

Gilbert Strang

Bibliography

1. An improvement on the Holzer table based on a suggestion of Rayleigh's, with S.H. Crandall, *J. Appl. Mechanics*, Paper 56-A27 (1957).
2. On the order of convergence of the Crank-Nicolson procedure, *J. Math. and Physics* **83** (1959) 141–144.
3. Difference methods for mixed boundary-value problems, *Duke Math. Journal* **27** (1960) 221–232.
4. On the Kantorovich inequality, *Proc. Amer. Math. Soc.*, **11** (1960) 468.
5. A note on the joint spectral radius, with G.-C. Rota, *Proc. Netherlands Academy* **22** (1960) 379–381.
6. Finite difference techniques for a boundary problem, with L. Ehrlich, J. Riley and B.A. Troesch, *J. Soc. Ind. Appl. Math.* (1961).
7. Eigenvalues of Jordan products, *Amer. Math. Monthly* **69** (1962) 37–40.
8. Trigonometric polynomials and difference methods of maximum accuracy, *J. Math. and Phys.* **41** (1962) 147–154.
9. Polynomial approximation of Bernstein type, *Trans. Amer. Math. Soc.* **105** (1962) 525–535.
10. Comparison theorems for supremum norms, with H. Schneider, *Numerische Math.* **4** (1962) 15–20.
11. Accurate partial difference methods I: Linear Cauchy problems, *Arch. Rat. Mech. Anal.* **12** (1963).
12. Accurate partial difference methods II: Non-linear problems, *Numerische Math.* **6** (1964) 37–46.
13. Wiener-Hopf difference equations, *J. Math. Mechanics* **13** (1964) 85–96.
14. Unbalanced polynomials and difference methods for mixed problems, *SIAM J. Numer. Anal.* **2** (1964) 46–51.
15. Necessary and insufficient conditions for well-posed Cauchy problems, *J. Diff. Eq.* **2** (1966) 107–114.
16. Matrix theorems for partial differential and difference equations, with J. Miller, *Math. Scand.* **18** (1966) 113–133.
17. Implicit difference methods for initial-boundary value problems, *J. Math. Anal. Appl.* **16** (1966) 188–198.
18. On strong hyperbolicity, *J. Math. Kyoto Univ.* **6** (1967) 397–417.
19. A variant of Caratheodory's problem, *Proc. Edinburgh Math. Soc.* **16** (1968) 43–48.
20. The nucleus of a set, *Canad. Math. Bull.* **11** (1968) 65–72.
21. On the construction and comparison of difference schemes, *SIAM J. Numer. Anal.* **5** (1968) 506–517.
22. Approximating semigroups and the consistency of difference schemes, *Proc. Amer. Math. Soc.* **20** (1969) 1–7.

23. Hyperbolic initial-boundary value problems in two unknowns, *J. Diff. Eq.* **6** (1969) 161–171.
24. On numerical ranges and holomorphic semigroups, *J. d'Analyse Math.* **22** (1969) 299–318.
25. On multiple characteristics and the Levi-Lax conditions for hyperbolicity, *Arch. Rat. Mech. Anal.* **33** (1969) 358–373.
26. Fourier analysis of the finite element method in Ritz-Galerkin theory, with G. Fix, *Studies in Appl. Math.* **48** (1969) 265–273.
27. Toeplitz operators in a quarter-plane, *Bull. Amer. Math. Soc.* **76** (1970) 1303–1307.
28. The correctness of the Cauchy problem, with H. Flaschka, *Advances in Math.* **6** (1971) 347–349.
29. The finite element method and approximation theory, *SYNSPADE Proceedings*, Academic Press (1971) 547–584.
30. The change in solution due to change in domain, with A. Berger, *AMS Symposium on Partial Differential Equations*, Berkeley (1971) 199–206.
31. Approximation in the finite element method, *Numerische Math.* **19** (1972) 81–98.
32. Approximate boundary conditions in the finite element method, with R. Scott and A. Berger, *Symposia Mathematica X*, Istituto Nazionale di Alta Matematica (1972) 295–313.
33. Variational crimes in the finite element method, “The Mathematical Foundations of the Finite Element Method”, ed. by A.K. Aziz, Academic Press (1973) 689–710.
34. A Fourier analysis of the finite element variational method, with G. Fix, *Constructive Aspects of Functional Analysis*, Edizioni Cremonese, Rome (1973) 795–840.
35. Piecewise polynomials and the finite element method, *AMS Bulletin* **79** (1973) 1128–1137.
36. Optimal conditioning of matrices, with C. McCarthy, *SIAM J. Numer. Anal.* **10** (1973) 370–388.
37. The dimension of piecewise polynomial spaces and one-sided approximation, *Proc. Conference on Numerical Analysis*, Dundee, Springer Lecture Notes **363** (1974) 144–152.
38. One-sided approximation and plate bending, *Lecture Notes in Computer Science* **11**, Springer-Verlag (1974) 140–155.
39. One-sided approximation and variational inequalities, with U. Mosco, *Bull. Amer. Math. Soc.* **80** (1974) 308–312.
40. The finite element method—linear and nonlinear applications, *Proc. Intern. Congress of Mathematicians*, Vancouver (1974).
41. Free boundaries and finite elements in one dimension, with W. Hager, *Math. Comp.* **29** (1975) 1020–1031.
42. A homework exercise in finite elements, *Inter. J. Num. Meth. in Engineering* **11** (1977) 411–418.
43. Some recent contributions to plasticity theory, *J. Franklin Institute* **302** (1977) 429–442.
44. Discrete plasticity and the complementarity problem, *Proceedings U.S.-Germany Symposium: Formulations and Computational Algorithms in Finite Element Analysis*, M.I.T. Press (1977) 839–854.

45. Uniqueness in the theory of variational inequalities, *Advances in Math.* **22** (1976) 356–363.
46. A minimax problem in plasticity theory, *Functional Analysis Methods in Numerical Analysis*, ed. M.Z. Nashed, *Springer Lecture Notes* **701** (1979) 319–333.
47. A family of model problems in plasticity, *Proc. Symp. Computing Methods in Applied Sciences*, ed. R. Glowinski and J.L. Lions, *Springer Lecture Notes* **704** (1979) 292–308.
48. The saddle point of a differential program, with H. Matthies and E. Christiansen, *Energy Methods in Finite Element Analysis*, ed. by R. Glowinski, E. Rodin, and O.C. Zienkiewicz, John Wiley (1979).
49. The solution of nonlinear finite element equations, with H. Matthies, *Inter. J. Num. Meth. in Eng.* **14** (1979) 1613–1626.
50. Mathematical and computational methods in plasticity, with H. Matthies and R. Temam, *Proc. IUTAM Symp. on Variational Methods in the Mechanics of Solids*, S. Nemat-Nasser, ed., Pergamon (1980) 20–28.
51. Spectral decomposition in advection-diffusion analysis by finite element methods, with R. Nickell and D. Gartling, *Proc. FENOMECH Symp.*, Stuttgart (1978); *Computer Methods in Appl. Mech. and Eng.* **17** (1979) 561–580.
52. Existence de solutions relaxées pour les équations de la plasticité, with R. Temam, *Comptes Rendus Acad. Sc. Paris* **287** (1978) 515–519.
53. Functions of bounded deformation, with R. Temam, *Arch. Rat. Mech. Anal.* **75** (1980) 7–21.
54. Numerical computations in nonlinear mechanics, with H. Matthies, Paper 79-PVP-103, *Amer. Soc. Mech. Eng.* (1979); *Proceedings of the 4th Symposium on Computing Methods in Applied Sciences and Engineering*, ed. R. Glowinski and J.L. Lions, 517–525, North-Holland (1980).
55. Duality and relaxation in the variational problems of plasticity, with R. Temam, *J. de Mécanique* **19** (1980) 1–35.
56. The quasi-Newton method in finite element calculations, Chapter 20 in *Computational Methods in Nonlinear Mechanics*, J.T. Oden, ed., North-Holland (1980).
57. The application of quasi-Newton methods in fluid mechanics, with M. Engelman and K.J. Bathe, *Int. J. Num. Meth. Eng.* **17** (1981) 707–718.
58. A problem in capillarity and plasticity, with R. Temam, *Nondifferentiable and Variational Techniques in Optimization*, D.C. Sorenson, R.J.B. Wets, eds., *Mathematical Programming Study* **17** (1982) 91–102.
59. Optimal design for torsional rigidity, with R. Kohn, *Proc. Int. Symp. on Mixed and Hybrid Finite Element Methods*, Atlanta (1981).
60. Optimal design of cylinders in shear, with R. Kohn, MAFELAP Conference, Brunel (1981).
61. The width of a chair, *American Math. Monthly* **89** (1982) 529–534.
62. Structural design optimization, homogenization, and relaxation of variational problems, with R. Kohn, *Proceedings of Conference on Disordered Media, Lecture Notes in Physics* **154**, Springer-Verlag (1982) New York.

63. Hencky-Prandtl nets and constrained Michell trusses, with R. Kohn, Conference on Optimum Structural Design, Tucson (1981), *Computer Methods in Applied Mechanics and Engineering* **36** (1983) 207–222.
64. The optimal accuracy of difference schemes, with A. Iserles, *Transactions Amer. Math. Soc.* **277** (1983) 770–803.
65. Duality in the classroom, *American Math. Monthly* **91** (1984) 250–254.
66. Maximal flow through a domain, *Mathematical Programming* **26** (1983) 123–143.
67. Barriers to stability, with A. Iserles, *SIAM J. Numerical Analysis* **20** (1983) 1251–1257.
68. L^1 and L^∞ approximation of vector fields in the plane, “Nonlinear Partial Differential Equations in Applied Science,” H. Fujita, P. Lax, and G. Strang, eds., *Lecture Notes in Num. Appl. Anal.* **5** (1982) 273–288.
69. Notes on softening and local instability, with M. Abdel-Naby, in “Computational Aspects of Penetration Mechanics,” *Springer Lecture Notes in Engineering* **3**, J. Chandra and J. Flaherty, eds. (1983).
70. A negative results for nonnegative matrices, *Journal of Xian Jiaotong University* **17** (1983) 69–72.
71. Numerical and biological shape optimization, with A. Philpott, in “Unification of Finite Element Methods,” *Math. Studies* **94**, H. Kardestuncer, ed., North-Holland (1984).
72. Explicit relaxation of a variational problem in optimal design, with R. Kohn, *Bull. Amer. Math. Soc.* **9** (1983) 211–214.
73. Optimal design and relaxation of variational problems, with R. Kohn, *Communications on Pure and Appl. Math.* **39** (1986) 113–137 (Part I), 139–182 (Part II), 353–377 (Part III).
74. The constrained least gradient problem, with R. Kohn, in *Non-Classical Continuum Mechanics*, R. Knops and A. Lacey, eds., Cambridge University Press (1987).
75. The optimal design of a two-way conductor, with R. Kohn, in *Nonsmooth Mechanics*, P.D. Panagiotopoulos *et al.*, eds., Birkhäuser (1987).
76. Fibered structures in optimal design, with R. Kohn, *Ordinary and Partial Differential Equations*, B. Sleeman and R. Jarvis, eds., *Pitman Research Notes* **157**, Longman (1987).
77. Optimal design in elasticity and plasticity, with R. Kohn, *Int. J. Numerical Meths. in Eng.* **22** (1986) 183–188.
78. A framework for equilibrium equations, *SIAM Review* **30** (1988) 283–297.
79. Karmarkar’s algorithm in a nutshell, *SIAM News* **18** (1985) 13.
80. Karmarkar’s algorithm and its place in applied mathematics, *Math. Intelligencer* **9** (1987) 4–10.
81. A proposal for Toeplitz matrix calculations, *Studies in Appl. Math.* **74** (1986) 171–176.
82. The Toeplitz-circulant eigenvalue problem $Ax = \lambda Cx$, with A. Edelman, pp. 109–117 in *Oakland Conf. on PDE’s and Applied Mathematics*, L. Bragg and J. Dettman, eds., Longman (1987).
83. Patterns in linear algebra, *American Math. Monthly* **96** (1989) 105–117.
84. Paradox lost: Natural boundary conditions in the Ritz- Galerkin method, with J. Storch, *Int. J. Numerical Methods in Engineering* **26** (1988) 2255–2266.

85. Dual extremum principles in finite elastoplastic deformation, with Y. Gao, *Acta Appl. Mathematicae* **17** (1989) 257–268.
86. Toeplitz equations by conjugate gradients with circulant preconditioner, with R. Chan, *SIAM J. Sci. Stat. Comp.* **10** (1989) 104–119.
87. Geometric nonlinearity: Potential energy, complementary energy, and the gap function, with Y. Gao, *Quarterly of Applied Mathematics* **47** (1989) 487–504.
88. Teaching modern engineering mathematics, *Applied Mechanics Review* **39** (1986) 1319–1321; SEFI Proceedings, L. Rade, ed., Chartwell-Bratt (1988).
89. Sums and differences vs. integrals and derivatives, *College Mathematics Journal* **21** (1990) 20–27.
90. Wavelets and dilation equations: A brief introduction, *SIAM Review* **31** (1989) 614–627.
91. Inverse problems and derivatives of determinants, *Archive Rational Mech. and Analysis* **114** (1991) 255–265.
92. A thousand points of light, with D. Hardin, Third Conference on Technology in Collegiate Mathematics (1990).
93. A chaotic search for i , *College Math. Journal* **22** (1991) 3–12.
94. The optimal coefficients in Daubechies wavelets, *Physica D* **60** (1992) 239–244.
95. Polar area is the average of strip areas, *Amer. Math. Monthly* **100** (1993) 250–254.
96. The fundamental theorem of linear algebra, *Amer. Math. Monthly* **100** (1993) 848–855.
97. Wavelet transforms versus Fourier transforms, *Bull. Amer. Math. Soc.* **28** (1993) 288–305.
98. Graphs, matrices, and subspaces, *College Math. Journal* **24** (1993) 20–28.
99. The asymptotic probability of a tie for first place, with B. Eisenberg and G. Stengle, *Annals of Applied Probability* **3** (1993) 731–745.
100. Continuity of the joint spectral radius: Applications to wavelets, with C. Heil, *Linear Algebra for Signal Processing*, A. Bojanczyk and G. Cybenko, eds., IMA **69** (1994) Springer-Verlag.
101. Convolution, reconstruction, and wavelets, *Advances in Computational Mathematics: New Delhi*, H.P. Dikshit and C.A. Micchelli, eds. (1994), World Scientific Publishing.
102. Short wavelets and matrix dilation equations, with V. Strela, *IEEE Trans. on Signal Processing* **43** (1995) 108–115.
103. Orthogonal multiwavelets with vanishing moments, with V. Strela, *Proc. SPIE Conference on Mathematics of Imaging, J. Optical Eng.* **33** (1994) 2104–2107.
104. Wavelets, *American Scientist* **82** (1994) 250–255.
105. Every unit matrix is a *LULU*, *Linear Algebra and Its Applications*, to appear.
106. Finite element multiwavelets, with V. Strela, *Proc. Maratea NATO Conference*, Kluwer (1995).
107. Approximation by translates of refinable functions, with C. Heil and V. Strela, *Numerische Mathematik* (1996).
108. The cascade algorithm for the dilation equation, *Proc. Argonne Conference on Wavelets* (1994).

109. Eigenvalues of $(\downarrow 2)H$ and convergence of the cascade algorithm, submitted to *IEEE Trans. Signal Processing* **44** (1996).
110. Multiwavelet filter banks for data compression, with P. Heller, V. Strela, et al., Proc. IEEE ISCAS, Seattle, WA (1995).
111. The zeros of the Daubechies polynomials, with J. Shen, *Proc. Amer. Math. Soc.* (1996).
112. The application of multiwavelet filter banks to signal and image processing, with V. Strela, P. Heller, et al., submitted to *IEEE Trans. on Image Proc.*
113. Creating and comparing wavelets, *Numerical Analysis: A. R. Mitchell Birthday Volume, G. A. Watson and D. F. Griffiths, eds., World Scientific* (1996).