 2939, 1996]. Cape [7409, 7412]. CAPI [6363].
Cardinality [5965]. Cards [4697]. Care [3077]. Carefully [6387, 3699].
Carlo [7056, 5880, 6034, 6137, 6040, 3798, 3799, 4083, 4251, 4252, 5363, 5780].
Carry [377, 6953, 4312, 5673, 3722, 4155, 4800, 3566, 4518, 4519, 6135, 335,
5275, 3072, 1124, 2075, 5722, 6159, 753, 233, 286, 144, 3139, 2001, 3324, 2782,
5759, 4909, 5212, 5226, 802, 2331, 2660, 2875, 4333, 2520, 4681, 2725, 1899,
5067, 1167, 5768, 5853, 2474, 4456]. Carry-aware [6953]. carry-free [5067],
carry-look-ahead [802]. Carry-Lookahead [4155, 2001, 2660, 1899]. carry-
propagate [2520]. Carry-Propagation [377, 233]. Carry-Save [4518, 4519,
6135, 335, 5275, 3139, 2782, 3566, 2875, 4333, 4681, 1167, 5768, 5853].
carry-save-adders [4456]. Carry-Select [5743]. Carry-Skip [2075, 2331, 2660,
2725, 2474]. Carry-Storage [286]. carrying [761, 1053]. cas [5081]. Cascade
[366, 477, 2899, 2401, 2330]. cascade-correlation [2899]. Cascaded
[4289, 6652, 3768, 1438, 3484, 4261, 1452, 2903, 933, 4442, 6109, 3359, 6112,
3221, 4516, 4684, 3900, 5596, 5983, 6695, 4448, 6335, 3370]. Cases [3419, 2351,
5286, 4387, 4717, 5172, 5409, 5917, 4398, 4616, 5083, 5230, 6474, 4700, 3449,
4716, 4578, 4722, 4756, 5081]. Casting [6025, 6988, 2829]. Castle [7446].
Catastrophic [4322]. Categorial [7105]. Cauchy [3624]. caused [1755, 700].
Causes [6326, 6436, 3350, 1702]. Causing [5959]. CAV [7451]. Caveats
[5684, 5478]. CCD [1526, 2111]. CCECE [7465]. CD [7339]. CD-ROM
[7339]. CDC [624, 302, 731, 554, 636, 1242, 1345, 717]. CDC-3600 [302].
CDMA [5150, 4231, 4232, 4233, 4394, 4395, 4576, 4871, 4132]. CCA [3080].
Celebration [7441]. CELEFUNT [3052]. céleste [40]. celestial [40]. Cell
[5673, 2889, 4018, 7222, 2387, 2909, 3178, 5561, 2674, 3733, 2800, 2722, 3277,
2413, 2747, 3181, 5049, 5059]. Cells [6609, 3430]. Cellular [5255, 5475, 1595,
2882, 4008, 1217, 4559, 637, 685, 938, 3404, 5405, 2580]. Cent [333, 165].
Center [7201, 7415, 719, 7151, 7288, 7334, 7406, 7458, 7473, 7133, 7100]. Centered
[6752]. central [3146, 3147]. Centre [7490, 7222, 7376, 7292, 7089].
complex

Complex-arithmetic

Complex-Number

Complexities

Complexity

Compliance

Compliant

complying

Component

Component-wise

Components

Composite-field

Computation

Computation/Decompression

Compressor

Compressors

Comprising

COMPSAC

Computable

Computation

Computation/Decompression
putational [7271, 7317, 7342, 6451, 854, 806, 3562, 3407, 4815, 5277, 5948, 7043, 3853, 1500, 4321, 4675, 4687, 3583, 7264, 2910, 575, 7096, 7296, 7496]. Computationally [3625, 3188]. Computations [3625, 3188]. Compu-

computers [703, 704, 769, 990, 1235, 7124, 1921, 4271, 80, 3240, 2012].

8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

gent [2173, 3675, 3633]. convergents [5400]. Converging [3445, 2388, 3504].
Additions from Nelson H. F. Beebe [4160, 1173, 6819, 748].
Correctly [5378, 6625, 6738, 4793, 4966, 5379, 5669, 6235, 7042, 4329, 4330, 5280, 2525, 6650, 4843, 3747, 6398, 5521, 5822, 4381, 6292, 3774, 4224, 6171, 6924, 3164, 1298, 5596, 6293, 6411, 706, 4090, 4339, 1853, 3265, 3277, 4720, 4244, 4259, 3203, 3204, 4010, 4339, 5185, 6219, 6721].
Corrections [4160, 1173, 6819, 748].
Correctly-Rounded [6625, 6235, 5521, 7042, 6847, 6961, 6962, 6981, 7047, 5593, 4916].
Correctly-Rounding [4843].
Correctness [3862, 3988, 1506, 3242, 4240, 3802, 3241, 3416, 1298, 5596, 6293, 6411, 706, 4090].
Correspondence [381, 3067, 625, 584].
Corrigenda [3210].
Corrigendum [2700, 1295, 2090, 2254, 2022].
Corum [7332].
Cos [1765, 2231, 536].
cosimulation [5185].
cosisim [2120].
Cosine [4030, 2120, 1068, 2810, 2606, 242, 952, 4010, 4339, 1853, 3265, 3277, 4720, 4244, 4259, 3203, 3204].
Cosines [52, 1398].
Cost [1365, 1805, 6732, 4154, 4158, 6032, 5267, 4180, 3752, 5715, 5818, 4038, 4851, 6529, 5924, 7005, 6798, 2973, 5614, 654, 6699, 6105, 6591, 943, 6709, 7042, 6869, 1402, 5714, 4850, 2578, 2798, 2134, 3497, 2799, 1066].
cost-effective [4850, 2578, 2799].
Cost-Efficient [6529].
Cost/performance [4158, 4038].
Costs [3968, 6111, 1483].
COSY [5063].
Cotes [3706, 4215].
Cox [3706, 4215].
Cox-Rower [4215].
CPFloat [6972].
CPU [5649, 1290, 2223, 2235, 3924, 3683, 4115, 4924, 6112].
CPUs [6497, 4925].
CR [5952, 4979, 5180].
CR-LIBM [4979, 5180, 5952].
Cray [7204, 2419, 2176, 3391, 2542, 2547, 2454, 1163, 2014].
Cray-1 [1163].
Cray-2 [2176, 2014].
Cray-4 [3391].
CRC [6148].
CRC-Based [6148].
CRD [1368].
Creating [6501, 3746, 3273].
Creation [5966].
Credible [3464].
Creek [7435, 7457].
crisis [6699, 3833].
Criteria [1054].
Criterion [333, 427, 415, 425, 5941].
Critical [6349, 3011, 6945, 4700, 4250].
Critique [418].
crlibm [4807].
CRNS [5866].
cross [6645, 3440].
cross-compiler [3440].
CRT [4637, 3987, 4665].
CRT-based [4665].
Crunch [1256].
Cruncher [1212].
crunching [1188].
Cryptanalysis [4631].
Crypto [3264].
Crypto-Chip [3264].
Cryptographic [6120, 4649, 6483, 5148, 4352, 5199, 5200, 4891].
Cryptography [5452, 4645, 6017, 6734, 6468, 6491, 5582, 6498, 6394, 5167, 4903, 5851, 3173, 6937, 5866, 6748, 4179, 1907, 2971].
cryptoprotoocols [1907].
Cryptosystem [4125, 3000].
Cryptosystems [5647, 4192, 4554, 3112, 6305, 4412, 6191].
Crystal [3650].
CS2 [2568].
CSD [3239].
CSI [7219, 3593].
CSI/IEEE [7219].
c’t [2080].
c’t-KAT-Ce. [2080].
Cube [6401, 49, 2123, 5422, 6603, 798, 1496, 1444, 3926].
Cubic [6039, 6827].
Cubiche [3926].
CUDA [6508, 5344, 7030].
CUDA-Accelerated [7030].
CUG247 [2283].
Cultural [2945].
Cumberland [7375].
Cumulative [1881].
Currency [3734, 3875, 4002, 4404].
Current [6118, 5488, 2707, 5742, 3286, 3897, 3903, 3461, 2941, 3658, 6111].
current-mode [3286, 3658].
curriculum [575].
Curve [5452, 5647, 4284, 5789, 4288, 4645, 6498,
8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE 38

4546, 5167, 4401, 4585, 4726, 4412, 4587, 4903, 372, 5237, 6962, 4198, 6191.
Curve-Based [5167]. Curve-Fitting [372]. Curve25519 [6691]. Curves
[5374, 5115, 5661, 5392, 5808, 4343, 4351, 4371, 5829, 3132, 4415, 4416, 4591,
3922, 1915, 3814, 4474, 3858, 6748, 6367, 6375, 4529, 6426, curvilinear [3692].
Custom [7388, 7273, 6742, 6743, 6643, 1964, 4987, 1848, 4028, 7220, 7235, 6300,
7293, 7300, 7314, 7367, 7426, 7442, 6589, 4527, 2900, 1868, 3505].
custom-designed [1868]. Custom-Precision [6742, 7420, 6643, 6589]. Customer
[2821]. customers [3382]. Customisation [4528]. Customizable [6449].
customized [6496, 6654, 6685, 3344]. Customizing [4989, 6892, 3496].
Cuts [2091]. Cutting [6574, 3185]. CVA6 [6892]. CVAX [2251]. CX
[2512]. CX-83S87 [2512]. CXgen [2674]. Cycle
[3047, 987, 1155, 3039, 744]. Cycle-Accurate [6554]. Cycles
[506, 1488, 3435, 3292, 899, 975, 2009, 3009].
Cyclic [4342, 5061, 2136, 1003]. Cylindrical
[5207]. Cyprus [7322]. Czech
[7306, 7423, 7455].

D [3391, 5669, 4986, 4177, 3881, 4033, 4201, 4038, 3283, 5520, 5025, 905,
4870, 5607, 6795, 3681, 3343, 3513, 7032, 6203, 4117, 4120, 4511, 6594, 5093,
3361, 2165, 4934, 4935, 4937, 801]. D-cache [3391]. D-konverter [3343].
[5864]. DAG [6922, 7024]. Dagstuhl [7383, 7446]. d’algorithmes [4307]. Dallas
[7092, 7224, 7184, 7147]. Dangerous [4268]. Dangers [3715]. DAP [1764].
Darcy [4236]. Dark [6750, 6968]. d’arrondi [989]. Darstellung [2609].
Data [3032, 5375, 6718, 6213, 6449, 5567, 1375, 5468, 865, 5266, 6490, 5809,
1616, 3081, 6503, 1036, 970, 6392, 5517, 3765, 6884, 892, 2100, 6988, 5314,
5174, 3635, 7169, 1315, 982, 145, 1323, 6912, 6803, 2453, 7027, 591, 1471, 6334,
5091, 6596, 5555, 4461, 5095, 3359, 4639, 1804, 48, 2498, 6230, 2656, 6474,
2665, 3978, 4335, 4524, 5896, 1509, 4836, 2892, 3078, 681, 5320, 5321, 1760,
4394, 4871, 2756, 4583, 4584, 5415, 3788, 1320, 3323, 2004, 1329, 3340,
2286, 2613, 3692, 1347, 2162, 2682, 292]. Data-Dependent [3765]. Data-
Driven [1375]. data-objects [3765]. Data-Parallel [3359]. data-paths
[4524]. DataBase [2821]. Dataflow [2038, 4018, 7025, 6938]. Datapath
[4635, 4312, 4794, 6855, 4542, 2940, 5561, 2320, 2184, 3976, 4505, 4915].
datapaths [3745]. Datatron [110]. Datatype [6509]. Datatypes [6624].
[3572, 4171, 4043, 5939, 5770]. DC [7137, 1150, 7215, 3065]. DCIS [7322].
DCT [4176, 5298, 5093, 4765, 4473, 3531]. DCT/IDCT [3531]. DDA
[1148, 969]. DDC [1686]. DDFUN90 [4954]. de-normalized [4558]. Deadly
December [7201, 7140, 7387, 7402, 7453, 7454, 7377, 7395, 7115, 7312, 7425,
7159]. Decidability [5126]. Deciding [5817]. Decimal [5233, 2037, 5114,
2856, 5793, 5118, 2947, 2646, 6354, 5958, 6127, 2866, 2867, 810, 811, 170, 4315,
32, 5676, 6475, 5124, 611, 865, 5471, 5802, 1382, 1386, 1590, 5127, 5259, 5479,
5480, 155, 4319, 4320, 4513, 4685, 4699, 4976, 6027, 6856, 6857, 6858, 6859,
6860, 6861, 198, 224, 6133, 6244, 5261, 173, 3731, 5270, 501, 4526, 4681, 4988,
8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

5275, 5395, 5491, 5492, 5580, 672, 674, 6146, 2525, 5396, 5900, 5500, 6045, 2531, 1405, 4843, 5902, 3747, 86, 5507, 1291, 1292, 1975, 3889, 5152, 5157, 5297, 5513, 1303, 2227, 4040, 5160, 5732, 1630, 4856, 5017, 5019, 260, 1144, 261. **Decimal** [94, 402, 6554, 115, 5183, 2960, 2781, 993, 267, 1539, 5849, 841, 1164, 1638, 485, 4908, 5070, 5541, 269, 166, 2600, 533, 5087, 5088, 189, 5357, 5358, 5548, 5772, 3520, 5217, 5360, 5552, 5553, 5636, 5857, 6339, 6818, 6342, 3358, 4930, 5097, 5364, 5365, 5556, 5557, 134, 3835, 5226, 1078, 5454, 6455, 1804, 5569, 5385, 5472, 464, 2699, 5970, 5499, 1290, 5707, 5156, 5158, 5512, 5515, 2233, 2234, 4855, 5320, 5321, 401, 353, 630, 610, 1159, 1062, 5623, 780, 652, 6926, 5545, 5634, 4921, 5637, 5774, 2482, 5366, 5640. **Decimal-Based** [5900, 5772, 5396, 5357, 5358]. **Decimal-Binary** [173, 2525]. **Decimal-Floating-Point** [5152]. **decimal-point** [780]. **Decimal-to-Binary** [155, 4843, 267, 1291, 1292, 401]. **Decimal/Hexadecimal** [2600]. **decimal64** [5750, 5875, 5531, 5409, 5172]. **Décimales** [1159]. **Decimals** [618, 43, 5299, 5523, 268, 1693]. **decimation** [3266]. **decimation-in-time** [3266]. **Decision** [4289, 5533, 4112, 5466, 3607, 4062, 5532, 4912]. **Decisions** [5013, 1977, 1308]. **decNumber** [5128, 5200]. **Decodable** [4342]. **Decoded** [5556]. **Decoder** [7045, 6322, 4115]. **decoders** [4108]. **Decoding** [4492, 6977, 6508, 6673, 569, 4498, 1088, 2354, 4226, 5173, 4888, 2026, 4470]. **Decoding-Free** [6977]. **Decodings** [6901]. **decomposable** [3997]. **Decomposition** [3094, 2387, 3285, 1886, 5321, 5175, 355, 4415, 772, 3675, 2986, 791, 2505, 4839, 6781, 2417, 476, 3338, 5207]. **Decompositions** [5297, 996]. **Decompression** [6866, 3671]. **Decreasing** [3999, 2457]. **decryption** [3565]. **DECSYSTEM** [1400, 958]. **DECsystem-10** [958]. **DECsystem-10/20** [958]. **DECSYSTEM-20** [1400]. **Dedicated** [2983, 2800, 2982]. **Dedication** [5864]. **dedié** [2800]. **Deductive** [5957]. **Deep** [6448, 7041, 6449, 6349, 6476, 6477, 6366, 6636, 6638, 6853, 6854, 6866, 6050, 6503, 6980, 6526, 6285, 6410, 6784, 6678, 6995, 6543, 6788, 6608, 6557, 6912, 6097, 6913, 6428, 6802, 6805, 6931, 6596, 6605, 6713, 7039, 6637, 6747, 6403, 6677, 6415, 6686, 6904, 6476, 6686, 7008, 6444]. **Deep-dish** [6097]. **Defect** [7254, 1784, 2820]. **defect-tolerant** [2820]. **Defektberechnung** [2567]. **defense** [2863, 1566, 1644]. **deficiencies** [1736]. **defined** [4971, 5145]. **Defining** [3473]. **Define** [6607, 282]. **Definiteness** [6193]. **Definition** [2343, 555, 6395, 5022, 5050, 3401, 2365, 747, 1224, 4860, 6195, 17]. **Definitions** [6857, 1553]. **Degeneracies** [3472]. **Degeneracy** [3333]. **Degradation** [5028, 5997]. **Degrades** [3760]. **Degree** [5784, 5662, 4318, 1665, 4774, 5281, 6316, 6328]. **Dekker** [6783, 5121, 6653, 6676]. **Delaunay** [3681]. **Delay** [3720, 2660, 3563, 3859, 5492, 5970, 6985, 4064, 6692, 4910, 4728, 4731, 3365, 5779]. **Delay-based** [5970]. **Delay-optimized** [4910]. **Delay-power** [3563]. **delayed** [5243, 4229]. **Delays** [2884]. **Delhi** [7219]. **Delight** [5946, 7382, 4575]. **delimit** [5201]. **Delimiting** [3019, 2841]. **deliver** [3196]. **delivers** [2182, 2503]. **Delivery** [7259]. **delta** [138]. **Delta** [3564, 3977]. **Delta-sigma** [3564, 3977]. **Demmel** [4829]. **demodulator** [3564]. **Demonstration** [5012, 3558, 88]. **Denmark** [7132]. **denoising** [5686]. **dénominateurs** [5400]. **Denominator** [5989, 5535]. **denominators** [5400]. **Denormal** [6925, 5867]. **Denormalization**


8

ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

43

[3874, 7306, 2622]. Dive [6596]. Diversity [7441]. Divide [3955, 3537, 2050,
5250, 814, 3862, 2344, 5504, 6054, 4204, 4703, 348, 438, 1664, 3491, 4430, 5437,
654, 3512, 3685, 3686, 2806, 322, 596, 2168, 3382, 4314, 3988, 4163, 2561, 2943,
3492, 4088, 4607, 3017]. Divide-and-Conquer [6054]. Divide-and-Correct
[814, 348, 438, 322]. Divide/Square [3512]. divided [6642]. Dividends
[5677]. Divider [11, 6358, 1596, 3069, 6523, 4367, 230, 312, 2101, 4072, 5332,
1155, 713, 3940, 1933, 5365, 2033, 6709, 1479, 6357, 2200, 5577, 4826, 4694, 3428,
5499, 2376, 6504, 2896, 4850, 4365, 4707, 5830, 5744, 2939, 2247, 114, 3311, 2975,
2135, 5440, 5558, 2835]. Dividers [6609, 5565, 808, 6129, 3442, 6417, 6891,
3629, 2127, 6431, 6695, 4949, 4181, 3121, 2580, 4115, 1933, 5639]. divides
Division [2632, 6, 1567, 1568, 852, 3848, 1366, 857, 5796, 726, 4498, 1811, 6957,
3553, 5958, 728, 3224, 3398, 6628, 6848, 6964, 6128, 1581, 32, 729, 5386, 5677,
814, 5253, 670, 3860, 3981, 1017, 4666, 3056, 3233, 4977, 3995, 3419, 5485, 6036,
6970, 3735, 1602, 1835, 3246, 3247, 4004, 4169, 4678, 2071, 6381, 424, 507, 552,
4012, 431, 1606, 822, 305, 6499, 2704, 6046, 3253, 2375, 1851, 5706, 3749, 7046,
4189, 6054, 5711, 3751, 4355, 3753, 4028, 4199, 5008, 4704, 4035, 3444, 3445,
740, 6273, 343, 5516, 5905, 4041, 3448, 4044, 3762, 3763, 6527, 257, 4554, 749].
Division [5406, 5592, 5735, 5020, 4375, 285, 348, 567, 568, 631, 1635, 313, 3458,
4713, 5309, 5523, 25, 287, 1311, 1880, 1048, 128, 1754, 2105, 2933, 5833, 6996,
3122, 2424, 2248, 3467, 4875, 3469, 4397, 6081, 2113, 5042, 4398, 264, 762, 3643,
266, 5751, 1893, 2949, 3301, 4068, 4882, 5051, 7006, 236, 4071, 5753, 6185, 5842,
5183, 3652, 3653, 3792, 3793, 2777, 2778, 2125, 4595, 5191, 5424, 3664, 2132,
238, 6801, 6694, 1774, 2590, 649, 3804, 164, 584, 5065, 4087, 239, 775, 186, 165,
5342, 2015, 711, 4752, 842, 270, 3813, 322, 5351, 1923, 2022, 6702, 5085, 5354].
Division [4119, 4449, 6814, 167, 214, 939, 1174, 2155, 489, 593, 6205, 6336,
2475, 6208, 3006, 3830, 5859, 1001, 543, 244, 2303, 5450, 6111, 3015, 3016,
6603, 5228, 5805, 3837, 663, 2633, 3844, 950, 460, 3549, 1087, 4792, 6961,
3399, 2504, 5125, 3229, 3404, 4156, 2669, 2507, 3567, 4670, 6248, 2875,
2355, 2357, 2522, 2688, 3071, 4679, 4682, 4683, 4990, 2359, 3579, 3580, 3581,
3425, 2361, 225, 2073, 2698, 5285, 3883, 3592, 3254, 4186, 4844, 2078, 3436,
3437, 3438, 3441, 3268, 3269, 4031, 3888, 3757, 2092, 4706, 5015, 3104, 3284,
2919, 3901, 400, 4054, 3117, 4058, 4572, 5411, 5601, 2937, 2109]. division
[2556, 3125, 3782, 4578, 4722, 4724, 4725, 2754, 2755, 3131, 577, 1890, 5606,
6898, 3912, 2760, 2950, 3140, 3302, 3303, 3476, 4402, 3913, 5987, 5926, 2118,
2956, 452, 4073, 3480, 3654, 4076, 4889, 4734, 2967, 4896, 4425, 4744, 130, 163,
3927, 3928, 1064, 779, 3336, 3169, 3170, 3504, 4911, 6699, 3514, 3815, 2467, 2468,
293, 4271, 4272, 1172, 1463, 5210, 1073, 2472, 3948, 4279, 4766, 4930, 4931, 1253,
2164, 2834, 2837, 4932, 4769, 4476, 4283, 1994, 262, 1770, 1476]. Divisionand-accumulation [3751]. Division-Free [5958, 3254]. Division/Square
[5859, 3844, 4054]. division/square-root [3844]. Divisionless [222, 211].
Divisions [560, 265, 531, 785, 4241, 3198]. Divisionsalgorithmus [1770].
Divisionsverfahren [1811]. Divisor [560, 438, 3922, 531, 785, 543, 460,
4792, 2956, 4734]. Divisors [740, 3269]. DivSqrt [6979]. DLFloat [6448].


8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE


...
8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

6205, 7035, 1075, 5550, 6595, 5555, 6342, 5096, 5858, 6820, 6934, 4466, 7037, 6937, 5371, 6824, 5103, 3206, 6604, 6605, 6711, 6712, 6825, 7039, 4136, 6942, 6944, 5648, 3536, 3853, 2661, 3723, 3858, 6241.

efficient [6949, 5290, 5728, 5026, 4591, 3307, 6328].

Efficiently [4591].

Effort [4114, 4383].

Egypt [7399].

Eidetic [6969].

Eigensolvers [5040, 5176].

Eigenvalue [1831, 4454, 7072, 3416, 6078, 4121].

eigenvalues [6078, 4411].

Eigenvectors [2806].

Eighteenth [7146, 7094, 31, 2371].

Eighth [7272, 7145].

Eignung [1699].

Ein- [2480].

Einbettung [1352].

einfach [1794].

Einiger [1236].

Einigen [835, 384].

Einplatinenrechner [2080].

Einzel [547].

Eisenstein [3729].

Eispack [3092, 3263].

electric [2406, 2408].

electrical [7158].

Elastic [2406, 2408].

Elements [1123, 308, 139, 6159, 2144, 3872, 3733, 2350, 4531, 1039, 5779].

Elevation [6481].

Eleventh [7271, 7259].

Elf [6994].

elicited [3934].

Eliminate [1206, 1079, 1184, 3380, 1269, 1436].

Eliminating [2167, 3882].

Elimination [3392, 5704, 5816, 3292, 5842, 5653, 1807, 1813, 2732, 1541, 1461, 1924, 2024].

Elision [6414].

Elizabeth [7393].

Elliptic [5452, 5647, 4284, 5789, 4288, 6350, 4645, 5237, 5661, 6043, 4343, 4546, 4371, 3132, 4401, 4585, 4726, 4412, 4587, 4730, 4415, 4416, 4903, 4432, 4606, 1915, 5629, 3814, 3858, 6748, 4198, 6426, 6919, 3338, 5222].

elliptical [108].

elliptique [108].

ELU [6638].

Elusive [4575, 5430].

ELXSI [1694].

Email [3481].

Embedded [7331, 6255, 6394, 7410, 7422, 7437, 7468, 6880, 6670, 3902,
8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

6071, 6410, 2952, 6687, 5842, 5851, 6945, 2496, 3580, 6360, 5133, 4868, 4590, 3925, 5439, 5440, 5442, 5635. Embedding [1027, 1352]. emerged [3659].


enemy [6320]. Energy [6828, 6011, 6345, 5863, 6632, 6750, 5492, 5696, 6765, 5969, 6271, 6985, 6424, 5927, 4731, 6910, 5337, 7018, 4758, 6820, 6934, 6942, 7018, 4839, 6385].

Engine [3044, 4336, 6971, 6760, 5518, 2463, 4, 16, 6469, 2383, 4550, 2163, 7403, 6505, 3659]. Engineer [2907, 4723]. Engineering [311x3842, 7479, 7176, 7403, 7465, 7466, 2392, 5403, 4367, 3775, 3681, 7443, 7399, 7411, 5003, 1620, 4854, 4707, 316]. engineers [254, 738, 1973]. engines [2843].

England [3454, 7280]. English [195, 73]. Enhance [5382, 1540, 1778]. Enhanced [6346, 3842, 5463, 1504, 1592, 4871, 3133, 6925, 6704, 5252, 3637, 4099].


Entwurf [2299, 1000]. Enumeration [2160]. envelope [3177]. Environment [7103, 3551, 1193, 1266, 5572, 3442, 5769, 1711, 4321, 6069, 5757, 3325, 1696].


ERL [4833]. Errata [1387, 231]. Erratum [1108, 922, 5445]. erreurs [989].

2100, 5835, 543, 460, 3992, 6288, 6537, 3127, 3642, 5197, 1461, 1924, 4768, 6593.

[4294], [4500], [5310], [4422], [5434], [5435], [3500], [3806], [4291]. Faithfully [5966], [6047], [6057], [6106]. Fall [7067], [7077]. fallback [7007]. Falls [7375]. Family [2491], [4785], [1578], [1579], [2654], [5384], [5387], [1833], [5699], [5701], [3095], [3271], [4049], [4373], [1642], [3296], [4264], [3814], [5360], [4474], [2496], [5383], [5973], [7167], 2558, 2942, 3346, 3363. famous [6609]. Fan [2132]. Fan-In [2132]. Fans [6813]. FAQ [4960], [6856], [6857], [6858], [6859], [6860], [6861]. FasMath [2512]. Fast [4481], [6610], [6829], [3532], [4284], [4641], [5788], [377], [219], [3847], [5238], [6121], [2179], 6954, [3040], [3041], [5661], [3223], [3851], [2048], [6739], [1717], [2659], [905], [953], [6627], 5673, [1583], [2333], [2334], [4317], [5474], [1383], [1587], [6636], [6637], [6638], [1018], [3987], 6484, [1594], [1828], [3058], [3236], [2678], [5483], [3238], [5389], [5883], [4518], [4519], [4815], [5888], [3417], [3999], [1831], [6377], [3068], [6970], [2520], [4991], [3422], [4176], [820], [4012], 6043, [1606], [3739], [1842], [1517], [1847], [1612], [556], [2077], [5508], [3884], [5288], [3601], [3752], [5585], [4847], [3605], [2713], [1299], [6515], [3442], [3269], [4031], [6394], [6271], [3445], [6159], [309], [5909], [4215]. Fast-Direct [2048]. Fast-Division [1048]. fast-optimaler [1061]. Fast-Start [5039]. Fast2Sum [6126], [6233]. Faster [6728], [1949], [4661], [3060], [3243], [118], [6379], [5282], [5496], [4343], [5710], [6506], [6524], [5591], [5735], [6539], [4415], [7020], [1919], [2831], [6108], [6115], [6623], [1490], [6747], [2687], [6079], [3010]. Fastest [463], [3029]. FastRTS [4619]. FastTwoSum [6783], [6676]. Fault [5870], [3395], [2203], [4181], [6148], [5709], [3101], [7254], [3231], [3222], [2130], [1170], [2166], [4631], [6945], [6120], [2177], [3040], [3041], [3585], [2710], [4548], [2246], [2963], [3511], [3513], [3199], [3361], [2843], [3371]. Fault-Masking [2166]. Fault-Tolerant [5709], [2130], [4181], [3321], [3222], [6945], [3040], [3041], [3585], [4548], [3511], [3199]. faults [3252]. Faulty [6830]. FCC [3739]. FCCM [7388], [7442], [7367], [7426]. Fclass [4552]. FCT [7105]. FD [6632], [6546]. FD-SOI [6632], [6546]. FDIV [3568], [3408], [3494]. FDLIBM [3142]. FDTD [4918]. Fe [7338]. Feasibility [2518], [1138], [1147], [4605], [2711]. Feasible [3625]. Feature [255], [5820], [6429], [3196]. Features [5040], [5176], [4406], [2857], [3031], [378], [3443], [2394]. featuring [7259]. February [7384], [7401], [7367], [7113], [7145], [7177], [7311], [7289], 7224, [7398], [7369], [7295], [4122]. Federal [108]. Fédérale [108]. Federation
ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

53

1376, 6470, 4312, 4794, 4968, 6358, 6628, 6964, 3555, 6473, 2503, 5468, 247, 6360, 864, 5676, 171, 3227, 3402, 1497, 1498, 5384, 5124, 6632, 2659, 1583, 5570, 2663, 3561, 4317, 5802, 6851, 1270, 2666, 2667, 2668, 5959, 6025, 6240, 3051, 3980, 1724, 2509, 730, 1196, 1385, 1501, 1502, 1725, 1824, 2202, 2339, 3053, 3983, 6131, 3985, 1197, 1198, 1274, 1387, 1726, 5881, 3862, 3989, 5127.

Floating [5259, 5479, 5480, 2869, 4320, 4803, 3410, 3411, 3570, 2061, 2062, 3413, 3726, 6138, 6134, 3571, 3864, 3866, 4325, 6751, 2344, 2513, 2514, 6641, 3995, 3996, 4327, 2204, 4812, 616, 2346, 2879, 3242, 4334, 4520, 4522, 4673, 4815, 5887, 6032, 6756, 1964, 5265, 4677, 6868, 5267, 5135, 6490, 3732, 4338, 6759, 1965, 2065, 501, 6140, 3874, 1724, 1824, 2202, 2339, 3053, 3983, 6131, 3985, 1197, 1198, 1274, 1387, 1726, 5881, 3862, 3989, 5127].


8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE 56

<table>
<thead>
<tr>
<th>Floating Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>4842, 3882, 2532, 4021, 6656, 6657, 3080, 4022, 5001, 3593, 5817, 6978, 4023, 4539, 4698, 6504, 2894, 2895, 3595, 6388, 3083, 4022, 5001, 3593, 5817, 6978, 4023, 4539, 4698, 6504, 2894, 2895, 3595, 6388, 3083, 4022, 5001, 3593, 5817, 6978, 4023, 4539, 4698, 6504, 2894, 2895, 3595, 6388, 3083, 4022, 5001, 3593, 5817, 6978, 4023, 4539, 4698, 6504, 2894, 2895, 3595, 6388, 3083, 4022, 5001, 3593, 5817, 6978, 4023, 4539, 4698, 6504, 2894, 2895, 3595, 6388, 308!</td>
</tr>
</tbody>
</table>
8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

4934, 4935, 5780, 598, 797, 2841, 6938, 194, 2843, 2307, 2489, 2845, 2846, 3205, 3836, 7052, 5227, 4940, 5106, 5108, 4632, 4772, 4773, 2309, 6716, 6943, 5130, 2345, 2682, 1252, 6466, 1731, 3891, 4865, 1884, 3644, 3188, 2298, 2299, 2300, 2479, 2480, 1475, 5575, 995

Floating-Decimal [134], Floating-Point [2039, 6952, 3954, 2629, 4635, 4945, 5233, 5785, 5562, 4636, 6948, 4946, 3958, 650, 6949, 6214, 6943, 5651, 5652, 5791, 598, 628, 6729, 3836, 3965, 4146, 4147, 4148, 1949, 4496, 2322, 6732, 2499, 3410, 3411, 3570, 2061, 6138, 6134, 4325, 6751, 2513, 2514, 6641, 4327, 4812, 616, 5887, 5888, 6032, 6756, 6868, 5267, 5135, 6490, 4338, 1965, 6140, 3874, 1732, 2883, 2885, 5394, 504, 6647, 4526, 5275, 5491, 3421, 4006, 4172, 1837, 6143, 2211, 1278, 6762, 6763, 1511, 6144, 4178, 6973, 2213, 6496, 4993, 5809, 1279, 2214, 2889, 4528, 5696, 3739, 1970, 5497, 877, 4018, 880, 1284, 6767, 2700, 4695, 5396, 5900, 6255, 6651, 1402, 1609, 6652, 4347, 4536

Floating-Point [5502, 306, 2217, 2218, 2372, 1849, 4184, 6976, 5706, 6769, 4843, 969, 391, 392, 5287, 3884, 2534, 6771, 5585, 1975, 970, 6513, 2538, 2712, 2902, 6155, 6270, 1300, 5296, 5818, 3887, 1131, 6158, 1618, 6518, 1860, 1861, 1862, 2086, 2087, 6519, 5157, 5721, 6663, 3096, 3097, 4201, 342, 5586, 6062, 5904, 5516, 5727, 5729, 5905, 5907, 6274, 6400, 4363, 3892, 5517, 1221, 6164, 6278, 6669, 1627, 5910, 6165, 344, 1223, 1307, 1416, 1986, 2913, 3759, 3893, 3894, 4210, 4364, 4552, 4851, 4852, 5013, 5403, 4367, 3761, 742, 745, 5300, 1870, 2545, 6528, 890, 1041, 3287, 5520, 827, 2407, 2921, 5305

Floating-Point [5306, 5823, 3768, 750, 751, 893, 1045, 5913, 3291, 6535, 6536, 6886, 6887, 6286, 6168, 6291, 6074, 5028, 2742, 6170, 4866, 5031, 6171, 6294, 6538, 1528, 440, 5314, 5315, 6992, 6994, 2105, 5174, 5980, 831, 904, 1430, 570, 4762, 3671, 5305, 2934, 2245, 2424, 6302, 2746, 4880, 2555, 6546, 639, 686, 2557, 5924, 6419, 1640, 2753, 6999, 5835, 6790, 4577, 525, 576, 1148, 3471, 5605, 4399, 7002, 7049, 982, 5531, 5324, 2432, 5533, 1763, 681, 641, 1895, 2116, 2256, 2436, 2437, 341, 5049, 5609, 6183, 6422, 1121, 2765, 2443, 2444, 6424, 6559, 6687, 915, 5056, 5183

Floating-Point [5332, 2774, 4077, 3653, 3655, 3793, 2962, 5930, 2777, 2778, 5418, 7014, 2003, 644, 1324, 2537, 2262, 6693, 5993, 7017, 701, 4255, 5994, 2785, 2786, 3152, 6564, 5538, 4897, 5146, 5425, 5426, 6430, 2272, 2273, 1238, 3669, 6192, 2274, 993, 3158, 2275, 4603, 2276, 2797, 5066, 5434, 5435, 5617, 5937, 6696, 6435, 1680, 6327, 3931, 1543, 4093, 1454, 1775, 4908, 5070, 5342, 4437, 4750, 5071, 5766, 5073, 2983, 7027, 5627, 5852, 3680, 2461, 212, 2948, 2805, 2990, 3178, 3179, 3342, 3685, 3686, 2287, 5942, 6202, 6925, 6103, 6104, 6576, 2020, 2995, 2601, 4913, 1458, 1459, 1785, 5544, 5084, 1340, 5855

Floating-Point [1786, 5546, 2470, 2607, 2608, 3002, 1465, 5547, 6703, 1789, 3517, 4920, 6106, 6589, 4120, 592, 3347, 6333, 6002, 7034, 5356, 2027, 848, 5548, 2822]

FLOATP Toolbox [6862]. Floats [2178, 5728, 6531, 3944, 6320, 6330, 2790].

FloatX [6496]. FLoC [5616]. FloCq [5665, 6736]. flop [4239, 502, 6546].


Flottante [2557, 2003, 701, 4307, 4788, 4340, 2213, 4865, 5319, 2756, 989].

Flow [6808, 5631, 3705, 3841, 2332, 2506, 5894, 1347, 1251]. FlowFPX [6948].

FLPPEG [349]. Fluid [6327, 7043]. Flux [3452]. Fly [5877, 6135, 3738, 5871, 2069, 2355, 2886, 5006, 4715]. Flying [4021]. Flytta1s [3343].

FMA [5378, 5664, 5697, 5715, 5818, 6777, 5905, 6275, 6292, 5601, 6911].

FMAC [3599, 3915]. FMCAD [7294]. FME [7354]. Focus [1230, 1247, 1201, 1047].

Fold [5435]. Fonctionnelle [2557]. Fonctions [4672, 3970, 5408, 5081].

Forces [2984]. Forcing [5423, 5079]. Forensic [5794]. Foreword [1009, 6218, 1364, 4646, 3975, 4506, 6639, 1114, 2356, 1859, 6778, 3454, 4050, 3771, 2763, 920, 3183, 6581, 6863].

Form [5452, 4284, 951, 3388, 547, 5257, 5258, 1828, 1829, 4834, 2893, 4847, 6297, 5599, 3781, 4412, 4587, 1445, 2146, 6602, 3706, 825, 7047, 5587, 5730, 6402, 3292, 3467, 1436, 5196, 3826, 3009].

Formal [6347, 6349, 2045, 2319, 4303, 4650, 4788, 5243, 5244, 5666, 5874, 6020, 6736, 6023, 7479, 7418, 4688, 4827, 4829, 876, 3077, 4188, 4189, 4699, 4361, 4367, 5518, 4048, 5743, 2749, 6419, 6552, 5842, 2573, 6430, 6193, 4261, 5938, 6917, 4607, 5766, 7294, 3375, 2044, 4787, 5121, 5979, 5957, 6231, 5010, 4707, 4383, 7354, 3146, 3147, 2487, 7479, 7418]. Formalisation [4307]. Formalization [4482, 4307, 829, 897, 973, 2938, 576, 6900].

Formalization [6062]. Formally [5464, 5465, 5873, 6354, 6080, 5323, 6898, 4077, 3488, 4805, 4806, 7000].

Formally-Proved [6354]. Formally-Verified [5873]. Format [6448, 6460, 6744, 3985, 5259, 5480, 6134, 970, 6660, 6158, 5160, 6404, 6888, 5172, 5409, 2753, 6556, 6693, 3943, 5087, 6705, 5361, 6596, 6208, 6598, 2172, 3966, 666, 4799, 6371, 4524, 4684, 2530, 3748, 520, 6677, 5027, 4879, 319, 5213, 1627, 2253, 3334].
ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE


high [2556, 50, 2943, 3135, 7063, 2563, 4402, 2956, 1153, 3311, 3795, 4731, 2776, 5843, 4080, 4246, 4734, 3150, 5338, 5757, 2578, 4739, 2583, 4898, 2008, 95, 3666, 1062, 1678, 5618, 3169, 3170, 1066, 2994, 5078, 1784, 3689, 1172, 6335, 3351, 5639, 6601, 2618, 2848, 3372, 2682, 2051, 2567].

High-Bandwidth [6848].

High-Dimensional [6305, 6645].

High-end [1517].

high-frequency [4855].

High-Level [1094, 6138, 1511, 4178, 7003, 993, 6706, 4144, 6847, 6412, 4583, 1696, 1062, 6335].

High-Order [2048, 3569, 1054, 3166, 3167].

High-Performance [7302, 1571, 5674, 3721, 4316, 3854, 4800, 5495, 5009, 4201, 6163, 5057, 5614, 5444, 6334, 5360, 5553, 5636, 6935, 6936, 6764, 4702, 2223, 4572, 6338, 3240, 3209, 5954, 4780, 6016, 4973, 4838, 4839, 4022, 2943, 3311, 4731].

high-period [5269].

High-Precision [3532, 4956, 4782, 6473, 1132, 3763, 6302, 5795, 5869, 6015, 6645].

High-Radix [5565, 3233, 3112, 6066, 4060, 3485, 5071, 4119, 4450, 6940, 4306, 4245, 4594, 4738, 3166, 3167, 2384, 2776, 4080, 4246, 4734, 4739, 3169, 3170, 1172].


High-Spped [1069, 1178].

High-Throughput [5564, 5025, 6990, 6571].

high/variable [2330].

Higher [7272, 460, 545, 5956, 7344, 1581, 2508, 1602, 6509, 2391, 2927, 5528, 2566, 5927, 2138, 1912, 1174, 2029, 543, 3075, 3083, 2911, 3102, 2433, 5072, 3831].

Higher-Order [7272, 3083].

Higher-Precision [6509].

Higher-Radix [1602, 543, 460].

Highlights [1041].

Highly [4775, 2500, 5478, 5684, 6646, 1841, 4190, 517, 2561, 3945, 2199, 1852, 4736, 1471, 1472].

Hile [384, 35].

Hilton [7259, 7157, 7178, 7195, 7335].

Hind [407].

hings [6211].

Hisab [407].

histogram [5344].

Historical [5529, 6100, 529, 3528].

History [852, 7285, 91, 21, 6252, 511, 622, 1399, 6516, 6775, 4202, 2720, 4046, 20, 2945, 2475, 5895, 2078, 6086, 800, 6826, 7125].

hits [6671].

HLS [6589].

HMC [6401].

HMC-MAC [6401].

HMFPCC [6013].

HMM [6592].

Hobbit [3091].

 Hochgenaue [2051, 2567].

Hogenauer [387].

höheren [1094].

HOL [4482, 5562, 3401, 3402, 3432, 3750, 4187, 6062].

HOL95 [7272].

Holiday [7151].

Homepage [4323].

homogeneous [1972, 5323].

Homomorphic [6610, 6997, 6557, 6566, 7030].

Hong [7376].

honor [6434].

Hood [5184, 3695].

hopped [4630].

Horizon [2295].
IEEE [3394, 2649, 6023, 3973, 4969, 3401, 3402, 4508, 1196, 1502, 1589, 2339, 3053, 3862, 3989, 5127, 5259, 5479, 5480, 6485, 3412, 3413, 3865, 3867, 4324, 4167, 2683, 6756, 7374, 7419, 4819, 5488, 3736, 4006, 4172, 4173, 4174, 4683, 6762, 6763, 1511, 4175, 4178, 4340, 2697, 2526, 5285, 2705, 2532, 2083, 7176, 5149, 1409, 6516, 6775, 6518, 6518, 1218, 7113, 7131, 7414, 7511, 1862, 7157, 7177, 7178, 7195, 7197, 7209, 7220, 7234, 5721, 4704, 4361, 1626, 1307, 2093, 3449, 3614, 3759, 5159, 5160, 4051, 4862, 6534, 7299, 7267, 5172, 5409, 5921, 6416, 7254, 1757, 5318, 3630, 2424, 2555, 4230, 5040, 5176, 2253, 5517, 5531].

IEEE-754 [5750, 3473, 3643, 3644, 6555, 2435, 7012, 4242, 3309, 4077, 3652, 4413, 4588, 2573, 4082, 3323, 6189, 2781, 7328, 7293, 3325, 3488, 2792, 4989, 2271, 1674, 6433, 6320, 1677, 7021, 3927, 3928, 3159, 4546, 7499, 4932, 4267, 4437, 4750, 4910, 4911, 5071, 3935, 4746, 1776, 5627, 2016, 7398, 2287, 5351, 1338, 1458, 1460, 7340, 2470, 2607, 2608, 3002, 1465, 5213, 7301, 1696, 5358, 3350, 5553, 5361, 2033, 7245, 5778, 7036, 1798, 7199, 7295, 7330].

8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE


Implementation [5735, 3871, 4819, 3733, 5270, 3070, 6875, 4010, 1204, 2361, 5283, 3076, 3586, 3428, 5285, 2530, 5700, 7218, 1850, 4842, 2532, 3883, 6388, 4194, 3260, 4029, 3440, 6664, 6160, 5726, 2088, 2090, 2546, 2732, 2240, 2413, 829, 897, 973, 4863, 5308, 2417, 4058, 3459, 5920, 4570, 2104, 5411, 3123, 4065, 5746, 3638, 5749, 6683, 1762, 2563, 2433, 5180, 5181, 2956, 3311, 4076, 3149, 3319, 3320, 4083, 2268, 2791, 2793, 1677, 5433, 4910, 1167, 2016, 5770, 2462, 1546, 7988, 2019, 2288, 5854, 5634, 1172, 2152, 5213, 846, 4275, 1175, 2473, 4464, 5558, 2834, 4473, 4476, 2682. Implementations [5651, 5652, 5791, 5792, 3223, 6480, 5387, 4672, 6647, 4348, 3746, 3749, 4557, 6412, 3122, 7291, 7411, 4580, 4071, 3972, 1902, 4247, 4085, 5424, 7228, 6569, 3173, 3512, 3685, 3686, 2606, 3519, 4125, 4623, 6709, 3260, 6031, 4672, 1261, 3039, 2655, 4158, 4164, 5390, 3246, 3425, 3439, 2727, 5307, 3292, 6293, 6411, 3627, 3777, 1757, 7325, 7336, 7352, 7365, 7379, 7396, 4086, 2592, 4748, 3813, 5075, 5218, 4928, 3007, 4934, 4283.

ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

5741, 5919, 5034, 2108, 2109, 2248, 6552, 6558, 6793, 145, 3484, 2120, 3486, 4415, 1905, 4895, 1669, 2132, 6317, 1774, 2590, 4425, 6192, 2139, 6435, 6920, 4752, 2146, 588, 5085, 5087, 5211, 5355, 6814, 5357, 5358, 5772, 6205, 6336, Integer [5093, 3358, 1253, 1076, 3527, 5644, 5805, 2179, 4784, 5801, 2655, 4156, 6484, 5389, 2205, 820, 3583, 5282, 2698, 2891, 2366, 5283, 6048, 4537, 4724, 7000, 5838, 6898, 5987, 5988, 7019, 1668, 6318, 2802, 3684, 5080, 2997, 4444, 4624, 5643, 3275, Integer-Division [6527], Integerarithmetik [2120], Integer [6840, 18, 549, 811, 5257, 5258, 3055, 877, 6652, 5711, 3885, 4369, 3635, 3636, 2112, 1146, 6179, 5751, 1768, 4419, 1667, 4596, 530, 2015, 3944, 5555, 2303, 3207, 3373, 2318, 1826, 871, 3253, 5600, 5606, 5193, 2030, 4764, integrable [4407], Integral [547, 333, 1349, 282, 4003, 6645, 1512], Integrals [6043, 1306, 3624, 6645, 1512], integrands [5149], Integrate [6892], Integrated [5649, 7328, 4777, 723, 3551, 2500, 724, 7235, 7436, 1424, 2242, 1879, 1179, 4321, 1031, 2530, 1868, 2421, 2252, 2466], Integrated-Circuit [1879], Integrating [3091, 1433, 5757, 7355, 4941], Integration [6232, 1822, 4003, 624, 82, 4357, 83, 7267, 440, 204, 77, 6701, 936, 4675, 282, 92, 95, 2134, 4109, 194], Integrations [6073, 2584], Integrator [62, 3588], Integrity [4461, 3634], INTEL [1377, 979, 5111, 6346, 5112, 5865, 1487, 1956, 5811, 4666, 5479, 6970, 6497, 3739, 5141, 6149, 6258, 6658, 1856, 4705, 1629, 5820, 2241, 2242, 1315, 5414, 1058, 1323, 2463, 6099, 2289, 5854, 3833, 2307], Intellectual [7145], Intelligence [5695, 6509, 6688, 6708], Intel(R) [4786, 5518], Intensive [1718, 6470, 6308, 3188, 6824], Inter [1080, 6510, 7156], Inter-Continental [7156], Inter-Modulo [6510], Inter-relationships [1080], interaction [5621], Interactions [3963], Interactive [1752, 1150, 983, 7389], Interchangeability [1080], interconnected [5764], Interest [7224, 53], Interface [1097, 1264, 7129, 7449, 2224, 985], Interfaces [3746, 3093, 5512], Interfacing [3186], Interim [6950, 6983], Interior [4467], Interior-Point [4467], Interlaced [6145], Interleaved [1132, 5591, 3294, 6681, 3118], interlock [2191], Intermediate [4945, 5233, 4843, 4064, 4085, 3748, 5027], Internal [3534, 3386, 6045, 5902, 6897, 3678, 2997, 1843, 2559, 2843], Internal-Newton-Method [3534], Internals [3170], Internation [7268], International [7717, 7189, 7384, 7400, 7401, 7283, 7284, 2635, 7247, 7272, 3707, 7303, 7387, 7231, 7356, 7274, 4646, 7402, 7417, 7431, 7357, 7451, 7286, 7344, 7345, 7432, 7479, 7262, 7275, 7462, 7373, 7418, 7358, 7248, 7319, 7453, 7463, 7374, 7488, 7375, 7419, 7140, 7082, 7464, 7305, 7499, 7501, 7176, 7446, 7306, 7454, 7087, 7098, 7113, 7130, 7311, 7415, 7156, 7157, 7177, 7185, 7195, 7196, 7197, 7209, 7219, 7222, 7234, 7265, 7277, 7278, 7309, 7322, 7323, 7333, 7334, 7347, 7349, 7360, 7361, 7376, 7377, 7386, 7391, 7392, 7393, 7394, 7395, 7406, 7408, 7422, 7433, 7434, 7435, 7437, 7447, 7447, 7456, 7457, 7458, 7466, 7467, 7468], International [7495, 7477, 7238, 7223, 7496, 7290, 7267, 7364, 7254, 7440, 7183, 7120, 7425, 7079, 7108, 7117, 7354, 7091, 7240, 3156, 5616, 7315, 7368, 7381, 7461, 7329, 7443, 7339, 7340, 7355, 7413, 7491, 7301, 7341, 7369, 7414, 7370, 7258, 7399, 7244, 7471, 7245, 7199, 7270, 7295, 7330, 7497, 7427,
8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE 75

1393, 281, 4342, 338, 7278, 7323, 7438, 7455, 5299, 1526, 6787, 4575, 6561,
4597, 482, 583, 3802, 4261, 7470, 7315, 2980, 4751, 4610, 781, 782, 783, 2019, 3689,
5213, 5089, 3694, 7078, 7058]. Logic-Based [6787]. Logical [3021, 1102, 1742, 4114,
Long [3398, 4972, 2671, 4697, 5711, 437, 6073, 3635, 3636, 6899, 4419, 844, 
4119, 3731, 2692, 4540, 5737, 2584, 2802, 5768, 5853, 5643]. long-term [2584].
longer [6419]. Look [5892, 3880, 1742, 4192, 3433, 5053, 5184, 2122, 4422,
3823, 5212, 802, 2661, 4015, 5510, 6418, 3942, 2153, 4937]. Look-Ahead [5212].
Look-Up [1742, 4192, 5053, 2122, 4422, 3823, 3433, 2661, 4015, 3942, 4937].
Lookahead [4155, 3457, 2001, 5226, 2660, 1899]. Looking [6542]. Lookup [5494, 4012, 6057, 5023, 4397, 5041, 5748, 2124, 2125, 6325, 3807, 1544, 998, 
2812, 2813, 3856, 3430, 4031, 4850, 3319, 3320, 4081, 3150, 2035]. Lookup-
Table-Based [6057]. Loop [3378, 3098, 5415, 2163, 3099]. Loops [3227, 4597].
L¨osung [1598, 4477, 4771]. Lottery [7026]. Louis [21, 7163]. Louisiana [7176, 7311, 7398]. Louiville [7144]. Low [2851, 4950, 4951, 1365, 1805, 6732, 6846, 6628, 6848, 6237, 608, 4798, 6477, 4971, 4800, 3859, 5257, 5258, 6967, 6248, 5267, 5486, 4005, 6874, 3579, 6972, 6382, 4183, 1402, 3881, 6976, 5705, 6977, 3752, 6513, 5009, 5715, 5818, 4032, 6163, 6523, 6985, 4708, 3899, 5911, 6283, 6888, 5029, 4389, 6992, 4234, 5924, 7005, 4071, 4072, 4073, 6688, 6899, 4883, 4414, 4589, 7016, 4255, 4421, 7328, 5933, 5654, 6514, 6802, 4742, 4743, 4902, 5064, 5432, 4092, 4094, 4909, 5766, 654, 5628, 6001, 6575, 6105, 5546, 
3005, 6931, 943, 6933, 4464, 3952, 6939, 6712, 6940, 4633, 5951, 5963]. low [6760, 2897, 5714, 3888, 5515, 6986, 3901, 4712, 5918, 5744, 3782, 5054, 2258, 
3657, 5756, 3797, 2578, 2978, 1066, 5208, 2615, 3953, 4932]. Low-Complexity [5432, 3899, 5029, 3953, 4932]. Low-Cost [1365, 1805, 6732, 5267, 3752, 
5818, 5924, 7005, 5614, 654, 6105, 943, 1402, 5714, 2258, 2578, 1066]. Low-
dimensional [4883]. Low-frequency [2851]. Low-Latency [6848, 5628]. low-level [2615]. Low-Overhead [6992]. Low-Power [4800, 5009, 6163, 
6523, 5911, 4071, 4072, 4414, 7016, 7328, 4092, 4909, 5766, 5546, 5036, 6712, 4798, 4005, 3579, 4073, 4633, 3901, 5054, 5756]. Low-Precision [6846, 6477, 6976, 6777, 6899, 6802, 6972, 6888]. Low-Weight [5257, 5258]. Lowerr [1948, 4059, 3645, 5431, 5955, 4543, 5430, 2815]. LP [3645]. LPE [6820]. 
LSI-11 [1507, 1408]. LTI [6707]. LU [4839]. Lubbock [7151]. LUCAS 
LX-1 [563]. Lyapunov [6005]. Lyon [7371, 7286, 7482]. LZA [2535].

1579]. MA [7385, 7491, 7189, 7076, 7112, 7175, 7456, 7158]. mac [4964, 5956,
8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

6480, 6862, 6967, 5812, 6882, 5923, 6794, 4255, 6921, 4115, 4937, 2317].
8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE 80

mécanique [40]. Mechanical [3538, 5666, 12, 3769, 6100, 4608, 40, 5895]. mechanically [4308, 3913, 3927, 3928, 4090]. mechanically-checked [3927].
Additional Contributions from Nelson H. F. Beebe

8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

| 6817, 6003, 6818, 2831, 4462, 4931, 1476, 1705, 458, 4465, 5221, 4466, 7037, 6006, 4474, 6712, 5372, 4136, 5229, 5804, 6608, 950, 2176, 6459, 3849, 4645, 5237, 5238, 1262, 1574, 3966, 2862, 5242, 90, 4653, 5246, 4793, 6961, 2189, 2655, 6849, 5252, 3404, 3566, 2510, 1591, 6484, 5129, 6369, 3238, 5389, 6375, 4983, 6377, 3070, 2357, 2520, 2688, 4681, 2210, 3580, 3581, 4011, 820, 4013, 4179 | multiplication |
| 2073, 4689, 5282, 5283, 619, 2215, 967, 1844, 3253, 6506, 6507, 6058, 101, 6881, 3757, 5722, 6275, 4706, 5015, 4708, 5018, 4217, 2237, 2918, 3115, 3290, 4386, 4567, 4392, 2553, 4393, 5411, 6077, 3630, 3909, 2109, 4873, 2428, 4878, 2755, 4733, 5755, 5844, 5931, 6092, 6187, 3487, 2780, 4736, 4417, 2448, 4256, 27, 6191, 4740, 4741, 4902, 7020, 5848, 3928, 778, 653, 3932, 4911, 6102, 6439, 2802, 5345, 5629, 3684, 2462, 3817, 5854, 4116, 1927, 2811, 3000, 3001, 3942, 5086, 4761, 1073, 5774, 3522, 492, 5362, 3197, 3831, 5222, 5367, 5101, 5370, 5377, 5643, 2627, 3371, 4940, 5106, 7030 | Multiplication |
| 371, 3706 | Multiplication/division |
| 3996, 6141, 4837, 6264, 5148, 5294, 3787, 6090, 4730, 6912, 766, 2477, 3527, 5656, 5678, 6048, 4241, 2811 | 3909, 2109 |
| 1011, 4977, 5968, 4352, 5041, 6081, 6315, 5994, 5656, 5312, 6400, 609, 1108, 1109, 4683, 5285, 1611, 3757, 2622, 3020 | Multiplicative |
| 1562, 6113, 4636, 5565, 1565, 3961, 4293, 329, 462, 1572, 3966, 4498, 3854, 1195, 6851, 5255, 5475, 5477, 5387, 198, 3413, 6133, 1595, 1830, 6135, 6868, 503, 3069, 6646, 424, 507, 111, 430, 6145, 1514, 5099, 5739, 5009, 309, 1304, 6985, 140, 5161, 6780, 6882 | Multiplier |
| 6057, 5362, 6828, 2310, 3703, 6953, 2042, 5566, 3392, 4785, 5377, 3043, 4304, 4300, 6626, 6741, 6960, 3720, 4661, 4507, 2057, 6244, 332, 1594, 1828, 5692, 1599, 5966, 6872, 4170, 5276, 1603, 6498, 5699, 878, 6975, 556, 7045, 5385, 1217, 6163, 3285, 6530, 3765, 5167, 6284, 6406, 5739, 4384, 6786, 6298, 6541, 6787, 3629, 4064, 6307, 3139, 6685, 1055, 1152, 2127, 5428, 4742, 1675, 6435, 2450, 5765, 6095, 5013, 4179 | Multiplier/Divide |
8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE 86


ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

- Non-Restoring [6423, 3484, 852, 1311, 3627, 3777].
- Non-Smooth [3621].
- Non-standard [505].
- non-strict [2904].
- Non-traditional [5100].
- Non-Underflow [1285].
- Non-Volatile [680].
- Nonbinary [1918].
- Nonclassical [2696].
- Nondecimal [622, 1399].
- Nonlinear [6461, 3574, 737, 3446, 3621, 2947, 3675, 3698, 4467, 3779, 758, 5326, 946].
- Nonrectangular [3338].
- nonrecursive [2239].
- nonredundant [3945].
- Nonrestoring [857, 1581, 670, 637, 649, 1353, 1890, 1064, 3169].
- Nonscalar [766].
- Nonspeculative [5707].
- Nonstandard [1811, 1257].
- Nonsupersingular [3132].
- Nord-2B [645].
- Nordseeck [440].
- Norfolk [7255].
- Norm [1092, 4117, 6387].
- Normal [6949, 1489, 5671, 6141, 5277, 4562, 758, 5326, 946].
- Normalis´ee [4340].
- normality [5621].
- Normalization [2059, 966, 1032, 438, 2011, 1940, 2167, 1585, 1832, 4020, 1611, 3693].
- Normalizing [6255, 3080, 5745].
- Norms [5669, 5474, 6047].
- normwise [5893].
- North con [7237].
- Northcon/92 [7237].
- Northeast [7134, 7158].
- Northeast-83 [7134].
- Northeast-86 [7158].
- Northeast/83 [7134].
- Northern [7345, 7461].
- Norwegian [1739].
- Notation [4671, 6098, 1335, 311, 5530].
- notations [4789].
- notch [2959].
- Note [1005, 3962, 274, 223, 277, 125, 175, 158, 968, 512, 341, 560, 82, 342, 743, 202, 361, 8, 918, 1669, 3802, 707, 711, 1923, 2022, 3011, 2303, 5450, 6111, 4472, 949, 4310, 116, 2878, 4540, 1974, 1624, 1227, 6676, 6783, 3633, 756, 1668, 3189, 78, 1252].
- Notes [195, 668, 52, 36, 26, 343, 2388, 4036, 3759, 30, 207, 1669, 741, 3614, 5313].
- Nothing [2091, 4046, 6906].
- notice [6217, 6614, 6720, 6579].
- Notwendigkeit [404].
- Nov [7383].
- Novel [803, 4300, 6638, 6759, 875, 6655, 3266, 2722, 015, 2105, 6315, 4080, 4246, 2794, 3666, 6694, 4603, 5212, 5213, 5361, 6818, 6006, 4639, 6038, 2937, 5608, 5939, 4757, 4932].
- November [7190, 7331, 7415, 7067, 7077, 7322, 7479, 7101, 7174, 7192, 7023, 7298, 7176, 7092, 7098, 7179, 7221, 7277, 7363, 7495, 7115, 7146, 7312, 7182, 7313, 7337, 7353, 7366, 7380, 7448, 7460, 7489, 7120, 7135, 7282, 7294, 7160, 7188, 7216, 4880].
- NPB [6634].
- NPL [945].
- NPU [6934].
- NS16000 [1642].
- NS16081 [1642].
- NS32000 [1952].
- NS32081 [1952] [1970, 2016].
- NS32831 [1950].
- NS32532 [2182, 2223].
- NS32532-NS32580 [2182].
- NS32580 [2182].
- NSA [1644].
- NSW [7180].
- NTRU [4733].
- NTT [6734, 6885, 6712].
- NTT-Based [6885, 6712, 6734].
- NTT-Uncoupled [6712].
- NTU [6712].
- NU [1362].
- Nuclear [7229].
- Null [390].
- Nullstellensätze [4053].
- Number [5647, 6008, 6829, 7041, 3536, 3708, 1486, 3709, 4491, 4643, 4952, 4953, 5457, 5654, 5655, 6457, 6622, 6841, 219, 854, 3848, 4297, 4958, 6731, 946, 665, 803, 856, 724, 805, 1090, 1575, 6955, 6124, 6021, 5667, 727, 6850, 6476, 1957, 3854, 4972, 611, 220, 1275, 1595, 5803, 5482, 671, 6489, 3572, 3730, 3998, 4337, 6374, 3874, 1201, 3420, 6252, 3072, 5494, 432, 177, 336, 337, 6877, 6044, 884, 1742, 253, 2076, 5004, 5709, 560, 1212, 1292, 7446, 6390, 5295, 1617, 6158, 6400, 1625, 1134, 1135, 1305, 3761, 202, 346, 1418, 1631, 3452, 5162, 749, 827, 6672, 6884, 203].
- Number [6404, 1137, 1423, 1875, 5595, 5911, 752, 5826, 5915, 25, 1047, 1230, 1231, 2386].
8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE


Number [597, 3019, 7089, 2628, 3206, 3376, 3377, 4942, 4943, 4481, 1710, 4287, 4639, 3535, 2636, 2313, 3846, 4644, 5867, 4777, 6227, 3549, 6351, 2177, 1088, 1261, 1488, 2043, 2045, 2319, 1263, 3220, 3221, 3317, 3318, 4414, 4589, 2574, 4084, 4253, 987, 2666, 2676, 2669, 2507, 3231, 3232, 3563, 3564, 3565, 3977, 4662, 3725, 4511, 6028, 1826, 4165, 5688, 1108, 1109, 4333, 2347, 2881, 3064, 3244, 3245, 3573, 3729, 3871, 3733, 3873, 1277, 4010, 4339, 2693, 2694, 4013, 4179, 2365, 4408, 4728, 2445, 3312, 3313, 2963, 2964, 4080, 4245, 4246, 3149, 3319, 3320, 405, 3321, 3322, 3487, 1769, 1907, 5190, 6190, 4417, 4418, 4737, 2970, 2971, 3490, 3664, 526, 7019, 4258, 2450, 2585, 4259, 1536, 1909, 2009, 2452, 1449, 4425, 4258, 4604, 4257, 3929, 5767, 5074, 3677, 1917, 3175, 2145, 5770, 2464, 2804, 2988, 3937, 4106, 4107, 4108, 999, 1066, 1067, 1687, 1781, 1782, 2018, 2019, 5075, 2991, 2992, 4612, 2998, 188, 2602, 2999, 323, 1462, 1549, 3515, 3691, 1930, 2294, 2026, 5214, 2820, 3825, 1175, 5089, 3190, 4124, 4277, 2826, 3603, 2030, 3353, 3354, 3355, 5363, 148, 4464, 2832, 2837, 3203, 3204, 3368, 3369, 4131, 4132, 4133, 4470, 4761, 6286, 4329, 2839, 2840, 2841, 4936, 544, 800, 3020, 2848, 2849, 6827, 4798]. Number-Theoretic Numbers [7371, 7416, 664, 1012, 4149, 39, 5118, 1492, 1094, 6354, 2501, 550, 5875, 6127, 3555, 6478, 6479, 7304, 4506, 1382, 2509, 6636, 331, 1388, 1107, 1828, 1829, 4327, 156, 6759, 4821, 6493, 672, 1206, 4830, 7383, 55, 877, 1515, 3741, 6652, 54, 3744, 6152, 6977, 2708, 558, 559, 41, 1211, 2534, 6771, 1975, 2538, 2712, 2902, 6156, 6158, 4202, 342, 5904, 6166, 6281, 4556, 6987, 1635, 6067, 260, 1528, 5526, 638, 685, 5835, 6549, 446, 2945, 4399, 2253, 3474, 5985, 115, 5989, 7005, 1151, 2777, 2778, 367, 4596, 1448, 3802, 1238, 6806, 185, 3930, 4907, 2146]. Numbers [6574, 2601, 4913, 5352, 3819, 3518, 1698, 3356, 6444, 6708, 1470, 1256, 660, 5949, 948, 1078, 4938, 6754, 5232, 3956, 6115, 3381, 4961, 2324, 3556, 4796, 6359, 5679, 5125, 2666, 2667, 2668, 5880, 4801, 4802, 2341, 5577, 2881, 5269, 3731, 2686, 2687, 2696, 2365, 137, 1403, 2371, 307, 2376, 1614, 6053, 4539, 4698, 5398, 1214, 1295, 138, 6154, 3268, 681, 1623, 256, 2097, 2733,
2918, 4860, 5022, 3456, 5307, 1993, 2926, 6288, 4058, 5600, 6545, 2249, 6178, 3127, 1434, 2944, 1318, 3642, 3475, 3300, 363, 5608, 2762, 3647, 8, 4736, 4254, 4420, 4895, 1332, 1063, 2592, 5629, 3181, 6926, 2997, 845, 5445, 5446, 6107, 3945, 849, 4931, 2301, 3365, 5227, 2952, 7010, 4413, 1326, 2270, 2972, 2973, 1236, 7122, 1061, 5996, 6319, 5343, 1341, 7064, 3190, 7198, 3828, 6334, 7214, 4926, 1426, 946, 1077, 718, 2306, 7089, 4475, 411, 74, 3838, 3209, 1083, 5955, 4647, 1812, 6239, 6635, 419, 6246, 6249, 6753, 6755, 1729, 3060, 4985, 510, 6042, 3740, 1126, 1738, 5143, 6050, 4195, 308, 824, 2079, 2899, 1215, 4360, 5155, 396, 3274, 7099, 2394, 472, 4047, 2402, 6677, 5831, 1637, 5527, 6550, 2756, 833, 5327, 5534, 696, 6904, 1327, 2579, 368, 1158, 4424, 2591, 840, 4755, 5076, 5077, 3688, 1251, 3834, 194, 544, 7143, 1854, 768].


8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

planes [4509]. planetary [2584]. Planning [246, 63, 64, 65, 66, 67, 68].
3051, 3979, 5960, 4801, 4802, 3982, 1501, 1589, 1824, 2202, 5478, 5684, 6132, 4161, 2674, 1104, 1961, 3988, 4669, 4515, 421, 2062, 5481, 3412, 5686, 3726.


8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

2271, 3328, 4086, 5760, 2451, 2586, 2795, 2976, 2587, 2588, 1773, 2135, 1332, 921, 922, 5063, 6804, 992, 528, 1240, 1241, 1333, 706, 1062, 2977, 1063, 3329, 1677, 483, 4904, 3496, 773.

point [5934, 6194, 5619, 5620, 5847, 6197, 5763, 3927, 3928, 4090, 1336, 4905, 4605, 1913, 3159, 107, 5764, 5623, 6436, 997, 2978, 2457, 3929, 3930, 5624, 3672, 3332, 776, 2013, 2279, 2593, 2141, 7023, 4906, 6000, 780, 709, 710, 3170, 3810, 4102, 4749, 5541, 3932, 4267, 4438, 4910, 4911, 5767, 3934, 3677, 2799, 2800, 2981, 2982, 2801, 1685, 3339, 3175, 5941, 2284, 3679, 3812, 4611, 4912, 926, 3340, 3176, 3505, 2016, 3506, 2145, 1065, 3936, 5197, 1546, 2463, 787, 4115, 4439, 6699, 3813, 2466, 1688, 1921, 2994, 4613, 1690, 2288, 1169, 2467, 2468, 4440, 4441, 4615, 5078].

point [5079, 5080, 5201, 5202, 5203, 5204, 5205, 5206, 5347, 5348, 5349, 5350, 5439, 5440, 5441, 5442, 5443, 2809, 2996, 1784, 1460, 2291, 292, 1461, 2024, 2025, 4757, 3689, 4115, 375, 323, 4270, 4759, 845, 2817, 2818, 3186, 3187, 6203, 5086, 1928, 3690, 4760, 4118, 147, 1464, 1787, 1930, 2294, 1934, 1788, 3003, 5210, 6331, 3004, 1696, 846, 3346, 4451, 4921, 1071, 3348, 1346, 4121, 4276, 1795, 1471, 1472, 1473, 1474, 1703, 1355, 1796, 540, 541, 542, 3951, 2162, 2301, 5098, 795, 2034, 2486, 2487, 1255, 294, 1704, 2163, 3202, 3365, 1938, 1559, 2304, 2836, 2488, 1356, 2621, 2622, 4128, 5222, 1798, 1560, 4933, 5225, 5559, 5779, 5948, 947, 2624, 4130, 4934, 4935, 7038, 5780, 598, 797, 1357, 2841, 6938, 194, 2843, 2307, 6710, 2489, 2845, 2846, 3205, 3836, 7052, 5227, 4940, 4941, 5106, 5108, 4632, 4772, 4773, 2309, 6716, 6943, 5130, 5576, 5885, 6030, 2345, 2682, 1252].

8

ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

101

Precision [6607, 5784, 6946, 6113, 3532, 4636, 6449, 3842, 1486, 3711, 4956,
6462, 4782, 6846, 6463, 6465, 2865, 727, 861, 953, 1097, 1098, 1099, 1192, 1264,
4966, 5379, 5669, 6742, 6743, 6237, 6473, 5468, 5382, 6477, 3559, 3560, 380,
5682, 6480, 6481, 1101, 6633, 5683, 5879, 6240, 6634, 1588, 302, 1386, 1590,
5882, 223, 6967, 3413, 6370, 4518, 4519, 4672, 6643, 616, 4523, 3418, 6870, 6970,
5579, 5694, 6379, 6143, 962, 428, 6973, 4993, 5278, 5280, 5584, 7044, 6650, 4347,
4536, 5702, 4841, 883, 6654, 6976, 6977, 4843, 6978, 6509, 4356, 6389, 6513,
6514, 6391, 10, 2221, 4030, 4199]. Precision [4200, 4848, 5008, 5296, 1519,
1855, 1979, 83, 1132, 3273, 342, 6984, 4551, 6665, 3276, 3446, 5724, 6273, 6064,
6277, 6524, 6164, 6278, 1747, 4040, 5731, 3763, 6527, 347, 5592, 1753, 1875,
5021, 5023, 5595, 3769, 348, 5825, 6168, 6291, 5524, 6678, 2103, 4387, 4717,
4866, 5031, 6171, 6294, 5979, 5314, 5316, 6175, 1430, 6300, 3462, 2554, 6680,
3632, 6302, 4880, 2109, 2248, 4235, 6789, 6790, 691, 1314, 1888, 5748, 6084,
6311, 762, 6312, 6313, 6314, 6556, 361, 362, 3141, 5839, 6183, 7009, 6687, 5927,
3308, 6689, 6690, 5182, 1322, 5059, 2777, 2778, 207, 7017, 4595, 209, 6564].
Precision [2789, 3326, 238, 6802, 4600, 4601, 705, 770, 4428, 3495, 5998, 6323,
7021, 7022, 6807, 6569, 708, 1542, 1914, 4435, 3502, 4264, 2282, 2283, 6809,
6922, 5627, 6575, 2805, 3179, 3938, 4754, 5199, 5200, 322, 5544, 4112, 5444,
374, 5546, 189, 1933, 4119, 5355, 6589, 1072, 1350, 6109, 5220, 5638, 5641, 5778,
4467, 1002, 5948, 6112, 7038, 459, 6604, 6713, 6825, 5644, 6714, 6715, 6606,
6108, 6337, 4672, 3375, 720, 5952, 1010, 5458, 298, 3034, 4493, 5795, 5869, 6015,
6730, 5566, 4960, 6466, 3970, 4151, 4308, 4309, 4650, 862, 954, 5568, 4793, 7043,
6629, 3556, 2330, 3855, 1271, 381]. precision [382, 5880, 5478, 5684, 6132, 4162,
4515, 4979, 3868, 4166, 6249, 4329, 4330, 2063, 1597, 1730, 5136, 3065, 5894,
6645, 5486, 2066, 3877, 4005, 4679, 734, 4174, 6972, 3250, 5279, 4692, 6500,
6050, 5901, 4022, 6265, 6385, 6386, 1290, 3748, 6504, 2899, 2901, 9, 5292, 5293,
625, 6659, 436, 826, 1520, 2718, 885, 6394, 5717, 6664, 6881, 1867, 6667, 6668,
5976, 2093, 2233, 2234, 3104, 1419, 6986, 1634, 6781, 2736, 5824, 632, 6408,
6888, 5312, 5830, 5918, 5920, 5921, 3776, 4570, 351, 2932, 3630, 401, 759, 4872,
4721, 5527, 6550, 7000, 5044, 2946, 5179, 6682, 6310, 577, 2430]. precision
[695, 4582, 4583, 4584, 6898, 5987, 2568, 5611, 7008, 4885, 4734, 4735, 4256,
1329, 5193, 2271, 1331, 6804, 6318, 1242, 2011, 5934, 6194, 5618, 2140, 5622,
5850, 3159, 6000, 4746, 709, 3337, 3501, 2458, 5851, 3677, 3175, 3679, 3812, 3509,
4439, 292, 5208, 4916, 4271, 5086, 5634, 4760, 5210, 6332, 4276, 6817, 491, 4457,
4458, 1351, 2481, 5219, 6005, 6209, 2618, 2301, 5098, 2486, 2621, 3366, 3526,
3372, 4479, 5109, 4808, 4809, 5263, 3970, 4309, 5319, 3151, 4479, 296, 1538].
Precisions [6772, 6608]. Precompiler [1106, 1002, 5438]. precomputation
[4256]. Precomputed [4419]. preconditioned [2614]. Preconditioners
[3620]. predecessor [5539]. Predicates [3680, 5555, 6954, 4220, 4379, 5323,
3679, 3812]. Predictable [3829]. Prediction [3384, 1835, 5809, 3629, 3779,
3121, 6550, 2793]. Prediction-Based [5809]. Predictive [4184, 6525, 6670,


ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

1788, 3004, 2295, 1792, 2484, 3199, 3361, 795, 1255, 3525, 1559, 2488, 6938, 2345, 2213, 1123, 2577, 1789.

Processor-based [6938]. Processor-T [6658].

Processors [4845, 6345, 6722, 546, 3396, 7262, 7275, 7462, 2663, 6853, 5881, 5479, 7374, 7419, 1837, 5899, 5290, 3094, 3095, 3271, 7178, 7197, 7209, 7234, 7309, 7391, 7392, 7408, 7447, 7456, 3096, 3097, 1417, 2096, 5590, 3114, 894, 1044, 1431, 4719, 3296, 6687, 4079, 6192, 4426, 7368, 2984, 1779, 4442, 7340, 7301, 7414, 7258, 1556, 6337, 2643, 1491, 4784, 3717, 6355, 3226, 1585, 5880, 2676, 3417, 5580, 3435, 7360, 3105, 3106, 3107, 3108, 3116, 5737, 5920, 3656, 5847, 788, 1920, 3003, 1697, 491, 5225, 5559, 5451]. Product-based [6936].


8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE


8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

3071, 2359, 3579, 3428, 6979, 3441, 2384, 2911, 3102, 3279, 889, 2733, 2925, 2927, 4054, 3459, 1760, 2433, 2760, 2950, 3140, 3476, 4402, 4073, 2776, 5843, 4080, 4245, 4246, 4734, 4594, 4738, 4739, 2975, 5433, 3166, 3167, 3169, 3170, 5072, 3514, 2811, 3001, 1172, 3831, 5558, 5639, 2840, 1746.

Radix-10 [5309].

Radix-16 [733, 5753, 5859].

Radix-2 [3219, 855, 4961, 5422, 5843, 3492].

Radix-4 [5485, 2358, 7046, 6298, 5332, 2155, 3514].

Radix-64 [6357, 6358, 6848, 6964, 2975].

Radix-8 [5674, 6163, 3302, 3492, 3811, 5433, 5558].

Randomized [6489, 3800].

Randomness [6483, 2039, 2087, 6161, 1785, 1746].

RAIVE [6075].

RAND [91, 5351, 1566].

Random [385, 6652, 5302, 5977, 6179, 2115, 2254, 115, 914, 4299, 91, 3725, 3979, 5259, 3328, 776, 3677, 3175, 5633].

Randomization [6489, 3800].

Range-Addressable [5053].

Range-Independent [2039, 2087, 6161, 1785, 1746].

Range-Reduction [4967].

Range-Transformation [568, 631].

Range-Reduction [4967].

Range-Transformation [568, 631].

Rate [503, 5980, 1055, 697, 1181, 379, 4394, 4871, 3498, 3351, 2682].

Rates [874, 4892].

Ratio [3227, 4133, 3564, 2078, 2475].

Ration [1065].

Rational [2052, 5380, 6356, 427, 1404, 1132, 1413, 2911, 3102, 1986, 2549, 1424, 1753, 2099, 2410, 1314, 1888, 4238, 1650, 5080, 579, 3327, 1448, 4900, 241, 2838, 1706, 3956, 221, 425, 251, 6257, 1214, 1295, 1411, 4036, 4037, 1227, 1634, 2238, 2550, 5535, 4895, 3498, 1248, 5445, 5446, 5804].

Rational/Radix [1132].

Rationalize [2349, 5157].

Rationally [1838].

Rationals [1643, 1597, 1730].

Ratios [667].

Rayleigh [5173, 4231].

RC [497].

RC-4000 [497].

RDSP [4659].

Re [3067, 3481, 3907].

re-evaluation [3907].

Re-ordering [3067].

Reach [3409].

Read [863, 2509, 1904, 4801, 4802, 3522].

Read-Only [863, 1904, 3522].

Reading [5904, 48].

Readings [606].

Readyreckoner [31].

Ready [3021, 7371, 7416, 3708, 3709, 5457, 5654, 329, 6955, 4305, 1095, 2051, 2052, 4311, 6128, 7304, 4506, 1588, 6852, 2672, 5482, 2880, 4003, 5495, 4830, 7383, 1515, 2367, 968, 3743, 6152, 6977, 2076, 3885, 7446, 2538, 2712, 2902, 6156, 563, 4359, 7410, 1627, 4556, 2100, 6070, 446, 2952, 2567, 5839, 5840, 7005, 3922, 6806, 4907, 6702, 4112, 410, 3188, 5089, 5224, 2625, 4938, 6945, 3956, 3846, 4777, 5123, 4796, 2656, 2658, 2322, 381, 3573, 3871, 3876, 4994, 4689, 4840, 1614, 2232, 635, 5308, 6288, 5978, 4568, 1429, 2249, 6178, 6082, 5044, 3642, 5052, 6919, 2798, 6573].

real [5447, 2616, 1177, 2080, 4134].

REAL-Arithmetik
8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE 108

8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE


SIGNUM [7103, 538]. SIGPLAN [7200, 7386]. SIKE [6646, 6761, 6532]. Silicon [5303, 6968, 2271]. SIMD [4288, 6118, 4780, 5667, 4973, 4978, 4335, 6764, 3584, 5715, 5818, 6693, 5546, 4281, 7038, 6207, 6337]. Similar [1699, 942].

Simple [857, 4790, 1267, 1376, 1602, 2522, 5493, 2888, 1517, 4536, 4546, 6515, 4549, 5161, 2548, 441, 572, 2760, 6188, 121, 1770, 649, 1452, 1794].
8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

4822, 4017, 6269, 7265, 2225, 1415, 6779, 7224, 4051, 4219, 5522, 3114, 6074, 5979, 360, 5052, 5990, 6907, 6434, 6920, 6198, 5069, 1558, 6116, 7387, 5029, 2259, 4745, 1414]. Special-Purpose [7265, 3114, 5979]. Specialized [5542].

Specific [6624, 7262, 7275, 7462, 7374, 7419, 5504, 5505, 7392, 7433, 7447, 7368, 6928, 7340, 7301, 6706, 7414, 7258, 2633, 7408, 7456, 5754, 6335, 6209, 6968].


Spoken [99]. Sponsored [7055, 7078]. Sponsors [6618, 6724, 6835, 6583].


Square [2388, 972, 5727, 5728, 6523, 1304, 2089, 2390, 4044, 4853, 30, 3763, 347, 518, 3897, 5020, 3457, 3458, 4381, 4713, 120, 5832, 2933, 3461, 5833, 6996, 3462, 2424, 1639, 1887, 637, 685, 2752, 4875, 3469, 6552, 359, 2947, 2253, 1651,
8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE


Square-Root-X [1482, 1552].

Square-Rooting [1583, 1207, 1887, 702, 3897, 3461, 2253, 2035, 4164, 2888, 2046, 1426].

Squares [602, 1829, 2704, 4853, 4861, 685, 642, 1676, 4747, 2173, 1947, 100, 291, 2023].

Squaring [610, 5256, 1518, 5004, 5506, 1748, 4559, 5528, 6315, 4419, 3207, 2338, 2888, 4380, 211, 6102].

Squarer [7435, 7457].

Squarers [3962, 1891].

Squared [333].

Squarer [333, 4370, 6562, 4468, 4222, 4625, 4627].

Squarers [4972, 132, 4463, 4929, 5096, 4127, 3272].

Squares [602, 1829, 2704, 4853, 4861, 685, 642, 1676, 4747, 2173, 1947, 100, 291, 2023].

Squaring [610, 5256, 1518, 5004, 5506, 1748, 4559, 5528, 6315, 4419, 3207, 2338, 2888, 4380, 211, 6102].

Squaw [7435, 7457].

Squeezing [6514].

SQUID [2707].

SRTEST [4365].

SSEC [1530].

St [7171, 7163, 7341].

ST100 [4882, 5051].

ST231 [5156, 5728].

Stabilität [1061].

Stabilitätsatzes [547].

Stability [6121, 1715, 6630, 3562, 1111, 1207, 4354, 3604, 4545, 7015, 2973, 1061, 5941, 1077, 495, 547, 3575, 4195, 1755, 1637, 833, 2591, 946].

Stabilized [103].

Stabilizing [4892].

Stable [5024, 1228, 2610, 888, 889].

Stack [1033, 1285].

Stacked [6203].

Stacking [6203].

Stage [5963].

Stages [4176, 3491, 3492, 1933, 2834].

Staggered [5463, 3503].

stairs' [2953].

Stairway [3701].

Standard [2576, 2271, 1677, 4749, 2016, 1460, 4918, 3364, 4948, 6349, 4178, 4690, 3644, 2573].
2969, 3156, 3803, 5351]. **Standard**- [1627]. **Standard-Cell** [5673, 5561, 2674]. **Standardfunktionen** [1811, 2051, 2100, 2567, 586, 3334, 1352, 1794, 1811]. **Standardization** [5682, 4812, 5307, 3481, 4622, 2808]. **Standardized** [4364]. **Standards** [5112, 2671, 5154, 3935, 6703, 2298, 1501, 2202, 1757, 3470]. **Standpoint** [389]. **Stanford** [7308, 7168]. **STAP** [5749]. **Start** [5039]. **Starting** [280, 383, 2759, 579, 3676, 532, 596, 5164, 451, 3168]. **starts** [1662]. **State** [7472, 3389, 3396, 7320, 7307, 7113, 7114, 7177, 7165, 3772, 6552, 2990, 1178, 7199, 7270, 7295, 7330, 3530, 3717, 7099, 3282, 4858, 2451, 1241, 1333, 2599, 4270, 2305, 2624]. **State-of-the-Art** [6552]. **State-Space** [3396, 2990, 3772, 3717, 3283, 4858, 4270, 2624]. **Statement** [3378]. **States** [7115]. **Static** [4800, 730, 4511, 6868, 3583, 4347, 5143, 5702, 4868, 4897, 3678, 4164, 5734, 3782, 5327, 7427]. **statistic** [4133]. **Statistical** [4776, 549, 3055, 225, 54, 3887, 1226, 752, 904, 3910, 4066, 3339, 4611, 592, 719, 417, 7129, 562, 1809, 5388, 3083, 290, 2611, 2612, 2613]. **Status** [5488, 3759, 2597, 3614, 6076, 771, 5079, 5203, 5439, 5440, 5441, 5442, 5443]. **Std** [2039, 6485, 6519]. **Steady** [6899]. **Steamboat** [7419]. **Steering** [6222, 6725, 6836, 6585]. **Stein** [1017]. **Stencil** [6575]. **Stengle** [6547, 6321]. **Step** [6232, 6738, 1075, 92, 3105, 3106, 3107, 3108, 1697]. **step-by-step** [92]. **Steps** [4342, 5840, 282, 2760]. **Stepwise** [5359]. **Sterbenz** [995]. **Sticky** [4148, 3727, 4250]. **sticky-bit** [4250]. **still** [2186]. **stingy** [2571]. **Stinks** [2705]. **STOC** [7428, 7445]. **Stochastic** [2170, 4779, 6749, 6871, 5813, 5703, 6500, 6659, 4873, 4874, 6561, 2264, 6000, 6200, 6921, 6812, 4926, 4774, 6355, 4508, 6049, 6384, 2894, 5831, 6415, 5416, 2593, 3194, 6822, 3406]. **Stochastically** [6762, 6763]. **stochastique** [3406]. **Stock** [3626, 1670]. **Stocks** [4257]. **STOIC** [1685]. **Stokes** [3562, 3649, 4126]. **stopping** [415]. **Storage** [865, 5498, 7495, 286, 144, 5901, 3340]. **Storage-Efficient** [865]. **Stored** [2495, 3072, 5586]. **Stored-Carry** [3072]. **Stories** [5002]. **story** [5312]. **Strader** [2465]. **Straight** [6206]. **Straight-Line** [6206]. **Strasbourg** [7275]. **Strassen** [5694, 5283]. **Strategies** [6287, 3468, 4152]. **Strategy** [6391]. **Strawman** [4668]. **Stream** [6690, 6809, 6227]. **Stream-Based** [6809, 6690]. **Streamed** [6329]. **streaming** [5764]. **streamlined** [2263]. **streamlines** [1795]. **Streams** [6334, 5645]. **Strength** [4752, 3527]. **Stretch** [246]. **Strict** [2024, 2904]. **strikes** [6438]. **string** [6343, 4150, 626, 1889]. **Strings** [1768, 832]. **Strings** [1768, 832]. **Strong** [3739, 3670]. **Strongly** [2931]. **Structural** [480]. **Structurally** [2196]. **Structure** [248, 671, 732, 1841, 882, 5979, 6100, 2807, 4460, 5555, 4196, 2923, 1140, 405, 4744, 1917, 3836, 1384]. **Structured** [2053, 1964, 7106, 4755]. **Structures** [851, 606, 858, 2650, 4510, 5494, 1412, 6290, 5041, 1438, 1659, 1450, 6572, 2990, 1250, 5252, 3997, 4544, 895, 3481, 2978, 790, 2298]. **struggle** [7403]. **strukturelle** [2609]. **Strukturen** [2298]. **Studies** [7142, 179, 840, 793, 6112, 821]. **Study** [4289, 549, 6742, 6743, 6239, 3562, 504, 5810, 1124, 176, 6652, 6526, 1041, 752, 144, 3484, 4261, 4152, 7027, 2803, 933, 2821, 3359, 3221, 299, 3226, 2664, 561, 3435, 2711, 1224, 5596, 759, 5983, 5003, 1907, 709, 323, 6335, 194, 3370, 2003]. **Stupid** [6021]. **Sub** [3426, 3582, 3579, 2380, 626].
124

135x681

135x634

135x598

135x574

135x551

135x539

135x527

135x515

135x513

135x491

135x479

135x467

135x455

135x423

135x403

135x383

135x363

135x343

135x323

135x303

135x283

135x263

135x243

135x223

135x203

135x183

135x163

135x143

135x123

135x103

135x083

135x063

135x043

135x023

135x003

135x792

135x612

8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

135x646

135x622

135x610

135x598

135x574

135x551

135x527

135x515

135x513

135x491

135x479

135x467

135x455

135x423

135x403

135x383

135x363

135x343

135x323

135x303

135x283

135x263

135x243

135x223

135x203

135x183

135x163

135x143

135x123

135x103

135x083

135x063

135x043

135x023

135x003
3698, 134, 2838, 5102, 4631, 1706, 2628, 1710, 4287, 4639, 3535, 296, 3029, 2636, 4644, 5867, 2041, 2315, 6227, 6351, 2177, 1088, 1261, 1488, 2045, 2319, 3222, 1948, 3040, 3041, 1713, 4150, 3850, 2498, 2863, 6231, 3719, 4657, 4797, 2192, 1453, 4505, 4798, 3401, 2055, 4659, 5252, 2332, 2506, 2665, 1722, 2507, 3231, 3232, 3563, 3564, 3565, 3977.

system [2676, 422, 4165, 2872, 5688, 1108, 1109, 4333, 2347, 2881, 3064, 3244, 3245, 3573, 3729, 3871, 4685, 4010, 4339, 4013, 4179, 2365, 2891, 2366, 3879, 2367, 2369, 1846, 2373, 2374, 6265, 3593, 561, 3436, 3437, 2378, 5150, 2903, 5714, 1410, 3888, 5512, 2386, 101, 2906, 6160, 4362, 1522, 1523, 1984, 2230, 1039, 472, 4216, 5405, 2727, 2415, 2739, 2416, 1229, 3773, 3905, 4392, 4062, 4226, 5173, 977, 6076, 2937, 4231, 4232, 4233, 4394, 4395, 4576, 4871, 4065, 4234, 5834, 2425, 980, 3137, 1762, 5607, 6686, 5054, 2955, 236, 4408].

System [681, 971, 2102, 2560, 2564, 1441, 3317, 3318, 4589, 187, 6332, 537, 3363, 4629].

System-based [4576, 4871].

System-definition [2365].

System-Level [3101, 5691].


System/370 [1745, 1945, 1100, 971, 2102].

System/390 [2871, 2872, 2870].

System/6000 [2540, 3270, 2535, 2560, 2564, 3363].

Systematic [5966, 82, 5399, 5173, 1438, 2964, 3317, 3318, 4898, 1450, 2991, 2992, 3376, 3377, 5817, 2556, 2586].

Systematizations [5467].

Systeme [1935].

Systemen [1236].

Systems [752, 5826, 5915, 3902, 5026, 5170, 287, 1142, 5743, 7254, 6542, 5322, 7313, 7326, 7337, 7363, 7380, 7489, 7849, 8579, 4610, 5162, 7146, 6884, 1137, 1423, 1875, 5595].

Systems [752, 5826, 5915, 3902, 5026, 5170, 287, 1142, 5743, 7254, 6542, 5322, 7313, 7326, 7337, 7363, 7380, 7489, 7849, 8579, 4610, 5162, 7146, 6884, 1137, 1423, 1875, 5595].

Systems [752, 5826, 5915, 3902, 5026, 5170, 287, 1142, 5743, 7254, 6542, 5322, 7313, 7326, 7337, 7363, 7380, 7489, 7849, 8579, 4610, 5162, 7146, 6884, 1137, 1423, 1875, 5595].

Systems [6360, 2196, 955, 5251, 2666, 2667, 2668, 2699, 4662, 4511, 4512, 1826, 5133, 3737, 1836, 1277, 7139, 386, 2693, 2694, 4179, 2696, 2698, 3585, 226, 336, 2526, 5284, 2368, 2703, 4696, 1034, 1209, 2040, 3846, 4777, 45, 1487, 3549, 2179, 1263, 2640, 1810, 2326, 5568, 3972, 1815].

systems [6360, 2196, 955, 5251, 2666, 2667, 2668, 2699, 4662, 4511, 4512, 1826, 5133, 3737, 1836, 1277, 7139, 386, 2693, 2694, 4179, 2696, 2698, 3585, 226, 336, 2526, 5284, 2368, 2703, 4696, 1034, 1209,
8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE


8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE 127

[135x681]8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE 127

Additional Contributions from Nelson H. F. Beebe

8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE 129

...
Two [3030, 3216, 1086, 1805, 1572, 725, 807, 810, 6966, 221, 3858, 331, 1603, 620, 878, 483, 883, 4351, 6977, 6515, 1217, 1873, 630, 828, 5739, 3293, 1755, 1149, 3474, 1655, 4085, 3662, 53, 123, 1913, 1165, 4263, 5543, 3341, 5346, 5353, 5632, 168, 5093, 4463, 6004, 1001, 4127, 3966, 4961, 4789, 2341, 3575, 4680, 3754, 3439, 3475, 5054, 984, 6188, 2266, 5193, 5621, 2592, 1917, 5941, 5345, 788, 4107, 5206, 3009, 3018].


TX [7349, 7184]. Type-2 [6117, 6624, 3963, 6465, 3079, 6503, 106, 255, 6673, 892, 6988, 4562, 2764, 5538, 482, 2136, 588, 3342, 5858, 5251, 5896, 6402, 4712, 3125, 72, 5535, 108, 4446, 6460, 6396, 6412].


ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE

8 ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE


using [3656, 580, 5185, 5755, 4891, 4589, 3658, 3150, 3321, 3322, 3487, 3797, 6798, 1769, 6913, 3492, 2131, 2271, 2450, 4259, 6801, 4741, 7020, 6194, 5619, 5620, 5936, 5850, 3159, 708, 3498, 6327, 4607, 3331, 1917, 1167, 5941, 2460, 5770, 2986, 1066, 2019, 2991, 2992, 2288, 4915, 5207, 4272, 1462, 1549, 4760, 5354, 1934, 6589, 5635, 1346, 5214, 1175, 5447, 2030, 2297, 5637, 5774, 4764, 5093, 3830, 3831, 3948, 3949, 2483, 4930, 412, 5098, 2163, 2834, 2488, 2837, 3015, 5222, 3203, 3204, 3953, 4625, 4626, 5368, 5224, 4628, 4629, 4936, 5226, 194, 7296, 5782, 2845, 3205, 4808, 3968].

Verfahren [513, 2097, 835, 1236, 1598, 1164, 35]. Verificarlo [6034, 6137].
ADDITIONAL CONTRIBUTIONS FROM NELSON H. F. BEEBE


References

[1] G.-W. Leibniz. Explication de l’Arithmétique binaire. (French) [Explanation of binary arithmetic]. Mémoires de mathématique et de physique de l Académie royale des sciences, ??(??):85–89, ????. 1703. URL https://hal.archives-ouvertes.fr/ads-00104781/document. Leibniz is often credited with the invention of the binary number system, but there is other work from his era, and detailed analysis of Leibniz’s use of binary numbers. See [390, 511, 622, 1229, 1399, 6252, 6929, 7040].


Anonymous:1879:TRA


Newcomb:1881:NFU


Holman:1888:DPM


Holman:1892:DPM


Anonymous:1893:IDb


Felt:1893:MA


Aley:1897:DES

REFERENCES

September 1897. CODEN AMMYAE. ISSN 0002-9890 (print), 1930-0972 (electronic).


REFERENCES


REFERENCES


REFERENCES


References


Cesareo:1946:RI


Comrie:1946:BDC


Dreyer:1946:REM

[61] H.-J. Dreyer and A. Walther. Der Rechenautomat Ipm. Entwicklung Mathematischer Instrumente in Deutschland 1939 bis 1945. (German) [The Ipm calculator. The development of mathematical instruments in Germany 1939–1945]. Bericht A3, Institut für Praktische Mathematik, Technische Hochschule, Darmstadt, West Germany, August 19, 1946. Reprinted in [7121, §3.3]. Translated by Mr. and Mrs. P. Jones.

Goldstine:1946:ENI


Goldstine:1947:PCPa


Goldstine:1947:PCPb

REFERENCES

April 1, 1947. 69 pp. Report prepared for U.S. Army Ordnance
published treatment of double-precision arithmetic on digital computers.

[65] Herman H. Goldstine and John von Neumann. Planning and coding
Technical report, Institute for Advanced Study, Princeton, NJ, USA,

[66] Herman H. Goldstine and John von Neumann. Planning and coding
Technical report, Institute for Advanced Study, Princeton, NJ, USA,

[67] Herman H. Goldstine and John von Neumann. Planning and coding
Technical report, Institute for Advanced Study, Princeton, NJ, USA,

[68] Herman H. Goldstine and John von Neumann. Planning and coding
Technical report, Institute for Advanced Study, Princeton, NJ, USA,

for the Automatic Sequence Controlled Calculator. Its Annals v. 1.


[71] J. Juley. The ballistic computer. Bell Laboratories Record, 24(???):5–9,
1947. CODEN BLRCAB. ISSN 0005-8564. Reprinted in [7121, §6.3].
<table>
<thead>
<tr>
<th><strong>REFERENCES</strong></th>
<th>147</th>
</tr>
</thead>
</table>


REFERENCES


Worsley:1950:ED


Anonymous:1951:R


Booth:1951:SBM


Brown:1951:HRR


Gill:1951:PSS


Goldstine:1951:NIM

REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


[136] Paolo Ercoli and Roberto Vacca. Errors due to overflow in arithmetic operations particularly as regards FINAC electronic computer. *Journal*
REFERENCES

of the Association for Computing Machinery, 4(4):450–455, October 1957. CODEN JACOAH. ISSN 0004-5411 (print), 1557-735X (electronic). See letter [199].

Gini:1957:SFD


Herzel:1957:SDD


Howe:1957:TRA


Kalbfell:1957:EAM


Kogbetliantz:1957:CEN


Lehman:1957:HSD

REFERENCES


REFERENCES


6, August 1958. CODEN CACMA2. ISSN 0001-0782 (print), 1557-7317 (electronic).


[159] Franz Hammer. Nicht Pascal sondern der Tübinger Professor Wilhelm Schickard erfand die Rechenmaschine!. (German) [Not Pascal, but the Tübingen professor William Schickard, invented the calculator!]. *Büromarkt*, 20(??):1023–1025, ???. 1958. ISSN 0007-3148.


REFERENCES


REFERENCES


[179] Peter Henrici. Theoretical and experimental studies on the accumulation of error in the numerical solution of initial value problems for systems


REFERENCES


REFERENCES


REFERENCES


February 1960. CODEN CACMA2. ISSN 0001-0782 (print), 1557-7317 (electronic). See [186].


REFERENCES


REFERENCES

informationsbehandling, 1(3):222, 1961. CODEN BITTEL, NBITA.B.
ISSN 0006-3835 (print), 1572-9125 (electronic). See [227, 217].

of the 1961 16th ACM national meeting, pages 132.101–132.104. ACM

IRE Transactions on Electronic Computers, EC-10(2):269–272, June

Communications of the Association for Computing Machinery, 4(8):355,
August 1961. CODEN CACMA2. ISSN 0001-0782 (print), 1557-7317
(electronic). See [203].

IRE Transactions on Electronic Computers, EC-10(3):512–515, September

[233] M. Lehman and N. Burla. Skip techniques for high-speed carry-
propagation in binary arithmetic units. IRE Transactions on Electronic
&arnumber=5219274.


[235] Philip Morrison and Emily Morrison, editors. Charles Babbage on the
principles and development of the calculator: and other seminal writings.
Nadler:1961:DSR


Pinkham:1961:DFS


Rabinowitz:1961:MPD


Saltman:1961:RCT


Spielberg:1961:ECF


Spielberg:1961:RPS


Thacher:1961:ISR


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


[300] R. A. Brooker. A programming package for some general modes of arithmetic. *Communications of the Association for Computing*
REFERENCES


REFERENCES


REFERENCES


474, August 1964. CODEN CACMA2. ISSN 0001-0782 (print), 1557-7317 (electronic).

Swo:1964:SFP


Wallace:1964:SFM


Wolfe:1964:RTE


Ashenhurst:1965:EEC


Ashenhurst:1965:EIU


Ashenhurst:1965:TAE


Atrubin:1965:ODR

REFERENCES


REFERENCES


REFERENCES


REFERENCES


[364] Ramon E. Moore. Automatic local coordinate transformations to reduce the growth of error bounds in interval computation of solutions of
ordinary differential equations. In Rall [7071], chapter 2, pages 103–140. URL http://interval.louisiana.edu/Moores_early_papers/Moore_in_Rall_V2.pdf. Proceedings of an advanced seminar conducted by the Mathematics Research Center, United States Army, at the University of Wisconsin, Madison, October 5–7, 1964.


REFERENCES


REFERENCES


REFERENCES


Flehinger:1966:PRI


Flehinger:1966:PRI


Flynn:1966:VHS


Garner:1966:ECA


Grau:1966:BRB


Gregory:1966:DAU


Greve:1966:HLR
REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


References


REFERENCES


REFERENCES


Shea:1969:NDN


Sterbenz:1969:OSA


Svoboda:1969:DAS


Troelstra:1969:EA


Turner:1969:CSI


Turner:1969:DSC


Turner:1969:IOC

REFERENCES


REFERENCES


REFERENCES


1970. CODEN CACMA2. ISSN 0001-0782 (print), 1557-7317 (electronic). See addendum [762].


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


Mathematical Software Symposium held at Purdue University, Lafayette, Indiana, USA, April 1–3, 1970.


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES

[703] Randell:1972:ATO
Randell 1972: ATO

[704] Randell:1972:ODC
Randell 1972: ODC

[705] Richman:1972:AEA
Richman 1972: AEA

Ripley 1972: PFP

[707] Rohl:1972:NCA
Rohl 1972: NCA

Samet 1972: CDL
REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


Kreifelts:1973:OBF


Kreifelts:1973:OBG


Kuki:1973:SSA


Larson:1973:HSM


Larson:1973:MSM


Lee:1973:SFP


Majithia:1973:NBL


[771] James E. Robertson and Kishor S. Trivedi. The status of investigations into computer hardware design based on the use of continued


REFERENCES


REFERENCES


REFERENCES

250


REFERENCES


REFERENCES


REFERENCES


[831] Seppo Linnaennaa. Analysis of some known methods of improving the accuracy of floating-point sums. *BIT (Nordisk tidskrift for Informationsvidenskab)*
Metropolis:1974:SAA


Miller:1974:CCN


Moon:1974:MRM


Neumaier:1974:REV


Newbery:1974:EAP


Prezas:1974:FPA


Rauscher:1974:MUX

REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


Kreifelts:1975:OBF


Krishnamurthy:1975:MPU


Ku:1975:FPC


Kuck:1975:RRN


Kulisch:1975:FIF


Kulisch:1975:MFC


Lacroix:1975:PEM


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


Conference on the state of the art in numerical analysis, 12 April 1976, University of York, England, UK.


REFERENCES


REFERENCES


Yau:1976:DMA


Zohar:1976:RTR


Agrawal:1977:CNB


Albrecht:1977:GC


Albrecht:1977:GCA


Alexander:1977:SRR

REFERENCES


REFERENCES


REFERENCES


[1030] Myron Ginsberg. Numerical influences on the design of floating-point arithmetic for microcomputers. Technical report CS 7708, Department
of Computer Science, Southern Methodist University, Dallas, TX, USA, 1977. 72 pp.


REFERENCES


REFERENCES


Maag:1977:SRE


Merzbach:1977:GSF


Metropolis:1977:MSA


Metropolis:1977:SAP


Mitra:1977:CDI


Ninke:1977:SRB

REFERENCES


Rjabko:1977:AHM


Sanyal:1977:AND


Simmons:1977:SRA


Soderstrand:1977:HSL


Soderstrand:1977:MRN


Steer:1977:DHS


Stenzel:1977:CHS


Stoutemyer:1977:AEC


Yuen:1977:NRD


Abu-El-Haija:1978:AER


Agrawal:1978:AIR


Agrawal:1978:MAL


Andrews:1978:EFM


Andrews:1978:IAN


Andrews:1978:UEF

REFERENCES

Apple:1978:AIR


Atkins:1978:CTA


Banerji:1978:HSD


Baraniecka:1978:DTR


Bareiss:1978:PEA


Barsi:1978:ACR


BellHowellCo:1978:BHF

REFERENCES


REFERENCES


[1106] F. D. Crary and J. M. Yohe. The Augment precompiler as a tool for the development of special purpose arithmetic packages. MRC Technical
Summary 1892, Mathematics Research Center, University of Wisconsin, Madison, Madison, WI, USA, 1978.


REFERENCES


REFERENCES


REFERENCES


[1153] G. P. O’Leary. The design of a high-speed arithmetic processor. In COMPSAC ’78 [7101], pages 175–176. LCCN ????

REFERENCES


<table>
<thead>
<tr>
<th>Reference</th>
<th>Title</th>
</tr>
</thead>
</table>
Shen:1978:CSA


Slekys:1978:MBI


Sripad:1978:QEF


Svoboda:1978:ACF


Swartzlander:1978:MAS


Tan:1978:TIH


Trivedi:1978:CUC


REFERENCES


Wittmayer:1978:APP


Wozniakowski:1978:REA


Wrathall:1978:CGI


Abu-El-Haija:1979:AER


Aggarwal:1979:REM


Agrawal:1979:HSA


Alt:1979:SRD


[1195] I-Ngo Chen and R. Willoner. An $O(n)$ parallel multiplier with bit-sequential input and output. *IEEE Transactions on Computers*, C-
REFERENCES


REFERENCES


[1224] Jan Kent. *The theoretical and practical study of floating point instructions: Consisting of Theoretical definition, analysis and
comparison of floating point instruction, and procedures for the
description and simulation of floating point instructions. Dr. Avhandling,
Universitetet i Oslo, Oslo, Norway, 1979.

[1225] Thomas Joseph Kolze. Block floating point FFT statistical noise
analysis program. Technical report CSR-79-2, Department of Electrical
Engineering, University of Missouri–Rolla, Rolla, MO, USA, 1979. vii +
180 pp.

[1226] Thomas Joseph Kolze. Statistical noise analysis of a block floating point
FFT and an example application. Electrical engineering thesis (M.S.),
University of Missouri–Rolla, Rolla, MO, USA, 1979. viii + 88 pp.

[1227] Peter Kornerup. A note on rational arithmetic. ACM SIG Micro
Newsletter, 10(2):28, June 1979. CODEN SIGMDJ. ISSN 0163-
1218004. See [1248, 1249].

[1228] Roland Kusterer and Manfred Reimer. Stable evaluation of polynomials
in time \( \log n \). Mathematics of Computation, 33(147):1019–1031, July
1979. CODEN MCMPAF. ISSN 0025-5718 (print), 1088-6842 (electronic).

[1229] Günter Lautz. 300 Jahre leibnizsches dualzahlensystem. (German) [300
years of the Leibniz binary number system]. Biological Cybernetics, 35
(3):175–181, December 1979. CODEN BICYAF. ISSN 0340-1200 (print),
1432-0770 (electronic).

System”. IEEE Transactions on Computers, C-28(9):693, September
1979. CODEN ITCOB4. ISSN 0018-9340 (print), 1557-9956
.tp=&arnumber=1675442. See [1047, 1247].
REFERENCES


REFERENCES


REFERENCES


Sheue:1979:TCM


Swartzlander:1979:CFN


Thacker:1979:MPR


Thacker:1979:R


Tseng:1979:IFS


REFERENCES

81566-x. ISSN 0344-8029. LCCN QA297 .F84. In cooperation with R. Albrecht, U. Kulisch, and F. Stummel.


REFERENCES


Grappel:1980:IZP


Gregory:1980:ECW


Gruner:1980:IUC


Hamacher:1980:DCV


Havender:1980:DBF


Havender:1980:DBN


Haviland:1980:CAP


Head:1980:MM


REFERENCES


REFERENCES


Palmer:1980:UND


Payne:1980:VFPa


Payne:1980:VFPb


Pedersen:1980:HBM


Purtilo:1980:IAP


Rallapalli:1980:CMF


Reid:1980:CDP


Reid:1980:FMF


REFERENCES

Stone:1980:TFP


Stummel:1980:REA


Swartzlander:1980:AUH


Swartzlander:1980:CA


Swartzlander:1980:MA


Thornton:1980:CP


Ting:1980:MCU


REFERENCES

Waser:1980:EGP


Watkins:1980:MFU


Wong:1980:IOF


Yohe:1980:FPE


Yohe:1980:PSI


Zeman:1980:HSM


Agrawal:1981:NAM


Andrews:1981:EFM

REFERENCES


REFERENCES


REFERENCES


Ganesan:1981:GSC


Glaser:1981:HBO


Gorin:1981:IDA


Gorji-Sinaki:1981:DDS


Gosling:1981:CSH


Grappel:1981:RDB


Gregory:1981:RAR

REFERENCES


REFERENCES


[1418] Saroj Kaushik and R. K. Arora. Sign detection in the symmetric residue number system. In IEEE CA5 '81 [7119], pages 146–150. LCCN QA 76.6
Kielbasinski:1981:IRL


Knuth:1981:SA


Kobayashi:1981:FMO


Kogge:1981:APC


Koren:1981:CPN


Kornerup:1981:IRA


Kulisch:1981:CAT

REFERENCES


Owens:1981:CAD


Padegs:1981:SB


Pan:1981:BCA


Papachristou:1981:APA


Peng:1981:AES


Peters:1981:EFB


Raghavendra:1981:SLA


Schryer:1981:TCF


Schwarz:1981:EYC


Smith:1981:ERA


Spaniol:1981:CAL


Stevenson:1981:ITP


Stevenson:1981:PSBa


Stevenson:1981:PSBb


REFERENCES

vonGudenberg:1981:GAP


Walker:1981:EMA


Washington:1981:BLF


Watanuki:1981:FOAa


Watanuki:1981:FOAb


Watanuki:1981:FPLa


Watanuki:1981:FPLb

REFERENCES


Anonymous:1982:ARBf


Anonymous:1982:MKF


Anonymous:1982:NPAa


Arnold:1982:EPS


Bairstow:1982:FPP


Baraniecki:1982:QEL


REFERENCES


REFERENCES

Dao:1982:KCA


Dekker:1982:PCM


DeSautels:1982:ALP


Dreyer:1982:ACI


Epstein:1982:UAF


Epstein:1982:UAI


Fateman:1982:HLL


Hull:1982:UCP


Hwang:1982:PMA


Jenkins:1982:FRD


Jenkins:1982:RNS


Kahan:1982:NOS


Katzan:1982:IAA


Kerkhoff:1982:LDM

REFERENCES


Korn:1982:EDF


Leuprecht:1982:PAR


McCormick:1982:EFM


McPherson:1982:LSG


Monroe:1982:FFP


Oklobdzija:1982:LSR


REFERENCES


Sips:1982:CPM


Strader:1982:CBS


Tan:1982:ADC


Taylor:1982:ARM


Taylor:1982:VRA


Teachey:1982:SRX


TorresyQuevedo:1982:EAD

Turner:1982:DLS


Velasevic:1982:RLC


Ware:1982:BMF


Waser:1982:IAD


REFERENCES


[1570] David B. Aspinwall and Yale N. Patt. Modifications to the VAX-11/780 microarchitecture to support IEEE floating point arithmetic. *ACM*

Avizienis:1983:AAE


Bandeira:1983:TCA


Banerji:1983:RPF


Baxter:1983:CRS


Bayoumi:1983:MVI


REFERENCES

Chamrad:1983:FFP


Chan:1983:ACS


Chang:1983:HSN


Chow:1983:PDA


Ciminiera:1983:FIM


Cloutier:1983:PAR

REFERENCES


REFERENCES


Ferguson:1983:DTE


Fraenkel:1983:SN


Gaitanis:1983:NPC


Galand:1983:FD


Gavrielov:1983:CSF


Gnanasekaran:1983:BSI

REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


Moran:1983:BRB


Morrison:1983:EHL


Murugesan:1983:ACF


Nagpal:1983:PAT


Nave:1983:ITF


Ni:1983:VRM

REFERENCES


REFERENCES


REFERENCES


REFERENCES


[1702] Edmund John Walsh. Floating gatefield effect transistor operating point changes: causes, characterization, and effect on electric field measurement by the device. Thesis (M.S.), Boston University, Boston, MA, USA, 1983. v + 121 pp.

[1704] Bertrand Jeffery Williams. A bit-serial floating point multiply/add architecture for signal processing applications. Electrical engineering thesis (M.S.), Texas A&M University, College Station, TX, USA, 1983. x + 97 pp.


REFERENCES


Braddock:1984:ASP


Butterfield:1984:MT


Caraiscos:1984:REA


Cavanagh:1984:DCA


Cheng:1984:FPC


Clarke:1984:AAR


Clenshaw:1984:BFP


Cody:1984:PRW

[1725] 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
REFERENCES


Coonen:1984:CPS


Corliss:1984:AGT


Cowlishaw:1984:DRL


Demmel:1984:URN


Demsky:1984:MMC


Dietrich:1984:FPR


Duncan:1984:FSF
REFERENCES


[1741] Robert Todd Gregory and E. V. Krishnamurthy. *Methods and Applications of Error-Free Computation*. Texts and monographs in


REFERENCES

March 1984. CODEN ACMSCU. ISSN 0098-3500 (print), 1557-7295 (electronic).


Miller:1984:ILA


Moran:1984:SST


Munzel:1984:RAE


Murray:1984:SFA


OliverWhiteheadQuintet:1984:FN


Palmer:1984:P


Parker:1984:CCS


Pei:1984:CAD

[1769] Soo-Chang Pei and Kuo-Chih Ho. Comments on “Adaptive digital control implemented using residue number systems”. *IEEE*


REFERENCES


REFERENCES


REFERENCES


Dadda:1985:SBN


DeMori:1985:DRP


Dongarra:1985:FAS


Dunham:1985:PFM


Eldon:1985:FCF

REFERENCES


1845 Markian Myron Gooley. Design of a floating-point multiplier with a recursive fraction-unit. Thesis (M.S.), University of Illinois at Urbana-Champaign, Urbana-Champaign, IL 61801, USA, 1985. vi + 54 pp.


and 80287 are. A valuable reference for instruction definitions. See also [1621, 1767].


REFERENCES


REFERENCES


REFERENCES


April 1985. CODEN MCMPAF. ISSN 0025-5718 (print), 1088-6842 (electronic).


REFERENCES


416

REFERENCES


REFERENCES


Zadrozny:1985:AFP


Zorpette:1985:BBN


Adams:1986:FSSa


Adams:1986:FSSb


Agarwal:1986:NSV


Apple:1986:ANM

REFERENCES


REFERENCES


REFERENCES


[1977] Mark Hill, Susan Eggers, Jim Larus, George Taylor, Glenn Adams, B. K. Bose, Garth Gibson, Paul Hansen, Jon Keller, Shing Kong, Corinna Lee,


REFERENCES


Kabal:1986:PFP


Kahan:1986:RAF


Kreithen:1986:FPC


Krishnan:1986:CCN


Krishnan:1986:CDS


Krishnan:1986:ICN


REFERENCES


Pfenninger:1986:SQA


Porter:1986:FPM


Quong:1986:FP1


Ramnarayan:1986:LCL


Rhyne:1986:SBS


Robertson:1986:NQD


Rump:1986:SER


REFERENCES


REFERENCES


Troutman:1986:DSF


Truong:1986:TCD


Twaddell:1986:HPM


Vaccaro:1986:SDF


Verma:1986:DEF


Waterhouse:1986:TMW


REFERENCES


REFERENCES


REFERENCES


Crockett:1987:PFF


Crowell:1987:FPA


Demmel:1987:EAA


Dion:1987:MFA


DuCroz:1987:DFP


Duff:1987:EAP


Duhamel:1987:ASR

See Chapter 11: The Floating Point Arithmetic Package.

Dunham:1987:PMA

Ercegovac:1987:FCR

Ercegovac:1987:LSC

Fandrianto:1987:AHS

FPS:1987:AR

Froggatt:1987:FPC

Grosse:1987:UCB
REFERENCES


[2081] Bertrand Hochet, Patrice Quinton, and Yves Robert. Systolic solution of linear systems over GF(p) with partial pivoting. In Irwin and
REFERENCES


REFERENCES


REFERENCES


[2101] Shigeo Kuninobu, Tamotsu Nishiyama, Hisakazu Edamatsu, Takashi Taniguchi, and Naofumi Takagi. Design of high speed MOS multiplier and divider using redundant binary representation. In Irwin and
REFERENCES


Lange:1987:ITA


Lange:1987:ITA

Leavitt:1987:APF


Leavitt:1987:APF

Lien:1987:RCI


Lien:1987:RCI

Lin:1987:NFP


Lin:1987:NFP

Liu:1987:BEF


Liu:1987:BEF

Lo:1987:HGA


Lo:1987:HGA
REFERENCES


REFERENCES


REFERENCES


[2142] Isaac D. Scherson and Yiming Ma. Vector computations on orthogonal memory access multiprocessor system. In Irwin and Stefanelli


REFERENCES


REFERENCES


REFERENCES


REFERENCES

Chen:1988:GCM


Cheng:1988:ATM


Cody:1988:AMS


Cody:1988:FPS


Cosentino:1988:FTS


Davila:1988:FPA


Duerksen:1988:CAP

Thesis (M.S.), Department of Computer Science, Ball State University, Muncie, IN 47306, USA, 1988. ix + 206 pp.


REFERENCES


REFERENCES


REFERENCES


[2234] Yasumasa Kanada. Vectorization of multiple-precision arithmetic program and 201,326,000 decimal digits of $\pi$ calculation. In *Proceedings
REFERENCES


REFERENCES


[2268] Papadourakis:1988:VDP


[2270] Perlman:1988:AFP
REFERENCES


REFERENCES

Santoro:1988:PIA


Schatte:1988:ASC


Schatte:1988:MDC


Scherson:1988:MOA


Schwarz:1988:CLI


Scott:1988:CMM


Shepherd:1988:LEC


Simon:1988:SP


REFERENCES


REFERENCES

Voelzke:1988:FSAc


Weyland:1988:LCS


Wilson:1988:FPS


Wilson:1988:NDP


Wilson:1988:NFP


Wollard:1988:TSS


Young:1988:SNMa


Yuen:1988:IFP

REFERENCES


REFERENCES


B. J. Benschneider, W. J. Bowhill, E. M. Cooper, M. N. Gavrielov, P. E. Gronowski, V. K. Maheshwari, V. Peng, J. D. Pickholtz, and


REFERENCES


[2335] Patty Chinn. The design, implementation, and applications of an ACT8837 floating point processor in an image processing hardware
REFERENCES


REFERENCES


[2347] A. M. Dennis, C. B. Marshall, and I. A. Burgess. Algorithm and architecture design for the implementation of high order FIR filters using the residue number system. In *IEE Colloquium on Signal Processing Applications of Finite Field Mathematics, 1 June 1989*, pages 1/1–1/5. IEEE Computer Society Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 1989. CODEN ???? ISSN ????
Dowling:1989:MFV


Dritz:1989:RPS


Dunham:1989:ICA


Dunham:1989:PAH


Dunham:1989:S


Duprat:1989:SRA


Elleithy:1989:ARA

References

Ercegovac:1989:FRD


Ercegovac:1989:FSC


Ercegovac:1989:IMC


Ercegovac:1989:RSR


Fandrianto:1989:AHS

REFERENCES

Feldstein:1989:NAP


Fowler:1989:AHS


Fried:1989:ONC


Fu:1989:PMI


Fujiyama:1989:FD


Gamberger:1989:ISN


Games:1989:AIQ

REFERENCES


Griffin:1989:RNS


Groeger:1989:DRG


Guyot:1989:JLM


Hoffmann:1989:PAR


Hohne:1989:PHP


Hollingsworth:1989:CP1


Hoshi:1989:RPV


Hu:1989:ARM


Huck:1989:ACA


Husby:1989:FPE


Hwang:1989:OAU


IEC:1989:IBF


REFERENCES


Jones:1989:EDC


Jorke:1989:AAM


Joslin:1989:EPN


Jouppi:1989:UVSa


Jouppi:1989:UVSb


Kahan:1989:PCA


Kak:1989:BAS

REFERENCES

Kaneko:1989:VRM


Kaneko:1989:VRP


Kawarai:1989:OPM


Kawasaki:1989:FPV


Koc:1989:SAI


Kohn:1989:ISM

REFERENCES


REFERENCES


Lo:1989:CED


Lu:1989:VMI


Malarkey:1989:RNS


Mansour:1989:CAS


Mastrovito:1989:VDM


REFERENCES


[2443] T. Nakayama, S. Kojima, H. Harigai, H. Igarashi, K. Tamada, and T. Toba. An 80b, 6.7 MFLOPS floating-point processor with
Vector/Matrix instructions. In Wuorinen [7199], pages 52–53, 289.

Nakayama:1989:MFPb


Nowacki:1989:ABQ


Ochs:1989:TPF


Petkovsek:1989:CDS


Pincin:1989:NAM


Prince:1989:FTF

REFERENCES


Vassiliadis:1989:GPO


Vassiliadis:1989:SMF


Voelzke:1989:FSAa


Voelzke:1989:FSAb


Vulchanov:1989:SCR


Wagner:1989:EDD


Wang:1989:ADF

REFERENCES


Wang:1989:MBC


Wichmann:1989:SPI


Wichmann:1989:TFS


Wittman:1989:SCU


Zeng:1989:RNP


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


[2567] Volker Müller. Hochgenaue CORDIC-Algorithmen für reelle Standardfunktionen mittels dynamischer Defektberechnung


REFERENCES


REFERENCES


1. Table 5 (page 124):
insert $k \leftarrow 0$ after assertion, and also delete $k \leftarrow 0$ from Table 6.

2. Table 9 (page 125):
   for $-1$ substitute $-1$;
   substitute $-1$ substitute $-1$;
   and delete the comment.

3. Table 10 (page 125):
   for $\text{fill}(-k, "0")$
   substitute $\text{fill}(-k-1, "0")$


REFERENCES


REFERENCES

97(9):836–839, November 1990. CODEN AMMYAE. ISSN 0002-9890 (print), 1930-0972 (electronic).


REFERENCES


REFERENCES


REFERENCES

Bohlender:1991:SPH


Bohlender:1991:VEI


Boughton:1991:CSG


Briggs:1991:PCF


Bromley:1991:FAT


Brunner:1991:VAR


Bruss:1991:RMF


Bryant:1991:CVI

[2655] R. E. Bryant. On the complexity of VLSI implementations and graph representations of Boolean functions with application to integer


REFERENCES


Chiang:1991:GDA


Cmelik:1991:AMS


Cody:1991:KAA


Cody:1991:PEP


Cody:1991:UTS


Compan:1991:GPS

[2674] A. Compan, P. Debaud, V. Delorme, J. A. François, H. Mehrez, and F. Pecheux. GAF: a portable standard-cell floating point adder generator using the CXgen function library. Microprocessing and
REFERENCES


Demmel:1991:OIA


Dongarra:1991:GBP


Dunham:1991:ABA


Duprat:1991:NRR


Duprat:1991:WND


Ercegovac:1991:MPM


REFERENCES


Golubev:1991:FPM


Gonnella:1991:ACF


Gotze:1991:SRD


Grcar:1991:IAS


Griffin:1991:REA


Gusev:1991:NCS


Guyot:1991:OAV

REFERENCES


[2711] Ian Holmes. A feasibility study into the design of a 64-bit floating point processor. Thesis (M.Sc. in Electronics), University of Southampton, Department of Electronics and Computer Science, Southampton, UK, 1991.


REFERENCES


REFERENCES


Kahan:1991:APL


Kahan:1991:ARL


Kantabutra:1991:DOC


Kim:1991:ERB


Kim:1991:NIC


Klette:1991:PSB


REFERENCES

Kramer:1991:EFA


Kuhnel:1991:OPS


Kurokawa:1991:CGU


Lai:1991:HNS


Lee:1991:FPPa


Lee:1991:FPPb


Lee:1991:FPPc

REFERENCES


Nakano:1991:MBM


Nelson:1991:SPM


Ochs:1991:NRU


Ochs:1991:NTR


Ochs:1991:RF


Ochs:1991:SRF


OGrady:1991:HOA


Okabe:1991:LDC

Orup:1991:HRH


Ozawa:1991:FND


Ozawa:1991:FOD


Parikh:1991:RBE


Paterson:1991:SMC


Paxson:1991:PTI

REFERENCES


645–653, October 1991. CODEN SJMAEL. ISSN 0895-4798 (print),
1095-7162 (electronic).

[2798] T. J. Scott. Mathematics and computer science at odds over real
numbers. SIGCSE Bulletin (ACM Special Interest Group on Computer
ISSN 0097-8418 (print), 2331-3927 (electronic). 22nd SIGCSE Technical
Symposium on Computer Science Education.

[2799] Andre Seznec and Karl Courtel. OPAC: a cost-effective floating-point
coprocessor = le coprocesseur numérique OPAC. Technical report, Institut
National de Recherche en Informatique et en Automatique, Le Chesnay,

[2800] Andre Seznec and Karl Courtel. OPAC: a floating-point coprocessor
dedicated to compute-bound kernels = OPAC: un coprocesseur flottant
dedié au calcul matriciel. Rapports de recherche 1555, Institut National
de Recherche en Informatique et en Automatique, Le Chesnay, France,

Wilburn, R. W. Davis, N. J. Colella, and D. B. Holtkamp. High energy
proton SEU test results for the commercially available MIPS R3000
microprocessor and R3010 floating point unit. IEEE Transactions on
ISSN 0018-9499 (print), 1558-1578 (electronic).

integer multiplication. ACM SIGARCH Computer Architecture News,
19(1):106–113, March 1991. CODEN CANED2. ISSN 0163-5964 (print),
1943-5851 (electronic).

[2803] Daniel P. Siewiorek and Philip John Koopman, Jr. The Architecture of
Supercomputers—Titan, A Case Study. Academic Press, New York, NY,
REFERENCES


REFERENCES


REFERENCES


Wigley:1991:FMR


Wigley:1991:SMR


Williams:1991:NBC


Williams:1991:ZOS


Winter:1991:FPA


Wong:1991:FDU

[2837] Derek C. Wong and Michael J. Flynn. Fast division using accurate quotient approximations to reduce the number of iterations. In Kornerup
REFERENCES


[2843] Tsung Lun Yu and William B. Ribbens. A floating-point coprocessor for fault detection and isolation in electronically controlled internal


REFERENCES

Ziv:1991:FEE


Acha:1992:LOF


Anonymous:1992:FPa


Anonymous:1992:FPb


Anonymous:1992:FPc


ANSI:ftn92


Arazi:1992:BDC


Arnold:1992:AFI

Bailey:1992:ATF


Bailey:1992:PHP


Baker:1992:LCE


Bakhrakh:1992:NIF


Bewick:1992:BMU


Blair:1992:PMU


Bohlender:1992:PAF

REFERENCES


Borwein:1992:MHP


Brosgol:1992:ADA


Brosgol:1992:DAA


Clarkson:1992:SED


Cosentino:1992:AMJ


Dao-Trong:1992:SCI

REFERENCES


REFERENCES


REFERENCES

[2885] J. Duprat and M. Fiallos Aguilar. On the simulation of pipelining of
fully digit on-line floating-point adder networks on massively parallel
CODEN LNCSD9. ISSN 0302-9743 (print), 1611-3349 (electronic).

arithmetic]. IEEE Transactions on Computers, 41(12):1497–1503,
December 1992. CODEN ITCOB4. ISSN 0018-9340 (print), 1557-9956
tp=&arnumber=214659.

[2887] Barry S. Fagin. Large integer multiplication on hypercubes. Journal of
JPDCER. ISSN 0743-7315 (print), 1096-0848 (electronic).

and squaring circuits. IEEE Transactions on Circuits and Systems
CODEN ITCAEX. ISSN 1057-7122 (print), 1558-1268 (electronic).

A floating-point cell library and a 100-MFLOPS image signal processor.
CODEN LISCBC. ISSN 0018-9200 (print), 1558-173X (electronic).

floating-point cell library and a 100-Mflops image signal processor. IEEE
LISCBC. ISSN 0018-9200 (print), 1558-173X (electronic).

[2891] D. Gamberger. Inversion of integer matrices in residue number
system. IEE Proceedings. Computers and Digital Techniques, 139
xpl/tocresult.jsp?isnumber=4186.
Goldberg:1992:DFD


Gray:1992:UMF


Hartwig:1992:AFQ


Hartwig:1992:MFA


Hasan:1992:BSS


Hasan:1992:MCL


Hegeman:1992:AF


Hoehfeld:1992:LLN

[2899] M. Hoehfeld and S. E. Fahlman. Learning with limited numerical precision using the cascade-correlation algorithm. IEEE Transactions
Hoff:1992:FCH


Hohfeld:1992:PRN


Horiguchi:1992:FNR


Hoyt:1992:MFP


Hudak:1992:RPL


IFIF:1992:CVD

[2906] P. B. Jackson. Developing a toolkit for floating-point hardware in the
Nuprl proof development system. In Prinetto and Camurati [7239], pages

issue/v2i3/tutorials/toolbox/index.html.

[2908] Joxan Jaffar, Peter J. Stuckey, Spiro Michaylov, and Roland
H. C. Yap. An abstract machine for CLP(R). ACM SIGPLAN
0-89791-475-9. ISSN 0362-1340 (print), 1523-2867 (print), 1558-
proceedings/pldi/143095/p128-jaffar/.

of a new reciprocal cell. In IEEE ICCD ’92 [7234], pages 106–109. ISBN
0-8186-3110-4 (paper), 0-8186-3111-2 (microfiche), 0-8186-3112-0 (case).

(M.S.), University of Missouri, Columbia, Columbia, MO, USA, 1992. vi
+ 183 pp.

[2911] P. Johnstone and F. E. Petry. Rational number approximation in higher
radix floating point systems. In IEEE [7236], pages 501–504 vol.2. ISBN
0-7803-0494-2. LCCN ???? Two volumes. IEEE catalog no. 92CH3094-0.

[2912] W. Kahan. Analysis and refutation of the LCAS. ACM SIGPLAN
(print), 1523-2867 (print), 1558-1160 (electronic).


REFERENCES


[2933] K. J. R. Liu and E. Frantzeskakis. Qrd-based square root free and division free algorithms and architectures. In Workshop on VLSI Signal
REFERENCES

Lozier:1992:RPC


Lozier:1992:RPV


Lozier:1992:SLI


Lu:1992:NDA


Lynch:1992:FCA


Lynch:1992:HSD

REFERENCES


REFERENCES


REFERENCES


[2988] A. Skavantzos and N. Mitash. Theory and implementation issues of the 2-dimensional polynomial residue number system. In *IEEE Southeastcon*
REFERENCES


REFERENCES


Werter:1992:SLC


Wesner:1992:TS


Wichmann:1992:NUF


Wichmann:1992:SFW


Wilkes:1992:E


Wilt:1992:ALP


Wong:1992:DSR

REFERENCES


REFERENCES


REFERENCES

Anonymous:1993:FSB

[3029] Anonymous. The “fastest system on the block” label must be qualified with new multiplatform, floating-point benchmarks. PC Week, 10(22):85–??, June 1993. ISSN 0740-1604.

Anonymous:1993:SRT


Asprey:1993:PFP


ASTM:1993:AES


Bailey:1993:AMT


Bailey:1993:MPM


Bajard:1993:BNH

REFERENCES


Briggs:1993:XBM


Callaway:1993:EPC


Chang:1993:REP


Choi:1993:FPR


Chu:1993:FPA

REFERENCES


REFERENCES


REFERENCES


[3069] David Eisig, Josh Rotstain, and Israel Koren. The design of a 64-bit integer multiplier/divider unit. In Swartzlander, Jr. et al. [7257], pages


REFERENCES


Hendtlass:1993:MNIa


Hendtlass:1993:MNIb


Higginbotham:1993:ISR


Higham:1993:AFP


Holler:1993:IFP


Hopkins:1993:CEM


Horning:1993:SUM


Hu:1993:EIS


REFERENCES


REFERENCES

Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 1993. CODEN ???? ISSN ????


Kim:1993:FABc


Kim:1993:FABd


Kirsch:1993:ABU


Klatte:1993:CXC


Koren:1993:CAA

REFERENCES


Kortemeyer:1993:CPT


Kota:1993:NAH


Krandick:1993:EMF


Krishna:1993:TFA


Lee:1993:DAE

REFERENCES


595

REFERENCES


REFERENCES


REFERENCES


REFERENCES

Schwarz:1993:HSA


Schwarz:1993:PHR


Schwarz:1993:UFM


Shanbhag:1993:REAA


Shanbhag:1993:REAB


Shand:1993:FIR


REFERENCES

[3187] Inside technology today 32-bit floating point multi-port DSP / produced by Texas Instruments. VHS format. High-speed, multi-port DSPs can be used in parallel processing applications to really enhance computation time and power. A popular 6-port floating point DSP and high speed design integration and applications are described in this tape., 1993. 1 videocassette.


REFERENCES


REFERENCES

ISSN 0747-7171 (print), 1095-855X (electronic).

[3207] D. Zuras. On squaring and multiplying large integers. In
Swartzlander, Jr. et al. [7257], pages 260–271. ISBN 0-7803-1401-
8 (softbound), 0-8186-3862-1 (casebound), 0-8186-3861-3 (microfiche).
ISSN 0018-9340 (print), 1557-9956 (electronic). LCCN QA 76.9 C62
papers/ARITH11_Zuras.pdf. IEEE Transactions on Computers 43(8),
1994.

Germany / Heidelberg, Germany / London, UK / etc., 1993. ISBN

functional parallelism of POWER2 to design high-performance numerical
September 1994. CODEN IBMJAE. ISSN 0018-8646 (print), 2151-
8556 (electronic). URL http://www.almaden.ibm.com/journal/rd38-
5.html#eight.

20(4):553, December 1994. CODEN ACMSCU. ISSN 0098-3500 (print),
1557-7295 (electronic). See [3267].

65–??, June 1994. CODEN CCAEDJ. ISSN 0733-3536 (print), 2162-1365
(electronic).

85–??, July 1994. CODEN CCAEDJ. ISSN 0733-3536 (print), 2162-1365
(electronic).
Anonymous:1994:FPc


Anonymous:1994:SCSa


Anonymous:1994:SPF


Anonymous:1994:SRT


Apple:1994:IMP


Bajard:1994:BNH


Bajard:1994:SOL

[3220] Ferruccio Barsi and M. Cristina Pinotti. Time optimal mixed radix
conversion for residue number applications. The Computer Journal, 37
(10):907–916, ????. 1994. CODEN CMPJA6. ISSN 0010-4620 (print),

[3221] M. Bartolucci and G. R. Sechi. Rounding error in the computation
of opposite sign floating point number parametric addition: a case
study. Microprocessing and Microprogramming, 40(10-12):833–839,
December 1994. CODEN MMICDT. ISSN 0165-6074 (print), 1878-7061
and Integration.

(4):245–250, August 1994. CODEN INSKDW. ISSN 0170-6012 (print),
1432-122X (electronic).

Ph.D. thesis, Computer Systems Laboratory, Stanford University,
Stanford, CA, USA, February 1994. 170 pp. Also issued as report CSL-
TR-94-617.

[3224] Per Brinch Hansen. Multiple-length division revisited: a tour of the
CODEN SPEXBL. ISSN 0038-0644 (print), 1097-024X (electronic). URL
http://brinch-hansen.net/papers/1994b.pdf. This paper derives an
algorithm for division of long integers, and implements it as a literate
program, although without identifier cross-references. See also related
work on division [3398, 1774].

[3225] Benjamin M. Bros gol, Robert I. Eachus, and David E. Emery.
Information systems development in Ada. In ACM [7259], pages 2–16.
ISBN 0-89791-684-0. LCCN ????
REFERENCES


REFERENCES


REFERENCES


REFERENCES

Dimauro:1994:DFNb


Ercegovac:1994:DSR


Ercegovac:1994:VHR


Fagin:1994:FPG


Farquhar:1994:MPH


FiallosAguilar:1994:HPA


Gander:1994:AFP

REFERENCES


[3269] Ching Yu Hung and Behrooz Parhami. Fast RNS division algorithms for fixed divisors with application to RSA encryption. *Information*
REFERENCES


REFERENCES

Jackson:1994:PCE

http://www.cs.toronto.edu/pub/reports/na/prec.except.ps.Z.

Jain:1994:SRR


Jaromczyk:1994:CCH


Johnstone:1994:DAN


Kabuo:1994:ARS


Kalliojarvi:1994:RCW


Seehyun Kim and Wonyong Sung. A floating-point to fixed-point assembly program translator for the TMS 320C25. IEEE transactions on circuits and systems. 2, Analog and digital signal processing, 41(11):
REFERENCES

730–739, November 1994. CODEN ICSPE5. ISSN 1057-7130 (print), 1558-125X (electronic).

Kobbelt:1994:FDP


Kornerup:1994:SLA


Krandick:1994:EMF


Laakso:1994:BFP


Laakso:1994:ELC


Ledoux:1994:TOW


Lewis:1994:IMF


REFERENCES

November 1994. CODEN ICDTEA. ISSN 1350-2387 (print), 1359-7027 (electronic).

Montuschi:1994:RDO


Montuschi:1994:RDS


Muller:1994:SCF


Murofushi:1994:RBR


Nakamura:1994:EPV


Narayanaswami:1994:AE


Nedialkov:1994:PCE

REFERENCES


REFERENCES


REFERENCES

and Systems, ISCAS ’94, 2 June 1994, volume 2, pages 441–444. IEEE Computer Society Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 1994. CODEN ????. ISSN ????

Parker:1994:FTLb


Patankar:1994:SHA


Phatak:1994:HSD


Popova:1994:EIA


Prince:1994:TFM


Pritchard:1994:RAR


Rajski:1994:DRP

REFERENCES


Solhaug:1994:FDK


Srivastava:1994:ASB


Stockman:1994:OMM


Thompson:1994:PSN


Timmermann:1994:CFP


Timmermann:1994:CFV


Turner:1994:SRM


REFERENCES


REFERENCES

Yuen:1994:PMC


Zhang:1994:EMR


Zhang:1994:TDN


Zuras:1994:MSM


Zuse:1994:PPV


Aagaard:1995:FVP


Abdallah:1995:SASa

REFERENCES


REFERENCES


REFERENCES


[3415] Marc Daumas, Christophe Mazenc, Xavier Merrheim, and Jean-Michel Muller. Modular range reduction: a new algorithm for fast and

### Demmel:1995:CSB


### DiClaudio:1995:FCR


### Doman:1995:SAP


### Doran:1995:SCD


### Ercegovac:1995:SDC

REFERENCES


REFERENCES


REFERENCES


[3445] Masayuki Ito, Naofumi Takagi, and Shuzo Yajima. Efficient initial approximation and fast converging methods for division and square

Jain:1995:HSD


Jang:1995:OSA


Kahan:1995:TSD


Kahan:1995:USP


Kaliski:1995:MIA


Kalliojarvi:1995:FWL

[3451] Kari Kalliojärvi. *Finite word length effects in floating-point and block-floating-point digital signal processing systems*. Avhandling (doktorgrad),
REFERENCES

[Tampereen teknillinen korkeakoulu, Tampere, Finland, 1995. vii + 71 + 68 pp.]


[3453] Friedrich Wilhelm Kistermann. Die Rechentechnik um 1600 und Wilhelm Schickard’s Rechenmaschine. (German) [The calculating technique of 1600 and Wilhelm Schickard’s calculator]. In Seck [7281], pages 241–272. ISBN 3-7995-3235-8. ISSN 0340-6857. LCCN ????. DM 76.00, sfr 76.00, S 600.00.


[3457] Hercule Kwan, Robert Leonard Nelson, Jr., and Earl E. Swartzlander, Jr. Cascaded implementation of an iterative inverse-square-root algorithm,

Lang:1995:VHR


Leeser:1995:VSR


Lehmann:1995:SLE

[3460] N. Joachim Lehmann. Schickard und Leibniz als Erfinder von rechenmaschinen. (German) [Schickard and Leibniz, the inventors of calculators]. In Seck [7281], pages 273–286. ISBN 3-7995-3235-8. ISSN 0340-6857. LCCN ???? DM 76.00, sfr 76.00, S 600.00.

Liu:1995:SRV


Louie:1995:VPS

Lozier:1995:EBL


Lynch:1995:HRL


Lynch:1995:KTF


Lyu:1995:RBB


Mandelbaum:1995:DUL


Martel:1995:DSO

Matsubara:1995:NBS


Meissner:1995:EAD


Metafas:1995:FAC


Michelucci:1995:ARD


Miner:1995:DIF


Moler:1995:CCT

[3474] Cleve B. Moler. Cleve’s corner: a tale of two numbers: With the Pentium, there is a very small chance of making a very large error. Technical note, The MathWorks, Inc., 3 Apple Hill Drive, Natick, MA 01760-2098, USA,
REFERENCES


REFERENCES


J. Arjun Prabhu and Gregory B. Zyner. 167 MHz radix-8 floating point divide and square root using overlapped radix-2 stages. In
REFERENCES


Pratt:1995:APB


Price:1995:PFF


Rogers:1995:UMP


Rubenking:1995:UNI


Sammut:1995:AUD


Sangwine:1995:CIT

REFERENCES

Sanyal:1995:CAS

Sarma:1995:FBR

Schulte:1995:DAV

- branch and bound algorithms for global optimization,
- constraint propagation,
- solution sets of linear systems,
- hardware and software systems for interval computations, and
- fuzzy logic.

Actual applications described in the book include:

- economic input-output models,
- quality control in manufacturing design,
- a computer-assisted proof in quantum mechanics,
- medical expert systems,
- and others.

A realistic view of interval computations is taken: the articles indicate when and how overestimation and other challenges can be overcome. An introductory chapter explains the content of the papers in terminology accessible to mathematically literate graduate students. The style of
the individual, refereed contributions has been made uniform and understandable, and there is an extensive book-wide index. Audience: Valuable to students and researchers interested in automatic result verification. Detailed information, including contents, contributors, and an order form can be found:

- on Kluwer homepage http://www.wkap.nl, or

The information on the Interval Computations homepage is basically a mirror image of the Kluwer one (the only difference is that the fonts are fancier).

Schulte:1995:HDA


Schulte:1995:PSI


Schwarz:1995:RQC


Shirazi:1995:QAF

REFERENCES


REFERENCES


REFERENCES


REFERENCES


Wong:1995:FEE


Wu:1995:SRM


Ypma:1995:HDN


Yu:1995:MRF


Zaytoun:1995:SFR


Zhou:1995:HSD

Ahrendt:1996:FHC


Al-Twaijry:1996:OPR


Alefeld:1996:EII


Andraos:1996:FPU


Angarai:1996:NRS

[3536] Vijayanand Jaganaathan Angarai. Number representation schemes for energy efficient computer arithmetic. Thesis (M.S.), University of Texas at Dallas, Dallas, TX, USA, 1996. ix + 57 pp.

Anonymous:1996:DC


Anonymous:1996:FPF

Anonymous:1996:IBT


Anonymous:1996:SROa


Anonymous:1996:SROb


Anonymous:1996:SROc


Anonymous:1996:SROd


Anonymous:1996:SROe


Anonymous:1996:SROf

REFERENCES


REFERENCES


[3564] W. A. Chren, Jr. Delta-sigma demodulator with large oversampling ratio using the one-hot residue number system. In *IEEE International
REFERENCES


Chren:1996:RDU


Ciminiera:1996:CSM


Clarke:1996:VSD


Clarke:1996:WLS


Corliss:1996:VPE

REFERENCES


REFERENCES

techniques to circuit simulation. In Alefeld et al. [7284], pages 329–333.

[3577] B. S. Dobronets. A posteriori error estimation for partial
ISSN 0138-3019. LCCN QA76.95 .I575 1995.


[3579] Emad N. Farag, M. Anwarul Hasan, and Mohamed I. Elmasry. Low-
power radix 2 division algorithm with minimum add/sub operations.

[3580] Alan Feldstein and Peter R. Turner. Overflow and underflow in
multiplication and division. Applied Numerical Mathematics, 21(3):221–
239, August 20, 1996. CODEN ANMAEL. ISSN 0168-9274 (print),

[3581] S. T. J. Fenn, M. Benaissa, and D. Taylor. GF(2\textsuperscript{m})
multiplication and division over the dual basis. IEEE Transactions on Computers,
45(3):319–327, March 1996. CODEN ITCOB4. ISSN 0018-9340 (print), 1557-

[3582] Michael J. Flynn, Stuart Oberman, Steve Fu, Hesham Al-Twaijry, Kevin
Nowka, Gary Bewick, Eric Schwarz, and Nhon Quach. The SNAP project: Towards sub-nanosecond arithmetic. In NSF/MIPS Conference
on Experimental Research on Computer Systems, June 1996, page ??
REFERENCES


Fortune:1996:SAY


Ganesan:1996:CSM


Garg:1996:FTP


Gibb:1996:FFI


Goldberg:1996:CA


Goldstine:1996:ENI

Gedenberg:1996:HSI


Guedj:1996:EN


Gupta:1996:AAG


Guyot:1996:STD


Haller:1996:AFP


Hamacher:1996:CO


Hartwig:1996:RNA

REFERENCES


REFERENCES

Herzberger:1996:OCC


Hickey:1996:FSP


Higham:1996:ASN


Hong:1996:NMM


Hyvoenen:1996:SCE


Inacio:1996:DDF


ISO:1996:TRF


REFERENCES


Industry immediately started to investigate the failure." From the report: “The internal SRI software exception was caused during execution of a data conversion from 64-bit floating point to 16-bit signed integer value. The floating point number which was converted had a value greater than what could be represented by a 16-bit signed integer. This resulted in an Operand Error. The data conversion instructions (in Ada code) were not protected from causing an Operand Error, although other conversions of comparable variables in the same place in the code were protected.”.


REFERENCES


REFERENCES


Oberman:1996:VLP


Oklobdzija:1996:MSO


Paar:1996:NAP


Parhami:1996:CHS


Park:1996:OHW


Park:1996:PAG


REFERENCES

Engineering. 26–29 May 1996, volume 1, pages 294–297. IEEE Computer Society Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 1996. CODEN ???? ISSN ????


Shokin:1996:IPI


Sinclair:1996:ORS


Singer:1996:EAP


Soderquist:1996:AFT


Soderquist:1996:APT


Steele:1996:EL


Stewart:1996:ANA

REFERENCES


REFERENCES


[3699] K. B. Williams. Testing math functions: When requirements are tight, we must carefully examine all potential sources of error. Make sure your math library isn’t the weak link in the chain. *C/C++ Users Journal*, 14 (12):49–54, 58–65, December 1996. CODEN CCUJEX. ISSN 1075-2838. Describes a package that extends the Cody-Waite-Plauger work on the ELEFUNT package for the testing of the elementary functions, including the inverse hyperbolic functions, cube root, and Bessel functions of the first and second kinds. The C++ package implements 192-bit extended precision versions of all of the functions, so that accurate results are available for comparison with the normal double-precision results.


Zgliczynski:1996:RVC


Al-Twaijry:1997:APO


Allaart:1997:ISC


Althaus:1997:MNF


Anonymous:1997:BRPk


Anonymous:1997:SIS

REFERENCES


[3710] Martin Atkinson-Barr. Letter to the Editor: Pentium II math bug. Dr. Dobb’s Journal of Software Tools, 22(10):10, October 1997. CODEN DDJOEB. ISSN 1044-789X. Identifies himself as the “Mr. X” cited in [3724], and provides more the background on the discovery of the Pentium FIST (floating-point to integer store) instruction.


REFERENCES


REFERENCES


REFERENCES


Hanson:1997:MAD


Harris:1997:SDA


Harrison:1997:FPV


Hasan:1997:DA


Hekstra:1997:FRL


Hiasat:1997:DIR

Society order number PR07846. IEEE Order Plan catalog number 97CB36091.


[3765] E. J. King and E. E. Swartzlander, Jr. Data-dependent truncation scheme for parallel multipliers. In Fargues and Hippenstiel
REFERENCES


Kinoshita:1997:RAE


Koc:1997:FSE


Kramer:1997:PWC


Kravchenko:1997:AEP


Lang:1997:CVA

REFERENCES


REFERENCES

Conference and Workshop on Engineering of Computer-Based Systems, pages 339–346. IEEE Computer Society Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 1997. URL http://ieeexplore.ieee.org/document/581900/. From the article: “The SRI S/W exception was raised during a conversion from a 64-bit floating point number $F$ to a 16-bit signed integer number. $F$ had a value greater than what can be represented by a 16-bit signed integer, which caused an Operand Error (data conversion — in Ada code — was not protected, for the reason that a maximum workload target of 80% had been set for the SRI computer). . . . The value of $BH$ was much higher than expected because the early part of the trajectory of Ariane 5 differs from that of Ariane 4, which results in considerably higher horizontal velocity values.”.


REFERENCES


REFERENCES

702


Rederlechner:1997:NCP


Reppy:1997:EAH


Rice:1997:MDB


Sanz-Gonzalez:1997:TBR


Sarma:1997:FIR


Schulte:1997:AFA

[3807] M. J. Schulte and James E. Stine. Accurate function approximations by symmetric table lookup and addition. In Thiele et al. [7301], pages
REFERENCES


Schulte:1997:HSR


Schulte:1997:SBT


Schwarz:1997:CFP


Schwarz:1997:RCM


Shewchuk:1997:APF

REFERENCES


REFERENCES

Computer Society order number PR07846. IEEE Order Plan catalog number 97CB36091.


REFERENCES


REFERENCES

Aberbour:1998:PMF


Aberth:1998:PNM


Al-Twaijry:1998:SPB


Al-Twaijry:1998:TSE


Althaus:1998:MNF


Anonymous:1998:ANO

[3842] Anonymous. Announcements: New official Fortran technical reports; working group 5 documents; OpenGL Fortran 95 bindings; MPI module provides enhanced Fortran support; variable precision arithmetic;
REFERENCES


REFERENCES


REFERENCES


REFERENCES


[3866] Joseph D. Darcy. Evolving Java’s floating point support: The good, the bad, and the ugly. In MacKay and Johnson [7312], page ?? LCCN TK
REFERENCES


REFERENCES 714
REFERENCES


REFERENCES


Hill:1998:FDP


Huertgen:1998:TFP


Hussein:1998:LPA


IBM:1998:DAI


IEC:1998:IIIta


ISO:1998:IIItc


REFERENCES


McCullough:1998:ARS


Mohan:1998:EFC


Montalvo:1998:NST


Moore:1998:MCP


Murabayashi:1998:WBP


Naffziger:1998:MAB

 Nguyen:1998:MLS


Oberman:1998:ATK


Oberman:1998:MCS


Oberman:1998:RML


Paar:1998:EMA


Paul:1998:CBR


Paulus:1998:CRI


REFERENCES


REFERENCES


REFERENCES


REFERENCES


Anonymous:1999:SLH


Antelo:1999:VRC


Aoki:1999:RCA


Bach:1999:NTS


Batten:1999:IBO


Batten:1999:IFB


Beaumont-Smith:1999:RLI

[3965] A. Beaumont-Smith, N. Burgess, S. Lefrere, and C. C. Lim. Reduced latency IEEE floating-point standard adder architectures. In Koren

Benschop:1999:MML


Bhardwaj:1999:RCM


Bhardwaj:1999:VCA


Blum:1999:MME


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


[4052] Peter Kornerup. Necessary and sufficient conditions for parallel, constant
time conversion and addition. In Koren and Kornerup [7324], pages 152–
final/paper-103.ps; http://www.acsel-
lab.com/arithmetic/arith14/papers/ARITH14_Kornerup.pdf. IEEE
Computer Society Order Number PR00116. IEEE Order Plan Catalog
Number 99CB36336.

SIGSAM Bulletin (ACM Special Interest Group on Symbolic and
Algebraic Manipulation), 33(3):17, September 1999. CODEN SIGSBZ.
ISSN 0163-5824 (print), 1557-9492 (electronic).

[4054] T. Lang and P. Montuschi. Very high radix square root with prescaling
and rounding and a combined division/square root unit. IEEE
Transactions on Computers, 48(8):827–841, August 1999. CODEN
ITCOB4. ISSN 0018-9340 (print), 1557-9956 (electronic). URL http:/

[4055] Ph. Langlois and F. Nativel. When automatic linear correction of
rounding errors is exact. Comptes Rendus des Séances de l’Académie
CASMEI. ISSN 0249-6291. See erratum, p. 829, in same volume.

[4056] Sung-Woo Lee, Hyun-Sung Kim, Jung-Joon Kim, Tae-Geum Kim,
and Kee-Young Yoo. Efficient fixed-size systolic arrays for the
modular multiplication. Lecture Notes in Computer Science, 1627:
442–??, 1999. CODEN LNCSD9. ISSN 0302-9743 (print), 1611-3349
series/0558/bibs/1627/16270442.htm; http://link.springer-

[4057] Chang-Hyi Lee and Jong-In Lim. A new aspect of dual basis for
efficient field arithmetic. Lecture Notes in Computer Science, 1560:
12–28, 1999. CODEN LNCSD9. ISSN 0302-9743 (print), 1611-3349
REFERENCES


[4063] D. Lopez, J. Llosa, E. Ayguade, and M. Valero. Impact on performance of fused multiply-add units in aggressive VLIW architectures. In Shiratori...


REFERENCES


Nedialkov:1999:IHO


Northrop:1999:GM


Oberman:1999:FPD


OLeary:1999:FVI


Paar:1999:FAP

REFERENCES


REFERENCES


REFERENCES


REFERENCES

Schulte:1999:AEF


Schulte:1999:CSI


Schulte:1999:ESO


Schulte:1999:HSI


Schulte:1999:IEG


REFERENCES


Tanskanen:1999:REF


Tenca:1999:DHR


Thompson:1999:BPF


Tisseur:1999:NMF


Tropp:1999:HAI


[4129] N. Yadav, M. J. Schulte, and J. Glossner. Parallel saturating fractional
arithmetic units. In Mazumder and Lomax [7327], pages 214–217. ISBN

CMOS image sensor with ultrawide dynamic range floating-point pixel-
level ADC. IEEE Journal of Solid-State Circuits, 34(12):1821–1834,
December 1999. CODEN IJSCBC. ISSN 0018-9200 (print), 1558-173X
electronic).

[4131] Lie-Liang Yang and L. Hanzo. Residue number system arithmetic
assisted M-ary modulation. IEEE Communications Letters, 3(2):28–30,
ieee.org/xpl/tocresult.jsp?isnumber=16186.

[4132] Lie-Liang Yang and L. Hanzo. Residue number system based
multiple code DS-CDMA systems. In IEEE 49th Vehicular Technology
Computer Society Press, 1109 Spring Street, Suite 300, Silver Spring,
MD 20910, USA, 1999. CODEN ???? ISSN ????

[4133] Lie-Liang Yang and L. Hanzo. Ratio statistic test assisted residue number
system based parallel communication schemes. In IEEE 49th Vehicular
Computer Society Press, 1109 Spring Street, Suite 300, Silver Spring,
MD 20910, USA, 1999. CODEN ???? ISSN ????

realexpr/.

REFERENCES


[4139] Record, page various, 19xx. Floating Point Systems, Portland, OR, USA.

[4140] Intel. Intel 8231A Arithmetic Processing Unit. Intel Corp, San Jose, CA, USA, 19xx. URL http://www.datasheetarchive.com/pdf-datasheets/Datasheets-14/DSA-276911.html. From the datasheet (p. 3-5): “The mantissa is expressed as a 24-bit (fractional) value; the exponent is expressed as a two’s complement 7-bit value having the range \(-64\) to \(+63\). The most significant bit is the sign of the mantissa (0 = positive, 1 = negative), for a total of 32 bits. The binary point is assumed to be [to] the left of the most significant mantissa bit (bit 23). All floating-point data values must be normalized. Bit 23 must be equal to 1, except for the value zero, which is represented by all zeros. The range of values that can be represented in this format is \(\pm(2.7^{-10} \ldots 9.2 \times 10^{18})\) and zero.”.
REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


[4195] Yun He and Chris H. Q. Ding. Using accurate arithmetics to improve numerical reproducibility and stability in parallel applications. In
REFERENCES


Hiasat:2000:NES


Hida:2000:QDA


Higuchi:2000:FAA


Hormigo:2000:HAVA


Hormigo:2000:HAVB


Ide:2000:GMF

[4201] Nobuhiro Ide, Masashi Hirano, Yukio Endo, Shin ichi Yoshioka, Hiroaki Murakami, Atsushi Kunimatsu, Toshinori Sato, Takayuki Kamei, Toyoshi Okada, and Masakazu Suzuki. 2.44 GFLOPS 300-MHz

Ifrah:2000:UHN


Imajo:2000:CSB


Intel:2000:DSR


Intel:2000:IPF


ISO:2000:FSI


Joye:2000:OLR


REFERENCES


REFERENCES


884–888. IEEE Computer Society Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 2000. CODEN ???? ISSN ????

Madhukumar:2000:PRN


Madhukumar:2000:RNS


Mahesh:2000:LPR


Markstein:2000:IEF


Maryska:2000:SCR


McKenzie:2000:ACP

REFERENCES

776


[4243] Sangho Oh, Chang Han Kim, Jongin Lim, and Dong Hyeon Cheon. Efficient normal basis multipliers in composite fields. IEEE Transactions
REFERENCES

Paliouras:2000:FPP


Paliouras:2000:HRR


Paliouras:2000:NHR


Papakonstantinou:2000:IU


Parhami:2000:CAA


Parhami:2000:PER


REFERENCES


REFERENCES


Department, University of Saarland, Saarbrücken, Germany, 2000. xii + 188 pp.

Seife:2000:ZBD


Sleijpen:2000:DER


Swider:2000:FPR


Takahashi:2000:IMP


Talahmeh:2000:ADR


Tchoumatchenko:2000:FBS


REFERENCES


REFERENCES


References


REFERENCES


[4311] Keith Briggs and Yannis Smaragdakis. XR — exact real arithmetic. World-Wide Web document and software package., March 01, 2001. URL http://www.btexact.com/people/briggsk2/XR.html. From the overview: “This is an implementation of exact (or constructive) real arithmetic, as an alternative to multiple-precision floating-point (MPFP). An important distinction is that in MPFP one sets the precision before starting a computation, and then one cannot be sure of the final result. Interval arithmetic is an improvement on this, but still not an ideal solution because if the final interval is larger than desired, there is no simple way to restart the computation at higher precision. By contrast, in XR no precision level is set in advance, and no computation takes place until a final request takes place for some output. Despite this, programming with XR is no different from MPFP, except for the declaration of critical variables as type ‘XR’.

The main aim is to produce a usably efficient implementation, which can be easily interfaced with existing C++ code. This contrasts with previous implementations in functional languages (Haskell, Miranda etc.), which, although theoretically important, seem to be rather too slow for real use.

This code is designed as an add-on to Victor Shoup’s arbitrary-precision arithmetic package NTL, and implements a new type XR, to complement NTL’s ZZ and RR integer and real types.


REFERENCES


REFERENCES

Dimitrov:2001:UMD


Drmac:2001:AQS


Fernandez:2001:IOD


Finot-Moreau:2001:PAU


Flynn:2001:ACA


Galan-Simon:2001:MLD

REFERENCES


REFERENCES


REFERENCES


[4364] W. Kahan. Names for standardized floating-point formats. Technical report, Mathematics Department and Electrical Engineering and Computer Science Department, University of California, Berkeley,
REFERENCES


REFERENCES


REFERENCES


[4381] Tomás Lang and Elisardo Antelo. Correctly rounded reciprocal square-root by digit recurrence and radix-4 implementation. In
REFERENCES


Langlois:2001:ALC


Laurent:2001:UFV


Lee:2001:BPS


Lee:2001:CAP


Lee:2001:DLS

REFERENCES


Lippert:2001:HSM


Madhukumar:2001:EMH


Madhukumar:2001:IBE


Madhukumar:2001:IIR


Matula:2001:ITL


McFearin:2001:GAH


Michel:2001:SCF


Mobley:2001:ICW


Moller:2001:SEC


Montuschi:2001:BVH


Morioka:2001:TEV


MRaihi:2001:ACR

REFERENCES


Muller:2001:IEA


Naini:2001:GHS


Nakamura:2001:AAA


Nannarelli:2001:TBR


Ning:2001:ESI


References


REFERENCES


REFERENCES


Yasuyuki Sakai and Kouichi Sakurai. On the power of multidoubling in speeding up elliptic scalar multiplication. Lecture Notes in Computer Science, 2259:268–??, 2001. CODEN LNCSDE. ISSN 0302-9743 (print),
REFERENCES


[Savas:2001:SUM]

[Schmookler:2001:LZA]

[Schonfelder:2001:VPA]

[Seidel:2001:BMR]

[Seidel:2001:DFI]
Seidel:2001:EAB


Smith:2001:AFS


Steele:2001:SMFa


Steele:2001:SMFb


Stine:2001:CIH


Stine:2001:DIA

REFERENCES


REFERENCES

Tenca:2001:HRD


Thompson:2001:BPC


TI:2001:TTPa


TI:2001:TTPb


Tisseur:2001:NMF


Trichina:2001:SAM


Um:2001:OAC

REFERENCES


REFERENCES


REFERENCES


[4478] Paul Zimmermann. De l’algorithmique à l’arithmétique via le calcul formel. (French) [From algorithmics to arithmetic via symbolic calculation]. Technical report, Département de formation doctorale en
REFERENCES


REFERENCES


REFERENCES

Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 2002. CODEN ???? ISSN ????

Arnold:2002:LNS


Arnold:2002:RPC


Bailey:2002:AAP


Bailey:2002:HPC


Bario:2002:REB


Belanovic:2002:LPF

BORDE:2002:PGS


BEUCHAT:2002:SMB


BLACKFORD:2002:USB


BOLDO:2002:FRF


BOLDO:2002:IAO


References
REFERENCES


REFERENCES


REFERENCES


Goldberg:2002:CA


Gonzalez:2002:NME


Gottwald:2002:NBL


Goubault:2002:APF


REFERENCES


REFERENCES


REFERENCES

Kulisch:2002:RNZ


Kwon:2002:EBS


Lang:2002:FPF


Lee:2002:DSS


Lee:2002:PFP


Leeser:2002:LPH


REFERENCES


hundred and one exercises], Translated from the 2001 English original by Alejandro Casares Maldonado.


REFERENCES

Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 2002. CODEN ???. ISSN ???.


[4605] Ibrahim Sahin, Clay S. Gloster, and Christopher Doss. Feasibility of floating-point arithmetic in reconfigurable computing systems. In


REFERENCES


REFERENCES


[4619] Texas Instruments, Dallas, TX, USA. *TMS320C67x FastRTS Library Programmer’s Reference (SPRU100A)*, October 2002. URL http://focus.ti.com/lit/ug/spru100a/spru100a.pdf. The FastRTS library is a collection of 26 optimized floating-point math functions for the TMS320C67x device. This source code library includes C-callable (ANSI-C-language compatible) optimized versions of the floating-point math functions included in previous run-time-support libraries.


REFERENCES


REFERENCES

Aharoni:2003:FTG


Akkas:2003:QPD


Al-Radadi:2003:RSD


Altman:2003:RAN


Ammar:2003:NDH

REFERENCES


Anonymous:2003:AI


Anonymous:2003:FFP


Anonymous:2003:RHP


Arnold:2003:FFT


Arnold:2003:ILN

REFERENCES


[4654] Nicolas Brisebarre and Jean-Michel Muller. Finding the “truncated” polynomial that is closest to a function. Research Report 4787, INRIA Rhone-Alpes, ZIRST, 655 Avenue de l’Europe, Montbonnot, 38334 Saint Ismier cedex,

Brown:2003:DPA


Burgess:2003:SRN


Cao:2003:DHS


Chaudhuri:2003:DAO


Chaves:2003:RRD


REFERENCES


REFERENCES


REFERENCES


[4689] Christiane Frougny and Athasit Surarerks. On-line multiplication in real and complex base. In Bajard and Schulte [7372], pages
212–219. ISBN 0-7695-1894-X. ISSN 1063-6889. LCCN QA76.6

**Gansner:2003:SMB**


**Gavrilova:2003:ESC**


**Geddes:2003:EFH**


**Geiselmann:2003:RRD**


**Gerwig:2003:HPF**


**Goldberg:2003:WEC**

[4695] David Goldberg. What every computer scientist should know about floating-point
REFERENCES


Grabmeier:2003:CAH


Grossschadl:2003:ASL


Hanrot:2003:DRF


Harrison:2003:FVS


Harrison:2003:ICC


Holmes:2003:PTC

Huang:2003:HPL


Intel:2003:DSR


Intel:2003:NID


Iordache:2003:OFP


Kaihara:2003:VAM

REFERENCES


[4712] Soonhak Kwon. A low complexity and a low latency bit parallel systolic multiplier over GF(2^m) using an optimal normal basis of type II. In Bajard and Schulte [7372], pages 196–202. ISBN 0-7695-1894-X. ISSN 1063-6889. LCCN QA76.6
REFERENCES


REFERENCES


number PR01894. Selected papers republished in *IEEE Transactions on Computers*, 54(3) (2005) [5069].


REFERENCES


Paschalakis:2003:DPF


Percival:2003:RMM


Phillips:2003:SRR


Pineiro:2003:HRI


Pineiro:2003:LHR

REFERENCES


REFERENCES


REFERENCES

Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 2003. ISBN ???? LCCN ????


REFERENCES


REFERENCES


[4771] Gerhard Zielke and Volker Drygalla. Genaue Lösung linearer Gleichungssysteme. (German) [Exact solution of linear systems of equations]. Mitteilungen der Gesellschaft
REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES

Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 2004.


[4806] Marc Daumas and Guillaume Melquiond. Generating formally certified bounds on values and round-off errors. In Frougny et al. [7383], pages
REFERENCES


[4818] Jérémie Detrey and Florent de Dinechin. A tool for unbiased comparison between logarithmic and floating-point arithmetic. Research Report RR2004-31, École Normale Supérieure de Lyon, 69364 Lyon Cedex 07,
REFERENCES


REFERENCES


REFERENCES


[4836] Christina Lynn Geyer and Patricia Pepple Williamson. Detecting fraud in data sets using Benford’s Law. Communications in Statistics:
REFERENCES


versions are 1.0 (8-Aug-1991), 2.0 (24-Apr-1996), 3.0 (17-Apr-2000), and 4.0 (1-Dec-2001).


REFERENCES


REFERENCES


Nguyen:2004:LDL


Nievergelt:2004:AAP


Ogasawara:2004:OPO


Ogita:2004:ASDa


Ogita:2004:ASDb


Olausson:2004:RFP

REFERENCES

Ortiz:2004:SPI


Pace:2004:ERL


Page:2004:PCA


Paul:2004:SMR


Petkovic:2004:GCS


Pineiro:2004:AAL

REFERENCES


REFERENCES

Schulte:2004:LPC


Seidel:2004:DOI


Seidel:2004:LIF


Shi:2004:FPF


Steele:2004:RHP


Stehle:2004:GAT

D. Stehlé and P. Zimmermann. Gal’s accurate tables method revisited. World-Wide Web
REFERENCES


Thompson:2004:BDF

TI:2004:TUG

Tsoi:2004:ALA

Underwood:2004:CGC

Underwood:2004:FVC

Vignes:2004:DSA


REFERENCES

Forschungsbericht Nr. 04-8.

Zhu:2004:ISR


Zhuo:2004:SMA


Zimmerman:2004:DCI


Abdallah:2005:MRN


Abtahi:2005:CFR


Adharapurapu:2005:LSO

Aharoni:2005:SCI


Alvarez:2005:FMF


Anonymous:2005:HAP


Anonymous:2005:TMF


Antelo:2005:DRD


Antelo:2005:LLD


Antelo:2005:LLP

[4951] Elisardo Antelo and Julio Villalba. Low latency pipelined circular CORDIC. In Montuschi and Schwarz [7412], page ?? ISBN 0-7695-


REFERENCES


REFERENCES

268, April 2005. CODEN ISPLEM. ISSN 1070-9908 (print), 1558-2361 (electronic).


REFERENCES


REFERENCES


REFERENCES


Eleftheriou:2005:SFF


Enenkel:2005:CMF


Erle:2005:DME


Etiemble:2005:CBF

REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


Sofronioua:2005:PNC


Steele:2005:SME


Steele:2005:SMF


Steele:2005:SMG


Stehle:2004:ARR


Stehle:2005:GAT


Stehle:2005:SCW

REFERENCES


REFERENCES


REFERENCES


[5102] V. Yatskiv and N. Yatskiv. Multiple access on the basis of residue number system transformation. In Proceedings of The Third Workshop 2005


[5108] Paul Zimmermann. MPFR: vers un calcul flottant correct ? (French) [MPFR: Towards correct floating-point arithmetic?]. Online interactive report., LORIA/INRIA Lorraine, Bâtiment A, Technopôle de Nancy-Brabois, 615 rue du jardin botanique, F-54602 Villers-lès-Nancy Cedex,
REFERENCES


REFERENCES


Bonten:2006:ACF


Briggs:2006:IER


Castellanos:2006:BDF


Chang:2006:DAR


Choi:2006:DCB


Cornea:2006:SII


Cowlishaw:2006:DCL

Dahab:2006:SMU


deDinechin:2006:STP


Demmel:2006:EBE


Deng:2006:IMM


Deschamps:2006:SAC


Detrey:2006:FVL

[5134] Jérémie Detrey and Florent de Dinechin. FPLibrary. A VHDL library of parametrisable floating-point and LNS operators for FPGA. Web site and source code., 2006. URL http://www.ens-lyon.fr/LIP/ArenaireWare/FPLibrary/. The FPLibrary has been superceded by the FloPoCo project [5575].
REFERENCES


[5141] Simcha Gochman, Avi Mendelson, Alon Naveh, and Efraim Rotem. Introduction to Intel Core Duo processor architecture. *Intel
REFERENCES


Gok:2006:IMO


Goubault:2006:SAN


Graa:2006:IFF


Graca:2006:ODE

[5145] Daniel S. Gra¸ca, Ning Zhong, and Jorge Buescu. The ordinary differential equation defined by a computable function whose maximal interval of existence is non-computable. In Anonymous [7416], page ?? ISBN ???? LCCN ????

Graillat:2006:ICH


Harrison:2006:FPV

REFERENCES


[5173] T. H. Liew, Lie-Liang Yang, and L. Hanzo. Systematic redundant residue number system codes: analytical upper bound and iterative decoding

Lindstrom:2006:FEC


Mahalingam:2006:IAM


Marques:2006:BIF


Maslennikowa:2006:DFB


Melquiond:2006:AIC

REFERENCES


Michael Parks. Unifying tests for square root. In Anonymous [7416], page ?? ISBN ???? LCCN ????


Qian:2006:HMP


Rajagopal:2006:TOA


Shen:2006:TAS


Shou:2006:MAA


Singh:2006:IEE


Solymosi:2006:APS

REFERENCES


REFERENCES


REFERENCES


REFERENCES


[5241] Jean-Luc Beuchat, Masaaki Shirase, Tsuyoshi Takagi, and Eiji Okamoto. An algorithm for the $\eta_T$ pairing calculation in characteristic three and

Bodrato:2007:IPM


Boldo:2007:FPD


Boldo:2007:FVF


Boldo:2007:PCA


Brent:2007:EBC


Brisebarre:2007:CRA


REFERENCES


REFERENCES

Dimitrov:2007:MCS


Doornik:2007:CHP


Duale:2007:DFP


Eisen:2007:IPA


Eisinberg:2007:AFP


Ercegovac:2007:CSR


Ercegovac:2007:HOM


[5280] Laurent Fousse. Multiple-precision correctly rounded Newton–Cotes quadrature. RAIRO. Informatique théorique et applications :=
REFERENCES


0948-6968. URL http://www.jucs.org/jucs_13_5/floating_point_verification.

Hasenplaug:2007:FMR


Hernandez:2007:MPO


Hilewitz:2007:PAB


Holmes:2007:BA


Homann:2007:IFPa


Homann:2007:IFPb


Hosangadi:2007:AMO

REFERENCES


Hosseinzadeh:2007:NMS


Huang:2007:NAM


Iguchi:2007:DRC


Ihsberner:2007:REA


James:2007:QAD


Kapre:2007:OPF


Kechagias:2007:CME

[5301] P. S. Kechagias and Basil K. Papadopoulos. Computational method to evaluate fuzzy arithmetic operations. Applied Mathematics and
REFERENCES

Khabbazian:2007:DPC


Knowles:2007:RSE


Kobayashi:2007:AIG


Kornerup:2007:CIPa


Kornerup:2007:CIPb


Kuliamin:2007:ST1

[5307] V. V. Kuliamin. Standardization and testing of implementations of mathematical functions in floating point numbers. Programming and Computer Software; translation of Programmirovaniye (Moscow, USSR)
REFERENCES


REFERENCES


[5320] Shawn D. Lundvall, Eric M. Schwarz, Ronald M. Smith, Sr., and Phil C. Yeh. Composition of decimal floating point data, and methods therefor.
REFERENCES


REFERENCES


[5339] Andreas Rauh, Marco Kletting, Harald Aischmann, and Eberhard P. Hofer. Reduction of overestimation in interval arithmetic simulation of biological wastewater treatment processes. *Journal of Computational...
REFERENCES


Saldamli:2007:SME


Saqib:2007:CAI


Schulte:2007:FPD


Scott:2007:NHC


Shams:2007:EHA


Shpilka:2007:IDA


REFERENCES


[5373] Tor M. Aamodt and Paul Chow. Compile-time and instruction-set methods for improving floating- to fixed-point conversion accuracy. *ACM*
Ahmadi:2008:PFS


ASTM:2008:AES


Bapst:2008:SIO


Beuchat:2008:AGM


Boldo:2008:EFC


Brisebarre:2008:CRM

REFERENCES


Brisebarre:2008:EME


Brisebarre:2008:IFP


Buttari:2008:UMP


Carnicer:2008:REP


Castaldo:2008:RFP

REFERENCES


[5391] Florent De Dinechin and Christoph Quirin Lauter. Optimizing polynomials for floating-point implementation. *arXiv.org*, ??(?):1–12,
REFERENCES


Dimitrov:2008:PSP


Dvir:2008:HRT


Edmonson:2008:ISS


Erle:2008:AHD


Gonzalez-Navarro:2008:BID


Graillat:2008:ASZ
REFERENCES


Nakamori:2008:SRA


Namin:2008:NFF


P754:2008:ISF


Pan:2008:SAL


Patterson:2008:AC


Patterson:2008:GCG


Pineiro:2008:RDD


Quinnell:2008:BFP

Quinnell:2008:FPF

Rahaman:2008:CTB

Rahaman:2008:DRT

Rahaman:2008:NRA

Quinnell:2008:FPF
REFERENCES

Ravikumar:2008:BND


Raz:2008:EFL


Raz:2008:LBS


Rodriguez-Henriquez:2008:LCB


Ruiz:2008:EIR


Rump:2008:AFPa


Rump:2008:AFPb


REFERENCES


[5463] Frithjof Blomquist, Werner Hofschuster, and Walter Krämer. A modified staggered correction arithmetic with enhanced accuracy and very wide


[5469] Murat Cenk, Çetin Kaya Koç, and Ferruh Özbudak. Polynomial multiplication over finite fields using field extensions and interpolation. In
REFERENCES


REFERENCES


REFERENCES

86


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


Wang:2009:RCD


XILINX:2009:XLF


Zhu:2009:CRH


Zimmermann:2009:DSS


Akbarpour:2010:VSI


Aldous:2010:WCO


Alimohammad:2010:UAA

REFERENCES


REFERENCES

Cheng:2010:BSS


Chevillard:2010:SED


Cuyt:2010:VSF


Daumas:2010:CBE


deDinechin:2010:FGA

Florent de Dinechin and Bogdan Pasca. FloPoCo: generator of arithmetic cores (Floating-Point Cores, but not only) for FPGAs (but not only). Web site and source code., August 10, 2010.

deDinechin:2010:FPE

REFERENCES


REFERENCES


REFERENCES


[5601] Nicolas Louvet, Jean-Michel Muller, and Adrien Panhaleux. Newton–Raphson algorithms for floating-point division using an FMA. In
REFERENCES


Maruyama:2010:SVN


Mathews:2010:AOE


Mehrotra:2010:SLR


Meyer:2010:CGT


Moller:2010:IDI


Morisita:2010:IEA

REFERENCES


REFERENCES


REFERENCES


[5627] Basit Riaz Sheikh and Rajit Manohar. An operand-optimized asynchronous IEEE 754 double-precision floating-point adder. In IEEE,
editor, ASYNC 2010: 16th IEEE Symposium on Asynchronous Circuits
and Systems, 3–6 May 2010, Grenoble, France, Proceedings, pages 151–
162. IEEE Computer Society Press, 1109 Spring Street, Suite 300,
Silver Spring, MD 20910, USA, 2010. ISBN 0-7695-4032-5. LCCN
???? URL http://ieeexplore.ieee.org/xpl/articleDetails.jsp?
arnumber=5476966; https://www.semanticscholar.org/paper/
An-Operand-Optimized-Asynchronous-IEEE-754-Double-Sheikh-
Manohar/3e30463d11ba059f19c5959e0acc66709390475e.

[5628] Ming-Der Shieh and Wen-Ching Lin. Word-based Montgomery modular
multiplication algorithm for low-latency scalable architectures. IEEE
Transactions on Computers, 59(8):1145–1151, ???. 2010. CODEN
ITCOB4. ISSN 0018-9340 (print), 1557-9956 (electronic). URL http:/

[5629] John A. Shuster and Jens Köpflinger. Elliptic complex numbers with dual
3514, August 15, 2010. CODEN AMHCBQ. ISSN 0096-3003 (print),
1873-5649 (electronic).

[5630] Jane Smiley. The man who invented the computer: the biography of John
0-385-52713-6, 0-385-53372-1 (e-book), 1-299-11995-6 (e-book). 246 + 8

[5631] Alastair M. Smith, George A. Constantinides, and Peter Y. K.
Cheung. An automated flow for arithmetic component generation in
field-programmable gate arrays. ACM Transactions on Reconfigurable
ISSN 1936-7406 (print), 1936-7414 (electronic).

[5632] Tsz-Wo Sze. The two quadrillionth bit of pi is 0 ! distributed
computation of pi with Apache Hadoop. In IEEE, editor, 2010 IEEE
Second International Conference on Cloud Computing Technology and
Science (CloudCom), page 727. IEEE Computer Society Press, 1109
Spring Street, Suite 300, Silver Spring, MD 20910, USA, 2010. ISBN
1-4244-9405-2. LCCN ???


REFERENCES

Zimmermann:2010:RCG


Adikari:2011:HBT


Al-Ashrafy:2011:EIF


Anderson:2011:GVD


Anonymous:2011:CPSa


Antelo:2011:IIFa


Antelo:2011:IIFb

[5652] Elisardo Antelo, editor. Industrial Implementations of Floating-Point Units, volume 2. IEEE Computer Society Press, 1109 Spring Street,
REFERENCES

LCCN ????

Arias-Garcia:2011:SFI
A suitable FPGA implementation of floating-point matrix inversion
based on Gauss–Jordan elimination. In 2011 VII Southern Conference on
Programmable Logic (SPL), pages 263–268. pub-IEEE, pub-IEEE:adr,

Arnold:2011:RCL
number system ALU. IEEE Transactions on Computers, 60(2):202–213,
February 2011. CODEN ITCOB4. ISSN 0018-9340 (print), 1557-9956
(electronic).

Arnold:2011:TQC
Towards a quaternion complex logarithmic number system. In Schwarz

Badin:2011:IAM
[5656] Matthew Badin, Lubomir Bic, Michael Dillencourt, and Alexandru
Nicolau. Improving accuracy for matrix multiplications on GPUs.
1058-9244 (print), 1875-919X (electronic).

Bailey:2011:GMD
[5657] David H. Bailey and Jonathan M. Borwein. The greatest mathematical
discovery? Report, Lawrence Berkeley National Laboratory and Centre
for Computer Assisted RMA, University of Newcastle, Berkeley, CA
94720, USA and Callaghan, NSW 2308, Australia, May 8, 2011. 10 pp.

Baudin:2011:EBC
complexerrorbounds_v0.2.pdf.


[5665] Sylvie Boldo and Guillaume Melquiond. Flocq: a unified library for proving floating-point algorithms in Coq. In Schwarz and Oklobdzija


BILLY BOB BRUMLEY AND DAN PAGE. Bit-sliced binary normal basis multiplication. In Schwarz and Oklobdzija [7475], pages 205–212.
REFERENCES


Brusentsov:2011:TCS


Burgess:2011:FRC


Butts:2011:RDR


Calamia:2011:CGG


Carlough:2011:IZD


Cavagnino:2011:AAD

REFERENCES


[5683] Sylvain Chevillard. Automatic generation of code for the evaluation of constant expressions at any precision with a guaranteed error bound.
REFERENCES


[5689] Florent de Dinechin. The arithmetic operators you will never see in a microprocessor. In Schwarz and Oklobdzija [7475], pages 189–190.
REFERENCES


REFERENCES


REFERENCES


Ikhile:2011:RBD


Ismail:2011:RLL


ISO:2011:III


Izsak:2011:CPM


Jaime:2011:HSA


Jaiswal:2011:HPF

REFERENCES


REFERENCES


Kainuma:2011:DIC


Kaivani:2011:DCR


Kathiara:2011:AVS


Kim:2011:ZAS


Kong:2011:GDM


Kornerup:2011:PAO


REFERENCES


Liu:2011:ILC


Lutz:2011:FMA


Malone:2011:FBI


Masakova:2011:ANS


Matula:2011:PLP


Mauer:2011:FPS
REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


[5810] Filippo Gandino, Fabrizio Lamberti, Gianluca Paravati, Jean-Claude Bajard, and Paolo Montuschi. An algorithmic and architectural study on
REFERENCES


Gazeau:2012:NL


Ghosh:2012:FPR


Giessing:2012:FRB


Goldberg:2012:CA


Goossens:2012:CTS


Grcar:2012:JNA

REFERENCES


[5823] Peter Kornerup, Jean-Michel Muller, and Adrien Panhaleux. Floating-point arithmetic on round-to-nearest representations. arXiv.org, ??(??):
REFERENCES


REFERENCES


REFERENCES

Masotti:2012:FPN


McCalpin:2012:OSH


Milicevic:2012:PAO


Mine:2012:ADB


Mukunoki:2012:PCD


Muller:2012:SSV

REFERENCES


REFERENCES

[5847] Siegfried M. Rump. Error estimation of floating-point summation
and dot product. BIT Numerical Mathematics, 52(1):201–220, March
2012. CODEN BITTEL, NBITAB. ISSN 0006-3835 (print), 1572-
genre=article&issn=0006-3835&volume=52&issue=1&page=201.

(1):1–34, September 2012. CODEN NUALEG. ISSN 1017-1398 (print),

[5849] Prabir Saha, Arindam Banerjee, Anup Dandapat, and Partha
Bhattacharyya. Design of high speed Vedic multiplier for decimal number
system. Lecture Notes in Computer Science, 7373:79–88, 2012. CODEN
LNCSD9. ISSN 0302-9743 (print), 1611-3349 (electronic). URL http://
link.springer.com/chapter/10.1007/978-3-642-31494-0_10/.

[5850] Tsubasa Saito, Emiko Ishiwata, and Hidehiko Hasegawa. Analysis
of the GCR method with mixed precision arithmetic using QuPAT.
sciencedirect.com/science/article/pii/S1877750311000329.

[5851] Hwajeong Seo and Howon Kim. Multi-precision multiplication for
public-key cryptography on embedded microprocessors. Lecture Notes
in Computer Science, 7690:55–67, 2012. CODEN LNCSD9. ISSN 0302-
9743 (print), 1611-3349 (electronic). URL http://link.springer.com/
chapter/10.1007/978-3-642-35416-8_5/.

[5852] Basit Riaz Sheikh and Rajit Manohar. An asynchronous floating-point
multiplier. In IEEE, editor, 2012 IEEE International Symposium on
Asynchronous Circuits and Systems: proceedings, ASYNC 2012: 7–
9 May 2012, Copenhagen, Denmark, pages 89–96. IEEE Computer
Society Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910,


[5858] Zhen Wang and Shuqin Fan. Efficient Montgomery-based semi-systolic multiplier for even-type GNB of GF(2^m). IEEE Transactions on
REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES

Lefevre:2013:SSI


Lei:2013:FIE


Lei:2013:VCI


Lowery:2013:RED


Maitra:2013:DSM


Maniatakos:2013:LCC


Martin-Dorel:2013:SIR

REFERENCES


REFERENCES


REFERENCES


[5963] Alberto A. Del Barrio, Nader Bagherzadeh, and Román Hermida. Ultralow-power adder stage design for exascale floating point units. ACM
REFERENCES


Demmel:2014:THS


Doerr:2014:RRP


Drane:2014:SCF


Du:2014:AEP


Dumas:2014:NRI


Gilani:2014:EEP


Gladstein:2014:DBP


REFERENCES


[5989] Hiroshi Murakami. Calculation of rational numbers in an interval whose denominator is the smallest by using FP interval arithmetic. *ACM*
REFERENCES


REFERENCES


Ahrens:2015:RPM


Aktan:2015:MEA


Andrysco:2015:SFP


Aneesh:2015:HHM


Anonymous:2015:EFP


Bailey:2015:HPA

REFERENCES


REFERENCES

Brain:2015:AFS

Brunie:2015:CGM

Chiang:2015:UFP

Collange:2015:NRP

Cowlishaw:2015:GDA

Coxon:2015:MMP
Nicholas Coxon. Montgomery’s method of polynomial selection for the number field sieve. Linear Algebra and its Applications, 485(??):

[6030] Florent de Dinechin. On fixed-point hardware polynomials. Technical report, INSA, CITI Lab, Université de Lyon, Lyon, France, October 2015. URL https://hal.inria.fr/hal-01214739.


[6041] Terry Froggatt. An error in the Ada universal arithmetic package. *ACM SIGADA Ada Letters*, 35(2):14, August 2015. CODEN AALEE5. ISSN 1094-3641 (print), 1557-9476 (electronic). See [1737]. The 32-year-old error is a test with digit $t$ that has if ($t > $BASE), but the operator should instead be $\geq$.

October 2015. CODEN SINODQ. ISSN 0362-1340 (print), 1523-2867 (print), 1558-1160 (electronic).

Fukushima:2015:PFCc


Gerard:2015:CDR


Gorgin:2015:CXH


Gouicem:2015:MMD


Graillat:2015:ECF


Graillat:2015:MRE

REFERENCES


Holzmann:2015:B
REFERENCES

Hsiao:2015:TSR

Hutter:2015:MMA

Iakymchuk:2015:EEB

Iakymchuk:2015:ERA

IEEE:2015:ISI

Jacobsen:2015:PFP
REFERENCES

8th International Workshop on Numerical Software Verification 2015, Seattle, WA, USA.


REFERENCES


Liu:2015:IBI


Liu:2015:SSS


Lu:2015:REP


Lutz:2015:OLZ


Martin-Dorel:2015:FVC


Matula:2015:MDE

REFERENCES


[6088] Radford M. Neal. Fast exact summation using small and large superaccumulators. Report, Department of Statistical Sciences and Department of Computer Science, University of Toronto, Toronto, ON,
REFERENCES

Neal:2015:FESb

Negre:2015:EME

Nguyen:2015:RTS

Ozaki:2015:IEF

Palmer:2015:MBI

Panchekha:2015:AIA

REFERENCES


[vanderHoeven:2015:FFM]


[Volkova:2015:REW]


[Wilczak:2015:CAP]


[Wittmann:2015:SNC]


[Yamazaki:2015:MPC]

Ahmed:2016:ILM


Ahrens:2016:ERF

Peter Ahrens, Hong Diep Nguyen, and James Demmel. Efficient reproducible floating point summation and BLAS. Report UCB/EECS-2016-121, EECS Department, UC Berkeley, Berkeley, CA, USA, June 18, 2016. URL http://www.eecs.berkeley.edu/Pubs/TechRpts/2016/EECS-2016-121.html.

Andrysco:2016:PFP


Anonymous:2016:KTS


Area:2016:ACS


Avenel:2016:STM


Bagnara:2016:EBF

Roberto Bagnara, Matthieu Carlier, Roberta Gori, and Arnaud Gotlieb. Exploiting binary floating-point representations for constraint


REFERENCES

Boldo:2016:RFA


Brisebarre:2016:CBB


Brzicova:2016:LMD


Chen:2016:DAR


Chen:2016:PSA


Coleman:2016:LCT


Collange:2016:PFP

REFERENCES

Cui:2016:PDM


Damouche:2016:TSB


DelBarrio:2016:PCS


Demmel:2016:ERF


Denis:2016:VCF


[6143] Xin Fang and Miriam Leeser. Open-source variable-precision floating-point library for major commercial FPGAs. *ACM Transactions on


Shay Gueron and Samu Mathew. Hardware implementation of AES using area-optimal polynomials for composite-field representation GF(2^4)^2 of


[6154] David Hopkins. Will my numbers add up correctly if I round them? The Mathematical Gazette, 100(549):396–409, November 2016. CODEN MAGAAS. ISSN 0025-5572 (print), 2056-6328 (electronic). URL https://www.cambridge.org/core/product/88F65753D8900DDDEAD1F2552B0F8B22. The probability that rounding after fixed-point summation of n terms gives the same result as summation of rounded terms is given by \( p(n) = \frac{2}{\pi} \int_0^\infty (\sin(x)/x)^{n+1} \, dx \), and that function is always a rational number. Its values are \( p(n) = 1, 3/4, 2/3, 115/192, 11/20, 5887/11520, 151/315, 259723/573440, \ldots \) for \( n = 1 \) to 8.

REFERENCES


[6169] Philippe Langlois, Rafife Nheili, and Christophe Denis. Recovering numerical reproducibility in hydrodynamic simulations. In Montuschi

[Lee:2016:VBM]


[Lefevre:2016:CRA]


[Lefevre:2016:OBB]


[LeMaire:2016:CFP]


[Li:2016:SDT]


[Lichtenau:2016:QPF]

[6175] Cedric Lichtenau, Steven Carlough, and Silvia Melitta Mueller. Quad precision floating point on the IBM z13. In Montuschi et al. [7486], pages
Liu:2016:DAI


Martin-Dorel:2016:PTB


Mascarenhas:2016:FPN


Meloni:2016:RDR


Montuschi:2016:MCA


Morancho:2016:UAF


Moroz:2016:FCI

REFERENCES

1095


Muller:2016:NMA


Munshi:2016:OCS


Nannarelli:2016:PPS


Notzli:2016:LVP


Ozaki:2016:EFT


Ozaki:2016:SFP


Paulk:2016:IFP

[6189] Mark Paulk and Lori Cameron. IEEE floating point standard. Computer, 49(6):10, June 2016. CODEN CPTRB4. ISSN 0018-9162 (print), 1558-
REFERENCES


Anonymous:2017:C

[6216]


Anonymous:2017:CN

[6217]


Anonymous:2017:F

[6218]


Anonymous:2017:FC

[6219]


Anonymous:2017:PCM

[6220]


Anonymous:2017:PI

[6221]


Anonymous:2017:SC

[6222]
[Anonymous:2017:TC]

[Anonymous:2017:TP]

[Anonymous:2017:TPI]

[Aurentz:2017:CCS]

[B:2017:GML]

[Beebe:2017:MFC]
Bocco:2017:HSU


Boehm:2017:SDC


Boldo:2017:CAF


Boldo:2017:REA


Boldo:2017:RFA


Bos:2017:FAM


Brisebarre:2017:ESC

[6235] Nicolas Brisebarre, Guillaume Hanrot, and Olivier Robert. Exponential sums and correctly-rounded functions. IEEE Transactions on


[6241] Chemseddine Chohra, Philippe Langlois, and David Parello. Reproducible, accurately rounded and efficient BLAS.
REFERENCES

In Desprez et al. [7488], pages 609–620. ISBN 3-319-58943-1 (e-book), 3-319-58943-1 (hardcover). LCCN QA76.9.E94; QA76.758TK.


REFERENCES


REFERENCES


REFERENCES


REFERENCES


[6276] Claude-Pierre Jeannerod and Jean-Michel Muller. On the relative error of computing complex square roots in floating-point arithmetic. In Michael B. Matthews, editor, 2017 51st Asilomar Conference on Signals,

Johansson:2017:AEA


Joldes:2017:IPE


Joldes:2017:TRE


Jorgensen:2017:ACR

Alan A. Jorgensen. Apparatus for calculating and retaining a bound on error during floating point operations and methods thereof. US Patent 9,817,662., November 14, 2017. URL https://patents.google.com/patent/US9817662B2/; https://tinyurl.com/y7ctbsez. This patent, filed 23 October 2016, was issued despite substantial prior art that should have resulted in its rejection: see [6440]. The inventor does not appear to have published in the area of floating-point arithmetic (apart from this entry, none by him can be found in this bibliography). The only literature references in the patent are [5413, 2701, 5835, 5609].

Kneusel:2017:NC


REFERENCES


REFERENCES


Mazahir:2017:PEA


Medhat:2017:MPE


Merchant:2017:ABL


Mian:2017:HPC


Micikevicius:2017:MPT


Moler:2017:CCB

REFERENCES


REFERENCES


[6331] Laurent Thévenoux, Philippe Langlois, and Matthieu Martel. Automatic source-to-source error compensation of floating-point programs: code
REFERENCES


[Thornes:2017:USD]


[Titolo:2017:AIF]


[Ueno:2017:BCF]


[Uguen:2017:BHL]


[Ugurdag:2017:HDS]

REFERENCES


REFERENCES


REFERENCES


REFERENCES


Chaurasiya:2018:PPA


Chen:2018:MMU

[6363] Jianyu Chen and Zaid Al-Ars. A matrix-multiply unit for posits in reconfigurable logic using (OPEN)CAPI. In ACM [7490], pages 1–5.

Cherkaev:2018:SLN


Chung:2018:PCP


Cococcioni:2018:EPA


Costello:2018:MCT


Dai:2018:FBM

REFERENCES


[6375] Yssouf Dosso, Fabien Herbaut, Nicolas Méloni, and Pascal Véron. Euclidean addition chains scalar multiplication on curves with efficient
Drucker:2018:CRS


Drucker:2018:FMB


Dutt:2018:ADA


Emmart:2018:FME


Emmart:2018:NVB


Ferguson:2018:DSM


Hutter:2018:FMP


Intel:2018:BHN


Jaiswal:2018:AGT


Jaiswal:2018:UNP


Jeangoudoux:2018:CRM


Jeannerod:2018:REF

REFERENCES

Jeannerod:2018:VWS


Jeon:2018:HMP


Jiang:2018:EFD


Johnson:2018:RFP


Kohlbecker:2018:SNF

[6404] Ignaz Kohlbecker. The slide number format. In ACM [7490], pages 1–6.

Kromer:2018:AQO


Kumm:2018:KRM

REFERENCES


REFERENCES


[6419] Sergio Marchese. AI chips must get the floating-point math right: Formal verification of FPUs is no longer a prerogative of big companies spending big bucks. Web site., September 27, 2018.
REFERENCES


Oliveira:2018:MLB


Podobas:2018:HIP


Popescu:2018:FPN


Radford:2018:FIF


Ram:2018:FVF


Reddy:2018:DAD

REFERENCES


REFERENCES


[6440] Tiffany Trader. Inventor claims to have solved floating point error problem. HPC Web site., January 17, 2018. URL https://www.hpcwire.com/2018/01/17/inventor-claims-solved-floating-point-error-problem/. From the HPC editor: “After this article was published, a number of readers raised concerns about the originality of Jorgensen’s techniques, noting the existence of prior art going back years. Specifically, there is precedent in John Gustafson’s work on unums and interval arithmetic both at Sun and in his 2015 book, *The End of Error*, which was published 19 months before Jorgensen’s patent application was filed.”.


REFERENCES


Anonymous:2019:CPC


Anonymous:2019:MCT


Anonymous:2019:RMV


Anonymous:2019:SOL


Anonymous:2019:UFP


Anonymous:2019:YAF


Arnold:2019:UOD

REFERENCES


REFERENCES


REFERENCES

Carmichael:2019:PET


Caygill:2019:DCF


Caygill:2019:NLH


Chen:2019:EIR


Cheng:2019:TCI


Cornea:2019:NTI


REFERENCES


[6507] David Harvey and Joris Van Der Hoeven. Integer multiplication in time $O(n \log n)$. Report hal-02070778, School of Mathematics and Statistics, University of New South Wales, and CNRS, Laboratoire d’informatique, École polytechnique, Sydney, NSW 2052, Australia and 91128 Palaiseau, France, March 18, 2019. URL https://hal.archives-ouvertes.fr/hal-02070778/document.


researchgate.net/publication/349173096_SIMPLE_EFFECTIVE_FAST_INVERSE_SQUARE_ROOT_ALGORITHM_WITH_TWO_MAGIC_CONSTANTS.


REFERENCES


REFERENCES


REFERENCES


REFERENCES


[6570] Souradip Sarkar, Purushotham Murugappa Velayuthan, and Manil Dev Gomony. A reconfigurable architecture for posit arithmetic. In IEEE,
Seo:2019:HTM


Serre:2019:DBM


Sherman:2019:SRS


Silver:2019:CCN


Singh:2019:LPP


Solovyev:2019:REF

REFERENCES


REFERENCES


[6591] Yohann Uguen, Luc Forget, and Florent de Dinechin. Evaluating the hardware cost of the posit number system. In IEEE, editor, 2019 29th
REFERENCES

vanDam:2019:APA

Laurens van Dam, Johan Peltenburg, Zaid Al-Ars, and H. Peter Hofstee. An accelerator for posit arithmetic targeting posit level 1 BLAS routines and Pair-HMM. In Gustafson and Dimitrov [7492], pages 5:1–5:10. ISBN 1-4503-7139-6. LCCN ????.

vanWyk:2019:RVT


Vazquez:2019:NPT


Venkatachalam:2019:DAA


Verheyde:2019:BDD


Villa:2019:NDB


REFERENCES


Bottcher:2020:HDL


Brisebarre:2020:EAS


Bruguera:2020:LLF


Brunie:2020:TFP


Buoncristiani:2020:ENS


Calligo:2020:PNU


Cavalcante:2020:AGS

[6632] Matheus Cavalcante, Fabian Schuiki, Florian Zaruba, Michael Schaffner, and Luca Benini. Ara: a 1-GHz+ scalable and energy-efficient RISC-
REFERENCES


Cherubin:2020:TRP


Chien:2020:PNA


Chowdhary:2020:DDN


Cococcioni:2020:FAH


Cococcioni:2020:FDN


Cococcioni:2020:NPB

REFERENCES


[6644] Peter Dinda, Alex Bernat, and Conor Hetland.Spying on the floating point behavior of existing, unmodified scientific applications. In ????,
Dolgov:2020:PCI


Elkhatib:2020:HOM


Erickson:2020:GNF


Fog:2020:FPE


Gallois-Wong:2020:OIP


Godunov:2020:ACC

REFERENCES


Hickmann:2020:INN


Hopkins:2020:SRR


Hormigo:2020:FPF


Hrycak:2020:ELP


Ipsen:2020:PEA


ISO:2020:III

REFERENCES


[6670] Chaitanya Jugade, Deepak Ingole, Dayaram Sonawane, Michal Kvasnica, and John Gustafson. A framework for embedded model predictive control


REFERENCES


Muller:2020:EFA


Murillo:2020:CPA


Murillo:2020:DPD


Nannarelli:2020:VPB


Nass:2020:GUL


Neves:2020:DFM

REFERENCES

1174

Systems (SiPS), pages 1–6. IEEE Computer Society Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, USA, 2020.


REFERENCES


REFERENCES


[6729] Roberto Bagnara, Michele Chiari, Roberta Gori, and Abramo Bagnara. A practical approach to verification of floating-point C/C++ programs
REFERENCES


REFERENCES


REFERENCES


Czachor:2021:NNM


Darcy:2021:FPA


deDinechin:2021:TAC


Defour:2021:SCB


delaFraga:2021:DEU


Demeure:2021:TET


Demmel:2021:NIS

REFERENCES

Dimitrakopoulos:2021:SPAA


Dimitrakopoulos:2021:SPAb


Druck:2021:NSB


Eliahu:2021:MME


Elkhatib:2021:ARV


Fasi:2021:ASRa


Fasi:2021:ASRb

REFERENCES


[6769] Oscar Gustafsson and Noah Hellman. Approximate floating-point operations with integer units by processing in the logarithmic domain.


REFERENCES


[6792] Jean-Michel Muller. $a \cdot (x \cdot x)$ or $(a \cdot x) \cdot x$?. In IEEE [7498], pages 17–24. ISBN 1-66542-293-9 (print), 1-66544-648-X (e-book). LCCN ????


REFERENCES


Raposo:2021:PTD


Reichenbach:2021:RVR


Revy:2021:AIF


Rodriguez:2021:DLS


Romanov:2021:APB


Saiki:2021:CPT


Saxena:2021:BOF


REFERENCES


Ahmadinejad:2022:EQE

Ahmadpour:2022:BMM

Alder:2022:FPU

AMD:2022:AIM

Anonymous:2022:AI

Anonymous:2022:C

Anonymous:2022:PCA

Anonymous:2022:SA
REFERENCES


[6844] Farah Benmouhoub, Pierre-Loic Garoche, and Matthieu Martel. An efficient summation algorithm for the accuracy, convergence and
REFERENCES


REFERENCES


REFERENCES

In IEEE [7500], pages 58–65. ISBN 1-66547-827-6, 1-66547-828-4. LCCN ????


[6877] Dina Genkina. Posits, a new kind of number, improves the math of AI: The first posit-based processor core gave a ten-thousandfold accuracy


REFERENCES


REFERENCES


REFERENCES


REFERENCES


Abdi:2023:FEF


Adela:2023:DIS


Alapati:2023:HIP


Allred:2023:FNT


Andrlon:2023:FNB


Anonymous:2023:IWG

REFERENCES

Anonymous:2023:TDT


ARM:2023:ACA


Awais:2023:TOS


Bartels:2023:FFP


Belorgey:2023:MFE


Beutel:2023:PFA

Blanchard:2023:NMD


Baldo:2023:FPA


Bommana:2023:DST


Böttcher:2023:TGO


Brisebarre:2023:EUM


Brisebarre:2023:IPC


Eckert:2023:EMM


Edamatsu:2023:FMP


Edavoor:2023:DAP


Fasi:2023:CCL


Filippas:2023:RPF


Fog:2023:FPE


REFERENCES


Bharath Krishna. Rounding numbers in the financial domain! Web site, January 1, 2023. URL https://www.foundingminds.com/rounding-numbers-in-the-financial-domain/. Includes important mention of financial regulatory sites, with this text taken verbatim from the article, because such information may be hard to find elsewhere: * International
Financial Reporting Standards (IFRS): IFRS is a set of accounting standards developed by the International Accounting Standards Board (IASB). It includes guidelines on rounding financial numbers in financial statements, such as the requirement to round amounts to the nearest whole number or the nearest multiple of 10. * Generally Accepted Accounting Principles (GAAP): GAAP is a set of accounting standards used in the United States. It includes similar guidelines on rounding financial numbers as IFRS and requires that any rounding errors should be immaterial and insignificant. * International Organization for Standardization (ISO): ISO has a standard for Rounding off numerical values, which is ISO 80000-1:2009. It provides guidelines on rounding numerical values in general and not specific to the finance domain, but it’s widely used in financial systems. * The Federal Reserve Board (FRB): The FRB, the central banking system of the United States, has guidelines on rounding financial numbers for bank reporting and financial statement preparation. * The European Central Bank (ECB): The ECB, the central banking system of the European Union, has similar guidelines on rounding financial numbers as the FRB.


REFERENCES


Ullah:2023:DRE


Whitehead:2023:FP1


Wong:2023:KNS


Yang:2023:ATF


Zhang:2023:EAP


Zlatopolski:2023:PAV


REFERENCES

[7047] Tom Hubrecht, Claude-Pierre Jeannerod, and Jean-Michel Muller. Useful applications of correctly-rounded operators of the form $ab+cd+e$. Report hal-04461089, DI-ENS (Département d’informatique — ENS Paris) and Université de Lyon, Paris, France and Lyon France, February 16, 2024. URL https://inria.hal.science/hal-04461089.


REFERENCES


REFERENCES

1963. ix + 574 pp. LCCN ???? See also volumes I–II, IV–VI [7058, 7059, 7062, 7064, 7065].


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


[7108] Edward W. Ng, editor. Symbolic and algebraic computation: EUROSAM ’79, an International Symposium on Symbolic and Algebraic Manipulation, Marseille, France, June 1979, volume 72 of Lecture Notes
REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


[7163] Pat Davis and Vicki McClintock, editors. Proceedings of the 15th annual conference on Computer Science, St. Louis, Missouri, USA. ACM Press,


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


IEEE:1989:PII


Turner:1989:NAP


Wuorinen:1989:DTP


ACM:1990:PAS


ACM:1990:PDB


Anonymous:1990:PAN

REFERENCES


REFERENCES


REFERENCES


REFERENCES


[7225] KENNETH R. (KENNETH RAY) MEYER AND DIETER S. SCHMIDT, EDITORS. Computer aided proofs in analysis, volume 28 of The IMA volumes in
REFERENCES

Morris:1991:RWP


SPIE:1991:PSI


Alley:1992:CRI


Anonymous:1992:EAP


Atanassova:1992:CAE


IEEE:1992:ASF


**IEEE:1992:IIC**


**IEEE:1992:PIS**


**IEEE:1992:NCR**


**Katwijk:1992:AMT**

REFERENCES

Prinetto:1992:CHD


Quinton:1992:APV


Singh:1992:CRT


Turing:1992:PM


Vandewalle:1992:SPV

REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES

Jain:1995:PET


Knowles:1995:PSC


Seck:1995:GWS


Singh:1995:CRT


Alefeld:1996:NME

REFERENCES


Kearfott:1996:AICa


- branch and bound algorithms for global optimization,
- constraint propagation,
- solution sets of linear systems,
- hardware and software systems for interval computations, and
- fuzzy logic.

Actual applications described in the book include:

- economic input-output models,
- quality control in manufacturing design,
- a computer-assisted proof in quantum mechanics,
- medical expert systems,
- and others.

A realistic view of interval computations is taken: the articles indicate when and how overestimation and other challenges can be overcome. An introductory chapter explains the content of the papers in terminology accessible to mathematically literate graduate students. The style of the individual, refereed contributions has been made uniform and understandable, and there is an extensive book-wide index. Audience: Valuable to students and researchers interested in automatic result verification. Detailed information, including contents, contributors, and an order form can be found:

- on Kluwer homepage [http://www.wkap.nl](http://www.wkap.nl), or

The information on the Interval Computations homepage is basically a mirror image of the Kluwer one (the only difference is that the fonts are fancier).
REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES

Matthews:1998:CRT


Pocek:1998:PIS


Sasao:1998:ISM


Sohi:1998:YIS


ACM:1999:PFA


Begehr:1999:PSI

REFERENCES


REFERENCES

Wuorinen:1999:IIS


ACM:2000:PIC


Anonymous:2000:DPX


IEEE:2000:EPI


IEEE:2000:IGP


IEEE:2000:IPI

REFERENCES


REFERENCES


Anonymous:2001:JJ


Boulton:2001:TPH


Brebner:2001:FLA


Burgess:2001:ISC

REFERENCES


REFERENCES


REFERENCES


[Borrione:2002:TIW]


[Cohen:2002:MSP]


[Hennessy:2002:CAQ]


[IEEE:2002:IIC]


[IEEE:2002:IRA]

IEEE Computer Society Order Number PR01573.


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


IEEE:2005:ICS


IEEE:2005:IIS


IEEE:2005:MSC


IEEE:2005:PII


IEEE:2005:PIS


IEEE:2005:PWE


**Luk:2005:ASP**


**Montuschi:2005:PIS**


**Tang:2005:AIC**


**Vassiliadis:2005:IIC**


**ACM:2006:SCH**
REFERENCES


REFERENCES


REFERENCES


REFERENCES


[7438] IEEE:2007:IP1


[7440] Luther:2007:GII


REFERENCES


REFERENCES


<table>
<thead>
<tr>
<th>REFERENCES</th>
<th>1300</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cumplido:2009:RPI</strong></td>
<td></td>
</tr>
<tr>
<td><strong>ICCIT:2009:ICC</strong></td>
<td></td>
</tr>
<tr>
<td><strong>IEEE:2009:ICF</strong></td>
<td></td>
</tr>
<tr>
<td><strong>IEEE:2009:IICa</strong></td>
<td></td>
</tr>
<tr>
<td><strong>IEEE:2009:IICb</strong></td>
<td></td>
</tr>
<tr>
<td><strong>IEEE:2009:IIS</strong></td>
<td></td>
</tr>
</tbody>
</table>
REFERENCES


IEEE:2009:PDR


Matthews:2009:CRF


Sezer:2009:IIS


Charot:2010:API


Delgado-Frias:2010:IIM

REFERENCES


Fukuda:2010:MSI


IEEE:2010:CCE


IEEE:2010:ICC


IEEE:2010:ICM


IEEE:2010:ICV

REFERENCES


REFERENCES


REFERENCES


IEEE:2015:ISS


Muller:2015:ISC


Swartzlander:2015:CAa


Swartzlander:2015:CAb

REFERENCES


REFERENCES


REFERENCES


