PUBLICATIONS OF JEFFREY C. LAGARIAS

A. Books

1. *Mathematical Developments Arising from Linear Programming* (J. C. Lagarias and M. J. Todd, Eds), Contemporary Math. Vol. 114, Amer. Math. Soc. 1990.

2. *The Ultimate Challenge: The $3x + 1$ Problem* (J. C. Lagarias, Ed.), Amer. Math. Society, Providence, RI 2010.

3. *The Kepler Conjecture: The Hales-Ferguson proof, by Thomas C. Hales, Samuel P. Ferguson* (J. C. Lagarias, Ed.), Springer-Verlag: New York 2011.

B. Book Chapters

1. Point Lattices, Chapter 19 in: *Handbook of Combinatorics,* Amsterdam: Elsevier Science Publ. 1995, pp. 919–966.

C. Papers in Refereed Journals

1. Discrete Balancing Games, Bulletin of the Institute of Mathematics, Academia Sinica **5** (1977), 363–373.

2. Effective Versions of the Chebotarev Density Theorem, in: *Algebraic Number Fields, L-Functions and Galois Properties, Proceedings of the 1975 Durham Symposium,* (A. Fröhlich, Ed.), Academic Press (1977), 409–464 (with A. M. Odlyzko).

3. Minimum Range Sequences of all k-subsets of a Set, Discrete Mathematics **19** (1977), 257–264 (with F. K. Hwang).

4. Signatures of Units and Congruences (mod 4) in Certain Real Quadratic Fields, J. reine angew. Math. **301** (1978), 142–146.

5. On Computing Artin L-functions in the Critical Strip, Mathematics of Computation **33** (1979), 1081–1095 (with A. M. Odlyzko).

6. A bound for the least prime ideal in the Chebotarev density theorem, Inventiones math. **54** (1979), 271–296 (with H. L. Montgomery and A. M. Odlyzko).

7. On determining the 4-rank of the ideal class group of a quadratic field, J. Number Theory, **12** (1980), 191–196.

8. Worst-case complexity bounds in the theory of integral quadratic forms, J. of Algorithms **1** (1980), 142–186.

9. On the computational complexity of determining the solvability or unsolvability of the equation $X^2 - DY^2 = -1$, Trans. Amer. Math. Soc. **260** (1980), 485–508.

10. Signatures of Units and Congruences (mod 4) in Certain Real Quadratic Fields II, J. reine angew. Math. **320** (1980), 115–126.

11. Signatures of Units and Congruences (mod 4) in Certain Totally Real Fields, J. reine angew. Math. **320** (1980), 1–5.

12. Divisibility Properties of Some Cyclotomic Sequences, Amer. Math. Monthly **87** (1980), 561–564 (with A. M. Odlyzko).

13. A complement to Ridout's p-adic generalization of the Thue-Siegel-Roth theorem, in: *Analytic Number Theory*, Proceedings, Philadelphia 1980 (M.I. Knopp. Ed.), Springer Lecture Notes in Mathematics No. 899 (1981), 264–275.

14. Fibonacci and Lucas Cubes, Fibonacci Quarterly **19** (1981), 39–43 (with D. P. Weisser).

15. Best Simultaneous Diophantine Approximations I. Growth rates of best approximation denominators, Trans. Amer. Math. Soc., **272** (1982), 545–554.

16. Best Simultaneous Diophantine Approximations II. Behavior of consecutive best approximations, Pacific J. Math, **102** (1982), 61–88.

17. On the density of sets of integers the sum of no two of which is a square I. Arithmetic Progressions, J. Combinatorial Theory, Series A, **33** (1982), 167–185 (with A. M. Odlyzko and J. B. Shearer).

18. Optimal pairs of score vectors for positional scoring rules, Applied Mathematics and Optimization, **8** (1982), 309–324 (with P. C. Fishburn, W. V. Gehrlein and B. Gopinath).

19. Minimal Storage Representations for Binary Relations, Information Processing Letters, **14** (1982), 63–66 (with D. E. Swartwout).

20. Best Diophantine approximations to a set of linear forms, J. Australian Math. Soc., Series A. **34** (1983), 114–122.

21. Multi-stage planning and the extended linear-quadratic-gaussian control problem, Mathematics of Operations Research **8** (1983), 42–63 (with F. Aminzadeh).

22. On the density of sets of integers the sum of no two of which is a square II. General sequences, J. Combinatorial Theory, Series A, **34** (1983), 123–139 (with A. M. Odlyzko and J. B. Shearer).

23. Sets of primes determined by systems of polynomial congruences, Illinois Journal of Mathematics **27** (1983), 224–239.

24. Approximation Algorithms for Maximizing the Number of Squares Packed in a Rectangle, SIAM J. on Algebraic and Discrete Methods, **4** (1983), 383–397 (with B. Baker, A. R. Calderbank, E. G. Coffman).

25. On the existence of fields governing the 2-invariants of the class group of $\mathbf{Q}(\sqrt{dp})$ as p varies, Math. Comp. **37** (1983), 711–730 (with H. Cohn).

26. On the tightest packing of sums of vectors, European J. Combinatorics **4** (1983), 231–236 (with J. Griggs, A. M. Odlyzko, J. B. Shearer).

27. Is there a density for the set of primes p such that the class number of $\mathbf{Q}(\sqrt{-p})$ is divisible by 16?, in: *Topics in Classical Number Theory,* (G. Halasz, Ed.), Colloquium Societatum Janos Bolyai No. *34* (1984), 257–279 (with H. Cohn).

28. The $3x + 1$ problem and its generalizations, American Math. Monthly, **92** (1985), 3–23.

29. The set of primes dividing the Lucas numbers has density 2/3, Pacific J. Math. **118** (1985), 449–461. [Errata, Pacific J. Math. **162** (1994), 393–396.]

30. The Computational Complexity of Simultaneous Diophantine Approximation Problems, SIAM J. Computing **14** (1985) 196-209.

31. Solving Low-Density Subset Sum Problems, J.A.C.M. **32** (1985), 229–246 (with A. M. Odlyzko).

32. Computing $\pi(x)$: The Meissel-Lehmer Method, Mathematics of Computation, **39** (1985), 537-560 (with V. S. Miller and A. M. Odlyzko).

33. Realizable Traffic Patterns and Capacity of Disjointly Shared Networks, Computer Networks and ISDN Systems, **10** (1985), 275-285 (with A. M. Odlyzko and D. B. Zagier).

34. Probabilities for Intersecting Systems and Random Subsets of Finite Sets, SIAM J. on Algebraic and Discrete Methods, **7** (1986), 73-79 (with P. C. Fishburn, P. Frankl, D. Freed and A. M. Odlyzko).

35. Simultaneous Diophantine Approximation of Rationals by Rationals, J. Number Theory **24** (1986), 200–228 (with J. Håstad).

36. Computing $\pi(x)$: An Analytic Method, J. of Algorithms, **8** (1987), 173–191 (with A. M. Odlyzko).

37. On the distribution in short intervals of integers having no large prime factor, J. Number Theory, **25** (1987), 249–273 (with J. B. Friedlander).

38. Single-Suit Two-Person Card Play, Intl. J. Game Theory, **16** (1987), 291–320 (with J. Kahn, H. Witsenhausen).

39. One-way functions and circuit complexity, Information and Computation, **74** (1987), 226-240 (with R. Boppana).

40. Unique extrapolation of polynomial recurrences, SIAM J. Computing, **17** (1988), 342–362 (with J. A. Reeds).

41. Reconstructing truncated linear variables satisfying linear congruences, SIAM J. Computing, **17** (1988) 262-280 (with A. Frieze, J. Håstad, R. Kannan and A. Shamir).

42. Single-suit two person card play II. Domination, Order **5** (1988), 45–60 (with J. Kahn, H. S. Witsenhausen).

43. The non-linear geometry of linear programming I. Affine and projective scaling trajectories, Trans. Amer. Math. Soc. **314** (1989), 499–526 (with D. A. Bayer).

44. The nonlinear geometry of linear programming II. Legendre transform coordinates and central trajectories, Trans Amer. Math. Soc. **314** (1989), 527-581 (with D. A. Bayer).

45. Algorithms for square packing: A probabilistic analysis, SIAM J. Computing **19** (1989), 166–185 (with E. G. Coffman).

46. Single suit two-person card play III. The Miseŕe game, SIAM J. Discrete Math. **2** (1989), 329–343 (with J. Kahn, H. S. Witsenhausen).

47. Power series variants of Karmarkar-type algorithms, A.T.&T. Technical Journal **68**, No. 3 (1989), 20–36 (with N. Karmarkar, L. Slutsman, P. Wang).

48. Polynomial time algorithms for finding integer relations among real numbers, SIAM J. Computing **18** (1989), 859-881 (with J. Håstad, B. Just, C. P. Schnorr).

49. Sets uniquely determined by projections. I. Continuous Case, SIAM J. Applied Math. **50** (1990), 288–306 (with P. C. Fishburn, J. A. Reeds, L. A. Shepp).

50. Bounds for Korkin-Zolotarev reduced bases and successive minima of a lattice and its reciprocal lattice, Combinatorica **10** (1990), 343–358 (with H. W. Lenstra, Jr., C. P. Schnorr).

51. The nonlinear geometry of linear programming III. Projective Legendre transform coordinates and Hilbert geometry, Trans. Amer. Math. Soc. **320** (1990), 193–225.

52. Simultaneously good bases of a lattice and its reciprocal lattice, Math. Annalen **287** (1990), 167–174 (with J. Håstad).

53. Tiling with polyominoes and combinatorial group theory, J. Comb. Th., Series A **53** (1990), 183–208 (with J. H. Conway).

54. I. I. Dikin's convergence result for the affine scaling algorithm, Contemporary Math. Vol. 114 (1990), 109–119 (with R. J. Vanderbei).

55. The set of rational cycles for the $3x + 1$ problem, Acta Arithmetica **56** (1990), 33–53.

56. Karmarkar's algorithm and Newton's method, Math. Programming **50** (1991), 291–320 (with D. A. Bayer).

57. Monotonicity inequalities for the Toda flow, QR-flow, and subspace iteration, SIAM J. Matrix Anal. Appl. **12** (1991), 449–462.

58. Two-scale difference equations I. Global regularity of solutions, SIAM J. Math Anal. **22** (1991), 1388–1410 (with I. Daubechies).

59. Sets uniquely determined by projections II. Discrete Case, Discrete Math. **91** (1991), 141–151 (with P. C. Fishburn, J. A. Reeds, L. A. Shepp).

60. Effects of misspecification of lag structure in certain two-variable distributed lag models, Computers & Math., with Applications **22**, No. 10, (1991), 3–23.

61. Bounds for lattice polytopes containing a fixed number of lattice points, Canadian J. Math. **43** (1991), 1022–1035 (with G. M. Ziegler).

62. Singularities of Minimal Surfaces and Networks and Related Extremal Problems in Minkowski Space, in: DIMACS Geometry Year, (R. Pollack, Ed.), DIMACS Series Volume **6**, Amer. Math. Soc. (1991), 95–109. (with Z. Furědi and F. Morgan).

63. Sets of matrices all infinite products of which converge, Lin. Alg. Appl. **161** (1992), 227–263 (with I. Daubechies). [Corrigendum/Addendum, Lin. Alg. Appl. **327** (2001), 69–83.]

64. The $3x+1$ Problem: Two Stochastic Models, Annals of Applied Probability **2** (1992), 229–261 (with A. Weiss).

65. A Lie bracket decomposition and its application to flows on symmetric matrices, Lin. Alg. Appl. **175** (1992), 239–257.

66. Two-scale difference equations II. Local regularity of solutions and fractals, SIAM J. Math. Anal. **23** (1992), 1031–1079 (with I. Daubechies).

67. Self-packing of Centrally Symmetric Convex Bodies in $\mathbb{R}^2$, Discrete and Computational Geometry **8** (1992), 171–189 (with P. G. Doyle and D. Randall).

68. Keller's Cube-tiling Conjecture is False in High Dimensions, Bull. Amer. Math. Soc. **27** (1992), 279–283 (with P. W. Shor).

69. Asymmetric Tent Maps I. Eventually Periodic Points, J. London Math. Soc. **47** (1993), 542–556 (with H. A. Porta and K. B. Stolarsky).

70. A polyomino tiling problem of Thurston and its configurational entropy, J. Comb. Th., Series A **63** (1993), 338–358 (with D. S. Romano).

71. The Quality of the Diophantine Approximations Found by the Jacobi-Perron Algorithm and Related Algorithms, Monatshefte für Math. **115** (1993), 299–328.

72. A collinear scaling interpretation of Karmarkar's linear programming algorithm, SIAM J. Optimization. **3** (1993), 630–636.

73. On the distribution of multiplicative translates of sets of residues (mod p), J. Number Theory **46** (1994), 108–122 (with J. Håstad, A. M. Odlyzko).

74. Asymmetric Tent Maps II. Purely Periodic Points, Illinois J. Math. **38** (1994), 574–588 (with H. A. Porta and K. B. Stolarsky).

75. The Zeta Function of the Beta Transformation, Ergodic Th. Dyn. Sys. **14** (1994), 237–266 (with L. Flatto and B. Poonen).

76. Geodesic Multidimensional Continued Fractions, Proc. London Math. Soc. **69** (1994), 464–488.

77. Cube Tilings of $\mathbb{R}^n$ and Nonlinear Codes, Discrete and Computational Geometry **11** (1994), 359–391 (with P. W. Shor).

78. On the thermodynamic formalism for multifractal functions, Rev. Math. Phys. **6** (1994), 1033–1070 (with I. Daubechies).

79. The Finiteness Conjecture for the Generalized Spectral Radius of a Set of Matrices, Lin. Alg. Appl. **214** (1995), 17–42 (with Y. Wang).

80. The Continuous Diophantine Approximation Mapping of Szekeres, J. Australian Math. Soc., Series A, **59** (1995), 148–172 (with A. D. Pollington).

81. Density Bounds for the $3x + 1$ Problem I. Tree-Search Method, Math. Comp. **64** (1995), 411–426 (with D. Applegate).

82. Density Bounds for the $3x + 1$ Problem II. Krasikov Inequalities, Math. Comp. **64** (1995), 427–438 (with D. Applegate).

83. Polytopes that fill $\mathbb{R}^n$ and Scissors Congruence, Discrete & Computational Geometry **13** (1995), 573–584 (with D. Moews). [Acknowledgment of Priority, Discrete & Computational Geometry **14** (1995), 359–360.]

84. On the Range of Fractional Parts $\{\xi(\frac{p}{q})^n\}$, Acta Arithmetica **70** (1995), 125–147 (with L. Flatto and A. D. Pollington).

85. A Walk Along the Branches of the Extended Farey Tree, IBM J. Res. Dev. **39** (1995), 283–294 (with C. Tresser).

86. The Distribution of $3x+1$ Trees, Experimental Math. **4** (1995), 101–117 (with D. Applegate).

87. Haar-type orthonormal wavelet bases in $\mathbb{R}^2$, J. Fourier Analysis **2** (1995), 1–14 (with Y. Wang).

88. Tiling the line with translates of one tile, Inventiones Math. **124** (1996), 341–365 (with Y. Wang).

89. Non-negative radix representations for the orthant $\mathbb{R}^n_+$, Trans. Amer. Math. Soc. **348** (1996), 99–117 (with Y. Wang).

90. Self-affine tiles in $\mathbb{R}^n$, Advances in Mathematics **121** (1996), 21–49 (with Y. Wang).

91. Integral self-affine tiles in $\mathbb{R}^n$ I. Standard and nonstandard digit sets, J. London Math. Soc. **54** (1996), 161–179 (with Y. Wang).

92. Haar bases for $L^2(\mathbb{R}^n)$ and algebraic number theory, J. Number Theory **57** (1996), 181–197 (with Y. Wang). [Corrigendum/Addendum, J. Number Theory **76** (1999), 330–336.]

93. The Lap Counting Function for Linear Mod One Transformations I. Explicit Formulas and Renormalizability, Ergod. Th. Dyn. Sys. **16** (1996), 451–492 (with L. Flatto).

94. Structure of tilings of the line by a function, Duke Math. J. **82** (1996), 653–678 (with M. Kolountzakis).

95. Meyer's concept of quasicrystal and quasiregular sets, Comm. Math. Phys. **179** (1996), 365–376.

96. The $3x + 1$ conjugacy map, Canad. J. Math. **48** (1996), 1154–1169 (with D. J. Bernstein).

97. The Lap Counting Function for Linear Mod One Transformations II. the Markov Chain for Generalized Lap Numbers, Ergod. Th. Dyn. Sys. **17** (1997), 123–146 (with L. Flatto).

98. The Lap Counting Function for Linear Mod One Transformations III. the Period of a Markov Chain, Ergod. Th. Dyn. Sys. **17** (1997), 369–403 (with L. Flatto).

99. The d-step conjecture and Gaussian elimination, Discrete & Computational Geometry **18** (1997), 53–82 (with N. Prabhu and J. A. Reeds).

100. Convexity and the average curvature of plane curves, Geometriae Dedicata **67** (1997), 1–30 (with T. J. Richardson).

101. Spectral sets and factorizations of finite abelian groups, J. Functional Analysis **145** (1997), 73–98 (with Y. Wang).

102. Counting d-step paths in extremal Dantzig figures, Discrete & Computational Geometry **19** (1997), 19–31 (with N. Prabhu).

103. Integral self-affine tiles in $\mathbb{R}^n$ II. Lattice tilings, J. Fourier Analysis Appl. **3** (1997), 83–102 (with Y. Wang).

104. Linear fractional transformations of continued fractions with bounded partial quotients, Sem. Theory des Nombres, Bordeaux **9** (1997), 267–279 (with J. O. Shallit). [Correction to: Linear fractional transformations of continued fractions with bounded partial quotients, ibid. **15** (2003), 741–743.]

105. Multiregular point systems, Disc. & Comput. Geom. **20** (1998), 477–498 (with N. I. Dolbilin and M. Senechal).

106. Interference-minimizing colorings of distance-regular graphs, SIAM J. Discrete Math. **11** (1998), 15–40 (with P. C. Fishburn, J. H. Kim and P. E. Wright).

107. Convergence behavior of the Nelder-Mead simplex algorithm in low dimensions, SIAM J. Optimization **9** (1998), No. 1, 112–147 (with J. A. Reeds, M. H. Wright and P. E. Wright).

108. Threading homotopies and DC operating points of nonlinear circuits, SIAM J. Optimization **9** (1998), No. 1, 159–178 (with R. Geoghegan and R. C. Melville).

109. Beurling generalized integers with the Delone property, Forum Math. **11** (1999), 295–312.

110. Geometric Models for Quasicrystals I. Delone Sets of Finite Type, Discrete & Computational Geometry **21** (1999), 161–191.

111. Geometric Models for Quasicrystals II. Local Rules Under Isometries, Discrete & Computational Geometry **21** (1999), 345–372.

112. Processor Shadowing: Maximizing the Probability of Successful Job Completion, Math. Operations Research **24** (1999), 362–382 (with J. L. Bruno, E. G. Coffman, Jr., T. J. Richardson and P. W. Shor).

113. The computational complexity of knot and link problems, J. A. C. M. **46** (1999), 185–211 (with J. Hass, N. Pippenger).

114. Number theory zeta functions and dynamical zeta functions, in: *Spectral Problems in Geometry and Arithmetic* (T. Branson, Ed.), Contemporary Math.,Vol. 237, AMS: Providence, R. I. 1999, pp. 45–86.

115. On a positivity property of the Riemann ξ-Function, Acta Arithmetica **89** (1999), No. 3, 217–234. [Correction to: "On a positivity property of the Riemann ξ-function", Acta Arith. **116** (2005), 193–194.]

116. Complements to Li's criterion for the Riemann hypothesis, J. Number Theory **77** (1999), 274–287 (with E. Bombieri).

117. Bounds for the number of DC operating points of transistor networks, IEEE Trans. Circuits & Systems **46** (1999), No. 10, 1216–1221 (with L. Trajković).

118. Orthonormal bases of exponentials for the n-cube, Duke Math. J. **103** (2000), 25–37 (with J. A. Reeds and Y. Wang).

119. Well-spaced labellings of points in rectangular grids, SIAM J. Discrete Math. **13** (2000), 521–534.

120. Orthogonality criteria for compactly supported refinable functions and refinable function vectors, J. Fourier Anal. Appl. **6** (2000), 153–170 (with Y. Wang).

121. The impact of aperiodic order on mathematics, Materials Science & Engineering A **294–296** (2000), 186–191. (Also appears as item D9.)

122. Mathematical quasicrystals and the problem of diffraction, in: *Directions in Mathematical Quasicrystals*, (M. Baake and R. V. Moody, Eds.), CRM Monograph Series, Vol. 13, Amer. Math. Soc.: Providence, RI, 2000, pp. 61–93.

123. The lap counting function and zeta function of the tent map, Nonlinearity **13** (2000), 1055–1071 (with L. Flatto).

124. Universal spectra and Tijdeman's conjecture on factorization of cyclic groups, J. Fourier Anal. Appl. **7** (2001), 63–70 (with S. Szabó).

125. The number of Reidemeister moves needed for unknotting, J. Amer. Math. Soc. **14** (2001), 399–428 (with J. Hass).

126. Robustness of single loop sigma-delta modulation with constant inputs, IEEE Trans. Information Theory **47** (2001), No. 5, 1735–1745 (with S. Günturk and V. Vaishampayan).

127. On the normality of arithmetical constants, Experimental Math. **10** (2001), 355–368.

128. Cutting sequences for geodesic flow on the modular surface and continued fractions, Monatshefte Math. **133**, No. 4 (2001), 295–339 (with D. Grabiner).

129. Bounds for local density of sphere packings and the Kepler conjecture, Discrete & Computational Geometry **27** (2002), 165–193.

130. Beyond the Descartes circle theorem, Amer. Math. Monthly, **109** (2002), 338–361 (with C. L. Mallows and A. R. Wilks)

131. Pinwheel scheduling: achievable densities, Algorithmica **34** (2002), No. 1, 14–38 (with P. C. Fishburn).

132. An elementary problem equivalent to the Riemann hypothesis, Amer. Math. Monthly, **109** (2002), 534–543.

133. Counting dyadic equipartitions of the unit square, Discrete Math. **257** (2002), No. 2-3, 481–499 (with J. H. Spencer and J. P. Vinson). [Kleitman and Combinatorics special issue]

134. Local Complexity of Delone Sets and Crystallinity, Bull. Canadian Math. Soc. **45** (2002), No. 4, 634–652 (with P. A. B. Pleasants). [R. V. Moody Festschrift issue]

135. The EKG sequence, Experimental Math. **11** (2002), No. 3, 437–446 (with E. Rains and N. J. A. Sloane).

136. Repetitive Delone sets and quasicrystals, Ergodic Theory Dyn. Sys. **23** (2003), 831–867 (with P. A. B. Pleasants).

137. Lower bounds for the total stopping time of $3x + 1$ iterates, Math. Comp. **72** (2003), 1035–1049 (with D. Applegate).

138. Apollonian Packings: Number Theory, J. Number Theory **100** (2003), 1–45. (with R. L. Graham, C. L. Mallows, A. R. Wilks and C. H. Yan)

139. On a two-variable zeta function for number fields, Annales Inst. Fourier **53** (2003), No. 1, 1–68 (with E. Rains).

140. Substitution Delone Sets, Discrete & Computational Geometry, **29** (2003), No. 2, 175–209 (with Y. Wang).

141. Bounds for the $3x + 1$ problem using difference inequalities, Acta Arithmetica **109**, (2003), No. 3, 237–258 (with I. Krasikov).

142. The minimal number of triangles needed to span a polygon embedded in $\mathbb{R}^d$, in: *Discrete and Computational Geometry: The Goodman-Pollack Festschrift* (B. Aronov, S. Basu, J. Pach, and M. Sharir, Eds), Springer-Verlag: New York 2003, pp. 509–526. (with J. Hass)

143. Approximate Squaring, Experimental Math. **13** (2004), No. 1, 113–128 (with N. J. A. Sloane),

144. Area inequalities for embedded disks spanning unknotted curves, J. Diff. Geom. **68** (2004), 1-29. (with J. Hass and W. P. Thurston).

145. Zero Spacing Distributions for Differenced L-functions, Acta Arithmetica **120**, No. 2 (2005), 159–184.

146. A note on absolute derivations and zeta functions, in: *Number Fields and Function Fields– Two Parallel Worlds*, (G. van der Geer, B. Moonen, R. Schoof, Eds.), Birkhäuser, 2005, pp. 279–285.

147. Dynamics of a family of piecewise-linear area-preserving plane maps I. Rational rotation number, J. Difference Eqns. Appl. **11** (2005), No. 12, 1089–1108 (with E. Rains).

148. Dynamics of a family of piecewise-linear area-preserving plane maps II. Invariant circles, J. Difference Eqns. Appl., **11** (2005), No. 13, 1137–1163 (with E. Rains).

149. Dynamics of a family of piecewise-linear area-preserving plane maps III. Cantor set spectra, J. Difference Eqns. Appl., **11** (2005), No. 14, 1205–1224 (with E. Rains).

150. Apollonian packings: geometry and group theory, I. The Apollonian group, Discrete & Computational Geometry **34** (2005), 547–585. (with R. L. Graham, C. L. Mallows, A. R. Wilks and C. H. Yan).

151. Apollonian packings: geometry and group theory, II. Super-Apollonian group and integral packings, Discrete & Computational Geometry **35** (2006), 1–36. (with R. L. Graham, C. L. Mallows, A. R. Wilks and C. H. Yan).

152. Apollonian packings: geometry and group theory, III. Higher dimensions, Discrete & Computational Geometry **35** (2006), 37–72. (with R. L. Graham, C. L. Mallows, A. R. Wilks and C. H. Yan).

153. Wild and Wooley numbers, American Math. Monthly **113** (2006), 97–108.

154. The $3x+1$ semigroup, J. Number Theory **117** (2006), 146–159. (with D. Applegate).

155. The Riemann hypothesis for certain integrals of Eisenstein series, J. Number Theory **118** (2006), 98–122. (with M. Suzuki).

156. Benford's law for the $3x + 1$ function, J. London Math. Soc. **74** (2006), 289–303. (with K. Soundararajan)

157. Li coefficients for automorphic L-functions, Ann. Inst. Fourier **57** (2007), 1689–1740.

158. Apollonian Packings: Number Theory II. Spherical and Hyperbolic Packings, The Ramanujan Journal, **14** (2007), no. 3, 437–469. (with N. Eriksson).

159. Ternary expansions of powers of 2, J. London Math. Society **79** (2009), 562–588.

160. The Schrödinger operator with Morse potential on the right half line, Communications in Number Theory and Physics **3** (2009), No. 2, 323–361.

161. The Kruskal Count, in: *The Mathematics of Preference, Choice and Order. Essays in Honor of Peter C. Fishburn.* (S. Brams, W. V. Gehrlein, F. S. Roberts, Eds.), Springer-Verlag: New York 2009, pp. 371-391. (with E. Rains and R. J. Vanderbei).

162. Cyclic systems of simultaneous congruences, International J. of Number Theory, **6** (2010), No. 2, 219–245. (Erratum **6** (2010), No. 4, 957).

163. Smooth solutions to the *abc* equation: the *xyz* conjecture, J. Théorie Nombres Bordeaux, **23** (2011), no. 1, 209-234. (with Kannan Soundararajan).

164. The integral of the Riemann ξ-function, Comment. Math. Univ. Sancti Pauli, **60** (2011), No. 1& 2, 143–169. [Issue in honor of A.. Fujii.].

165. Level sets of the Takagi function: Generic level sets, Indiana Univ. Math. J. **60** (2011), 1857–1884. (with Z. Maddock), [eprint: `arXiv:1011.3183`]

166. The Lerch zeta function I. Zeta integrals, Forum Math. **24** (2012), 1–48 (with W.-C. Winnie Li)

167. The Lerch zeta function II. Analytic continuation, Forum Math. **24** (2012), 49–84. (with W.-C. Winnie Li)

168. Counting smooth solutions to the equation $A + B = C$, Proc. London Math. Soc., **104** (2012), No. 4, 770–798. (with K. Soundararajan).

169. Level sets of the Takagi function: Local level sets, Mönatshefte für Math. **166** (2012), No. 2, 201–238. (with Z. Maddock).

170. Convergence of the restricted Nelder-Mead simplex algorithm in two dimensions, SIAM J. Optimization **22** (2012), No. 2, pp. 501–532. (with B. Poonen and M. H. Wright)

171. Product-free sets with high density, Acta Arithmetica, [Issue in honor of 75th birthday of A. Schinzel], **155** (2012), No. 2, 163–175. (with Pär Kurlberg and Carl Pomerance), [`eprint: arXiv:1107:5589`]

172. The maximal density of product-free sets in $\mathbb{Z}/n\mathbb{Z}$, IMRN **2012**, Vol. 2012, article ID rns014, 19 pages. (with Pär Kurlberg and Carl Pomerance), [eprint: `arXiv:1111:2364`]

173. The Takagi function and its Properties, in: *Functions in Number Theory and their Probabilistic Aspects,* (K. Matsumote, Editor in Chief, S. Akiyama, H. Nakada, H. Sugita, A. Tamagawa, Eds.), RIMS Kôkyûroku Bessatsu B34, Aug. 2012, pp. 153–189. [eprint: `arXiv:1112:4205`]

174. On sets of integers which are both sum-free and product-free, INTEGERS, accepted to appear. (with Pär Kurlberg and Carl Pomerance). [eprint: `arXiv:1201.1317`]

175. Euler's constant: Euler's work and modern developments, Bull. Amer. Math. Soc., accepted to appear, 2013.

C*. Preprints and papers in preparation

176. A Skolem-Mahler-Lech theorem for ideal inclusions, (with Jason Bell), preprint.

177. Ergodicity of the action of K^* with $\mathbb{A}_K$, (with S. Neshveyev) [eprint `arXiv:1211.3256`]

178. p-adic path set fractals and arithmetic, (with W. Abram), [eprint: `arXiv:1210.2478`]

179. Path sets and their symbolic dynamics, (with W. Abram) [eprint: `arXvi:1207:5004`]

180. The Lerch zeta function III. Polylogarithms and Special Values, preprint. (with W.-C. Winnie Li)

181. The Lerch zeta function IV. Hecke Operators, in preparation (with W.-C. Winnie Li)

182. Random Hill's Equation, Random Walks and Products of Random Matrices, to appear (with F. W. Adams and A. M. Bloch)

183. Succinct certificates for the solvability of binary quadratic Diophantine equations, SIAM J. Computing, submitted. [eprint: `arXiv:math.NT/0611209`]

184. The Relation Between Effective Frequency and S-Shaped Aggregate Advertising Response, preprint. (with M. Koschat).

185. The $3x + 1$ problem: An annotated bibliography (1963–1999), arXiv version, ordered by author's surname (differs from [D13]), [eprint: `arXiv:math/0309224`]

186. The $3x+1$ problem: An annotated bibliography II (2000-2009), arXiv version preprint. [eprint: `arXiv:math/0608208`]

187. George Boole's general method in the theory of probabilities and the moment map, in preparation

D. Conference Papers

C1. Succinct certificates for the solvability of binary quadratic Diophantine equations (Extended Abstract), Proc. 20th Annual IEEE Symposium on the Foundations of Computer Science, IEEE Computer Society (1979), 42–46.

C2. Some New Results in Simultaneous Diophantine Approximation, in: Proc. of the Queen's Number Theory Conference 1979 (P. Ribenboim, Ed.), Queen's Papers in Pure and Applied Math. No. 54 (1980), 453–474. (see [16], [17])

C3. On the Space Requirements of Navigational Relationship Representations, Proc. ACM-SIGMOD 1981 International Conf. on the Management of Data (Y. E. Lien, Ed.), 1–9. (with D. Swartwout). (see [19])

C4. The Computational Complexity of Simultaneous Diophantine Approximation Problems, Proc. 23rd Annual IEEE Symposium on Foundations of Computer Science, IEEE Computer Society (1982), 32–39. (see [30])

C5. Solving Low-Density Subset Sum Problems, Proc. 24th Annual IEEE Symposium on Foundations of Computer Science, IEEE Computer Press (1983), 1–10. (with A. M. Odlyzko). (see [31]).

C6. New Algorithms for Computing $\pi(x)$, Proc. of 1982 New York Number Theory Seminar (G. V. Chudnovsky, ed.), Springer Lecture Notes in Mathematics, No. 1052 (1984), 176–193. (with A. M. Odlyzko). (see [32], [36])

C7. Knapsack Public Key Cryptosystems and Diophantine Approximation, in: *Advances in Cryptology, Proc. of CRYPTO-83 Conference* (D. Chaum, Ed.), Plenum Press, New York (1984), 3–24.

C8. Performance Analysis of Shamir's Attack on the Basic Merkle-Hellman Knapsack Cryptosystem, in: ICALP 1984, Automata, Languages and Programming, Eleventh Colloquium, Antwerp, Belgium, July 1984, Springer Lecture Notes in Computer Science No. 172 (1984), 312–323.

C9. Evaluation of the Adleman attack on multiply iterated knapsack cryptosystems, in: *Advances in Cryptology; Proc. of CRYPTO-83 Conference* (D. Chaum, Ed.), Plenum Press, New York (1984), 25–28 (with E. F. Brickell and A. M. Odlyzko).

C10. Linear congruential generators do not produce random sequences, Proc. 25th IEEE Symp. on Foundations of Computer Science, (1984), 480–484, (with A. Frieze and R. Kannan). (see [41])

C11. Polynomial time algorithms for finding integer relations among real numbers, STACS '86, Lecture Notes in Computer Science, No. 210, Springer-Verlag, New York (1986), 105–118. (with J. Håstad, B. Helfrich, C. P. Schnorr). (see [44])

C12. One-way functions and circuit complexity, in: Structure in Complexity Theory, Lecture Notes in Computer Science, No. 223, Springer-Verlag, New York (1986), 51–65. (with R. Boppana). (see [39])

C13. On Lasker's Card Game, Proc. 3rd Intl. Conf. on Differential Games and Applications (T. Basar and P. Bernard, Ed.), Lecture Notes in Control and Info. Science No. 117, Springer-Verlag (1989), 1–8. (with J. Kahn, H. S. Witsenhausen). (see [38], [42], [46])

C14. On the thermodynamic formalism for multifractal functions. In: *The state of matter (Copenhagen 1992)*, (M. Aizenmann and H. Araki, Eds.) World Scientific: River Edge, NJ 1994, pp. 213–264. (with I. Daubechies). (see [78]).

C15. The Parameter Space of the d-Step Conjecture, Proc. Foundatons of Software Technology and Theoretical Computer Science (Hyderabad, 1996), Lecture Notes in Computer Science No. 1180, Springer-Verlag: Berlin 1996, pp. 52–63. (with N. Prabhu, J. A. Reeds). (see [99], [102])

C16. Bounds for the number of DC operating points of transistors, Proc. ISCAS 1997, Volume II, IEEE Circuits and Systems Society, pp. 857–860. (with L. Trajkovic). (see [117])

C17. The Computational Complexity of Knotting and Linking Problems. Preliminary Report, Proc. 38th Annual IEEE Symposium on Foundations of Computer Science, IEEE Computer Society (1997), 172–181 (with J. Hass and N. Pippenger). (See [113])

C18. Saddle Point and Hamiltonian Structure in Excitatory-Inhibitory Networks, in: *Advances in Neural Information Processing Systems 10*, (M. I. Jordan, M. J. Kearns and S. A. Solla, Eds.) MIT Press: Cambridge 1998, pp. 329–335. (with S. Seung, T. J. Richardson and J. J. Hopfield).

C19. Delone set models for quasicrystals, pp. 99–101 in: (J.-P. Gazeau et al., Eds) *Group 24: Physical and Mathematical Aspects of Symmetries* (J.-P. Gazeau, R. Kerner, J-P Antoine, S. Metens and J-Y. Thibon, Eds), Conference Series Number 173, Institute of Physics Publishing: Philadelphia 2003. (see [110], [111], [134], [136]).

C20. Hilbert spaces of entire functions and Dirichlet L-functions, in: *Frontiers in Number Theory, Physics and Geometry: On Random Matrices, Zeta Functions and Dynamical Systems*, (P. E. Cartier, B. Julia, P. Moussa and P. van Hove, Eds.) Springer-Verlag, 2006, pp. 367–379.

E. Expository and Survey Papers

D1. The van der Waerden Conjecture: Two Soviet Solutions, Notices of the A.M.S. **29** (1982), 130–132.

D2. Pseudorandom number generators in cryptography and number theory, in: *Cryptology and Computational Number Theory,* (C. Pomerance, Ed.), Proc. Symp. Applied Math. No. 42, (1990), 114–144.

D3. Number Theory and Dynamical Systems, in: *The Unreasonable Effectiveness of Number Theory (S. A. Burr, Ed.),* Proc. Symp. Applied Math., No. 46 (1992), 35–72.

D4. Probabilistic Algorithms for Speedup, in: *Probability and Algorithms,* National Research Council, Natl. Acad. Sci. Press 1992, 49–60 (with J. Feigenbaum). [Reprinted in: Statistical Science **8** (1993), 20–25].

D5. Pseudorandum Numbers, in: *Probability and Algorithms,* National Research Council, Natl. Acad. Sci. Press 1992, 61–82. [Reprinted in: Statistical Science **8** (1993), 31–39].

D6. Multivariate Descartes' Rule of Signs and Sturmfels's Challenge Problem, Math Intelligencer **19** No. 3 (1997). 9–15 (with T. J. Richardson).

D7. Who wins Misère Hex?, in: *The Mathemagician and Pied Puzzler*, (E. Berlekamp and T. Rogers, Eds.), A. K. Peters: Natick, MA 1999, pp. 237–240. (with Daniel Sleator).

D8. How Random are 3X + 1 Function Iterates?, in: *The Mathemagician and Pied Puzzler*, (E. Berlekamp and T. Rogers, Eds.), A. K. Peters: Natick, MA 1999, pp. 253–266.

D9. The impact of aperiodic order on mathematics, Materials Science & Engineering A, **294–296** (2000), 186–191.

D10. The Riemann hypothesis: Arithmetic and Geometry, in: *Surveys in Noncommutative Geometry*, Clay Institute Monographs No. 6, CMI/AMS: Providence, RI 2006, pp. 127–139.

D11. The $3x+1$ problem: An overview, pp. 3–29 in : *The Ultimate Challenge: The $3x+1$ Problem* (J. C. Lagarias, Ed.), Amer. Math. Society, Providence, RI 2010.

D12. Stochastic models for the $3x + 1$ and $5x + 1$ problems, pp. 131–188 in : *The Ultimate Challenge: The $3x+1$ Problem* (J. C. Lagarias, Ed.), Amer. Math. Society, Providence, RI 2010. (with A. V. Kontorovich)

D13. The $3x + 1$ problem: An annotated bibliography (1963–1999), pp. 267–344 in : *The Ultimate Challenge: The $3x+1$ Problem* (J. C. Lagarias, Ed.), Amer. Math. Society, Providence, RI 2010.

D14. The Kepler conjecture and its proof, Chapter 1 in: *The Kepler Conjecture. The Hales-Ferguson Proof, by Thomas C. Hales, Samuel P. Ferguson.* (J. C. Lagarias, Ed.), Springer-Verlag: New York 2011.

D15. Mysteries in Packing Regular Tetrahedra, Notices Amer. Math. Soc. **59** (2012), No. 11, 1540–1549.

F. Miscellaneous papers

E1. Oids and their ilk, in: *Dopo le Parole aangeboden aan Dr. A. K. Lenstra*, (H. W. Lenstra, Jr., J. K. Lenstra and P. van Emde Boas, Eds.), Amsterdam 1984, privately printed.

E2. Review of: Prof. J. Moriarty, M. A. *A Treatise on the Binomial Theorem,* Revised and Enlarged Edition, Privately Printed, Cork 1885, Math. Intellingencer, **23**, No. 3 (2001) 70–72.

G. Problems and Solutions

1. Solution to 6035, A subseries of $\sum \mu(n) \log n/n$, American Math. Monthly **84** (1977), 225.

2. Solution to 6049, Subgroups of the symmetric group, American Math. Monthly **84** (1977), 397.

3. Solution to 6053, Density of arguments of powers of Gaussian integers, American Math. Monthly **84** (1977), 493.

4. Problem E2877, A sequence with variable rules of succession, American Math. Monthly **88** (1981), 209 (with A. M. Odlyzko). [Solution: **89** (1982), 698–699.]

5. Problem 6341, Collinear algebraic units, American Math. Monthly **88** (1981), 294 (with H. W. Lenstra, Jr.). [Solution **90** (1983), 61.]

6. Problem 6352, American Math. Monthly **88** (1981), 540–541. [Unsolved]

7. Problem 6401, Triples of integers with identical ratios, American Math. Monthly **89** (1982), 603 (with D. S. Sturtevant). [Partial Solution: See #10 below.]

8. Problem 82–16, Malevolent traffic lights, SIAM Review **24** (1982), 477. [Solution: **25** (1993), 571–572.]

9. Problem 83–15, An inequality for walks in a graph, SIAM Review **25** (1983), 403 (with B. McKay, J. E. Mazo, L. A. Shepp). [Solution: See #11 below.]

10. Partial solution to 6401, Triples of integers with identical ratios, American Math. Monthly **91** (1984), 443–444 (with D. S. Sturtevant).

11. Solution to Problem 83–15, An inequality for walks on a graph, SIAM Review **26** (1984), 580–582 (with B. McKay, J. E. Mazo, L. A. Shepp).

12. Elementary Problem E 3129, Partitioning the unit square, American Math. Monthly, **93** (1986), 131 (with D. J. Kleitman, R. Kannan). [Solution: **94** (1987), 797–799.]

13. Problem 6661, A curious property of 1/7, American Math. Monthly **98** (1991), 559 (with T. Zaslavsky). [Solution: **100** (1993), 191–194.]

14. Problem 10305, Prime real algebraic integers, American Math. Monthly **100** (1993), 402. [Solution: **103** (1996) 274.]

15. Problem 10351, Zeros of a geometric series with random signs, American Math. Monthly **100** (1993), 952 (with L. Flatto). [Solution: **104** (1997), 173–174.]

16. Problem 10479, Modular Fekete polynomials, American Math. Monthly **102** (1995), 746 (with B. Poonen). [Solution: **105** (1998), 370-371.]

17. Problem 10500, Boundedness along subsequences, American Math. Monthly **103** (1996), 75 (with P. W. Shor). [Solution: **104** (1997), 372.]

18. Problem 10555, Rationals to and only to rationals, American Math. Monthly **103** (1996), 809. (with E. Rains). [Solution: **105** (1998), 277-278.]

19. Problem 10591, American Math. Monthly **104** (1997), 457 (with T. J. Richardson) [Unsolved].

20. Problem 10656, Large values of tangent, American Math. Monthly **105** (1998), 366 (with D. P. Bellamy and F. Lazebnik). [Solution: **106** (1999), 782–784.]

21. Problem 10822, When periodic points are real, American Math. Monthly **107** (2000), 653 (with J. P. Vinson). [Solution: **108** (2001), 876–877.]

22. Problem 10927, The EKG sequence, American Math. Monthly **109** (2002), 202. (with E. Rains and N. J. A. Sloane). [Solution: **111** (2004), 167–168.]

23. Problem 10941, Decay of a Markov chain, Amer. Math. Monthly **109** (2002), 393. [Solution: **110** (2003), 547–548.]

24. Problem 10949, A generous bound for divisor sums, American Math. Monthly **109** (2002), 569. [Solution: **111** (2004), 264–265.]

25. Problem 11334, Very composite numbers, American Math. Monthly, **116** (2008), 71 (with Jon Bober). [Solution: **116** (2009), 847–848.]

26. Problem 11355, A reciprocal Diophantine equation, American Math. Monthly, **116** (2008), 365. [Solution: **117** (2010), 279–280.]

27. Problem 11389, Distinct multiset sums, American Math. Monthly, **116** (2008), 758. (with Elizabeth R. Chen). [Solution: **117** (2010), 747–748.]

28. Problem 11390, A Euclidean path, American Math. Monthly **116** (2008), 855. [Solution: **117** (2010), 930–931.]

29. Problem 11594, American Math. Monthly **118** (2011), No. 8, 747. (with Harm Derksen).

30. Problem 11601, American Math. Monthly **118** (2011), No. 9, 846. (with Harm Derksen).

31. Problem 11607, American Math. Monthly **118** (2011), No. 10, 936. (with Andrey Mishchenko).

32. Problem 11628, American Math. Monthly **119** (2012), No. 3, 247. (with Michael E. Zieve).

H. Patents

1. No. 4,744,027, May 10, 1988. Method and apparatus for optimizing system operational parameters (with D. A. Bayer, N. Karmarkar).

2. No. 4,894,773, Jan. 16, 1990. Method and apparatus for optimizing system operational parameters through projective transformations.

3. No. 4,914,563, Apr. 3, 1990. Method and apparatus for optimizing system operational parameters through affine scaling (with N. Karmarkar).

4. No. 5,892,775, Apr. 6, 1999. Method and apparatus for providing error-tolerant storage of information (with N. S. Jayant).

5. No. 5,999,566, Dec. 7, 1999. Method and apparatus for providing error-tolerant communication of information (with N. S. Jayant)