

PUBLICATIONS (COMPLETE LIST)

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1 PUBLICATIONS: FOUR CATEGORIES

- 4 research monographs
- over 20 book chapters and survey articles
- over 170 refereed publications in journals
- over 80 refereed publications in conference proceedings

2 BOOKS

1. “How to Multiply Matrices Faster”, Lecture Notes in Computer Science, vol. 179 (XI + 212 pages), Springer, Berlin (1984).

2. “Polynomial and Matrix Computations”, Volume 1: “Fundamental Algorithms” (XVI + 415 pages) (by D. Bini and V. Y. Pan), in the series Progress in Theoretical Computer Science (R.V. Book editor), Birkhäuser, Boston (1994).

3. “Structured Matrices and Polynomials: Unified Superfast Algorithms” (XXV + 278 pages), Birkhäuser/Springer, Boston/New York (June 2001).

4. “Numerical Methods for Roots of Polynomials” (by J. M. McNamee and V. Y. Pan), Part 2 (XXII + 718 pages), Elsevier (2013).

3 CHAPTERS IN BOOKS AND SURVEY ARTICLES

The list in this section includes prefaces. Items 1-6, 8, 9 and 17 included new research results.

1. ”On Methods of Computing the Values of Polynomials”, Uspekhi Matematicheskikh Nauk, 21, 1 (127), 103–134 (1966). (Transl. Russian Mathematical Surveys, 21, 1 (127), 105–137 (1966).)

2. "How Can We Speed Up Matrix Multiplication?", *SIAM Review*, 26, 3, 393–415 (1984).
3. "Linear Systems of Algebraic Equations", in *Encyclopedia of Physical Sciences and Technology*, 7, 304–329 (1987), (first edition, Marvin Yelles, editor); 8, 779–804 (1992) (second edition), and 8, 617–642 (2001) (third edition, Robert A. Meyers, editor), Academic Press, San Diego, California.
4. "Complexity of Algorithms for Linear Systems of Equations", in *Computer Algorithms for Solving Linear Algebraic Equations (The State of the Art)*, (E. Spedicato, editor), NATO ASI Series, Series F: Computer and Systems Sciences, 77, 27–56, Springer, Berlin (1991) and Academic Press, Dordrecht, the Netherlands (1992).
5. "Complexity of Computations with Matrices and Polynomials," *SIAM Review*, 34, 2, 225–262 (1992).
6. "Parallel Solution of Sparse Linear and Path Systems", in *Synthesis of Parallel Algorithms* (J. H. Reif, editor), Chapter 14, pages 621–678. Morgan Kaufmann publishers, San Mateo, CA (1993).
7. "Algebraic Algorithms" (by A. Diaz, E. Kaltofen and V. Y. Pan), Chapter 10 in the *Computer Science and Engineering Handbook* (Allen B. Tucker, Jr., editor), pages 226–249, CRC Press Inc., Boca Raton, Florida (1997).
8. "Solving a Polynomial Equation: Some History and Recent Progress", *SIAM Review*, 39, 2, 187–220 (1997).
9. "Newton's Iteration for Structured Matrices and Linear Systems of Equations" (by V. Y. Pan, S. Branham, R. Rosholt, and A. Zheng), *SIAM volume on Fast Reliable Algorithms for Matrices with Structure* (T. Kailath and A. H. Sayed, editors), chapter 7, pages 189–210, SIAM Publications, Philadelphia (1999).
10. "Solving Polynomials with Computers", *American Scientist*, 86, 62–69 (January-February 1998).
11. "Computational Complexity of Solving Large Sparse and Large Special Linear Systems of Equations", pages 1–24, in "Algorithms for Large Scale Linear Algebraic Systems: Applications in Science and Engineering" (G. Winter Althaus and E. Spedicato, editors), NATO Advanced Science Institute Series, Kluwer Academic Publishers, Dordrecht, The Netherlands (1998).
12. "Some Recent Algebraic/Numerical Algorithms", *Electronic Proceedings of IMACS/ACA'98* (1998): <http://www-troja.fjfi.cvut.cz/aca98/sessions/approximate>
13. "Algebraic Algorithms" (by A. Diaz, E. Kaltofen and V. Y. Pan), Chapter 16 in *Handbook "Algorithms and Theory of Computations"*, pages from 16–1 to 16–27 (M. Atallah, editor), CRC Press Inc., Boca Raton, Florida (1999).
14. "Fast Fourier Transform and Its Applications" (by I. Z. Emiris and V. Y. Pan), Chapter 17 in *Handbook "Algorithms and Theory of Computations"*, pages from 17–1 to 17–30 (M. Atallah, editor), CRC Press Inc., Boca Raton, Florida (1999).
15. "Preface to the Special Issue on Algebraic and Numerical Algorithms" (by I. Z. Emiris, B. Mourrain, and V. Y. Pan), *Theoretical Computer Science*, 315, 2–3, 307–308 (2004).
16. "Algebraic Algorithms" (by A. Diaz, I.E. Emiris, E. Kaltofen and V. Y. Pan), Chapter 8 in the *Computer Science and Engineering Handbook* (Allen B. Tucker, editor), pages from 8–1 to 8–24, Chapman and Hall/CRC Press, 2004.
17. "Root-finding with Eigen-solving" (by V. Y. Pan, D. Ivolgin, B. Murphy, R. E. Rosholt, Y. Tang, X. Wang, and X. Yan), pages 185–210 in *Symbolic-Numeric Computation* (Dongming Wang and Lihong Zhi, editors), Birkhäuser, Basel/Boston (2007).

18. "Preface to the Special Issue on Symbolic–Numerical Algorithms" (by D. A. Bini, V. Y. Pan, and J. Verschelde), *Theoretical Computer Science*, 409, 2, 155–157 (2008).
19. "Algebraic and Numerical Algorithms" (by I. Z. Emiris, V. Y. Pan, and E. Tsigaridas), in *Algorithms and Theory of Computations Handbook*", Second Edition, Volume 1 (1016 pages): General Concepts and Techniques, pages 1–34 in Chapter 17 (Mikhail J. Atallah and Marina Blanton, editors), CRC Press Inc., Boca Raton, Florida (2009).
20. "Fast Fourier Transform and Its Applications" (by I. Z. Emiris and V. Y. Pan), in *Algorithms and Theory of Computations Handbook*", Second Edition, Volume 1 (1016 pages): General Concepts and Techniques, pages 1–31 in Chapter 18 (Mikhail J. Atallah and Marina Blanton, editors), CRC Press Inc., Boca Raton, Florida (2009).
21. "Preface to the Special Issue on Symbolic and Numerical Algorithms" (by I. S. Kotsireas, B. Mourrain, and V. Y. Pan), *Theoretical Computer Science*, 412, 16, 1443–1444 (2011).
22. "Preface to the Special Issue on Symbolic and Numerical Algorithms" (by I. S. Kotsireas, B. Mourrain, V. Y. Pan, and L. Zhi), *Theoretical Computer Science*, 479, 1–3 (2013).
23. "Algebraic Algorithms" (by I. Z. Emiris, V. Y. Pan, and E. Tsigaridas), Chapter 10 (pages from 10–1 to 10-40) of *Computing Handbook (Third edition)*, Volume I: Computer Science and Software Engineering (Allen B. Tucker, Teo Gonzales, and Jorge L. Diaz-Herrera, editors), Taylor and Francis Group, 2014.
24. "Fast Matrix Multiplication and Its Algebraic Neighborhood", *SB MATH (Mathematical Sbornik)*, 208, 11 (2017) DOI:10.1070/SM8833 (available in Russian and in English).

4 RESEARCH PAPERS (in journals and refereed proceedings of conferences).

1. "On One Question by N.N. Luzin", *Nauchnye Doklady Vysshey Schkoly, Fiziko-Matematicheskie Nauki (in Russian)*, 4, 59–62 (1958).
2. "Some Schemes for the Evaluation of Polynomials with Real Coefficients", *Doklady Akademii Nauk SSSR (in Russian)*, 127, 2, 266–269 (1959).
3. "On Approximation of Analytic Functions by Rational Ones", *Uspekhi Matematicheskikh Nauk (in Russian)*, 16, 5 (101), 195–197 (1961).
4. "Some Schemes for the Evaluation of Polynomials with Real Coefficients" *Problemy Kibernetiki (in Russian)*, (edited by A.A. Lyapunov), 5, 17–29 (1961). (Transl. *Problems of Cybernetics, USSR*, 5, 14–32, Pergamon Press (1961).)
5. "On Some Methods of Computing Polynomial Values", *Problemy Kibernetiki (in Russian)*, (edited by A.A. Lyapunov), 7, 21–30 (1962). (Transl. *Problems of Cybernetics, USSR*, 7, 20–30, U.S. Dept. of Commerce (1962).)
6. "Schemes with Preconditioning for the Evaluation of Polynomials and a Program for Automatic Preconditioning", *Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki (in Russian)*, 2, 1, 133–140 (1962). (Transl. from *USSR Computational Mathematics and Mathematical Physics*, 1, 137–146 (1963).)
7. "Methods for Computing Polynomials" (in Russian), Ph.D. thesis, Dept. of Mechanics and Mathematics, Moscow State University (1964).
8. "The Evaluation of Polynomials of the Fifth and Seventh Degrees with Real Coefficients", *Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki (in Russian)*, 5, 1,

116–118 (1965). (Transl. USSR Computational Mathematics and Mathematical Physics, 5, 1, 159–161 (1965).)

9. "On Simultaneous Evaluation of Several Polynomials of Low Degree (Two to Five)", *Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki* (in Russian), 6, 2, 352–357 (1966). (Transl. USSR Computational Mathematics and Mathematical Physics, 6, 2, 222–227 (1966).)

10. "On Methods of Computing the Values of Polynomials", *Uspekhi Matematicheskikh Nauk* (in Russian), 21, 1 (127), 103–134 (1966). (Transl. Russian Mathematical Surveys, 21, 1 (127), 105–137 (1966).)

11. "Calculus of Rational Costs Based on Modern Economic Information" (by V. Belkin, A. Kronrod, Y. Nazarov and V. Y. Pan), *Ekonomika i Matematicheskie Metody* (in Russian), *Akademiya Nauk SSSR*, 1, 5, 699–717 (1965).

12. "A Linear Model and Algorithm for Optimizing Foreign Trade", *Tezisy Dokladov i Vystupleniy na Simpoziume po Modelirovaniyu Narodnogo Khozyaistva*, Institut Ekonomiki AN SSSR (Proceedings of the Symposium on Models of Public Economy, Institute of Economics, Academy of Sciences of USSR), (in Russian), Moscow, 29–37 (1970).

13. "On Solving a Distribution Problem with Upper Bounds on the Variables and a Simplified Criterion for Optimizing Foreign Trade", *Trudy 4-oy Zimney Schkoly po Matematicheskomu Programirovaniyu i Smezhnym Voprosam* (in Russian), (Transactions of the 4-th Winter School on Mathematical Programming and Adjacent Problems), (edited by S. I. Zuhovitskiy), Iss. 5, 26–49, Drogobych (1972).

14. "On Schemes for the Evaluation of Products and Inverses of Matrices", *Uspekhi Matematicheskikh Nauk* (in Russian), 27, 5 (167), 249–250 (1972).

15. "Models for Planning Costs with Optimization of Foreign Trade of Several Countries under the Economic Integration", *Primenenie Ekonomiko–Matematicheskikh Modeley i EVM pri Planirovanii i Prognozirovanii Tsen* (in Russian), 5 (1973).

16. "A Model for the Optimization of Foreign Economic Relations Under the Economic Integration of the Socialist Countries", *Ekonomika i Matematicheskie Metody* (in Russian), *Akademiya Nauk SSSR*, 10, 2, 255–266 (1974). (Transl. USSR Trade and Services, 755, 1–16 (1974).)

17. "A Model for the Dynamics of Costs and Expenditures", *Trudy Mezhdunarodnoy Konferentsii "Modelirovanie Ekonomicheskikh Protsesov"* (Transactions of the International Conference, "Models of Economic Processes"), (in Russian), Erevan, 166–174 (1974).

18. "A Modification of a Balanced Model of Income–Commodities into an Equilibrium Model" (by V. Belkin, V. Ivanter, N. Konstantinov and V. Pan), *Ekonomika i Matematicheskie Metody*, *Akademiya Nauk SSSR* (in Russian), 11, 6, 1037–1049 (1975).

19. "Computational Complexity of Computing Polynomials over the Fields of Real and Complex Numbers", *Proceedings of the Tenth Annual ACM Symposium on Theory of Computing (STOC'78)*, 162–172, ACM Press, New York (1978).

20. "Strassen's Algorithm Is Not Optimal. Trilinear Technique of Aggregating, Uniting and Canceling for Constructing Fast Algorithms for Matrix Multiplication", *Proceedings of the 19th Annual IEEE Symposium on Foundations of Computer Science (FOCS'78)*, 166–176, IEEE Computer Society Press, Long Beach, California (1978).

21. "Fields Extension and Trilinear Aggregating, Uniting and Canceling for the Acceleration of Matrix Multiplication", *Proceedings of the 20th Annual IEEE Symposium on Foundations of Computer Science (FOCS'79)*, 28–38, IEEE Computer Society Press, Long Beach, California (1979).

22. "Methods of Aggregations" (by W. L. Miranker and V. Y. Pan), *Linear Algebra and Its Applications*, 29, 231–257 (1980).
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24. "Convolution of Vectors over the Real Field of Constants", *Journal of Algorithms*, 1, 297–300 (1980).
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26. "The Bit Complexity of Arithmetic Algorithms", *Journal of Algorithms*, 2, 144–163 (1981).
27. "A Unified Approach to the Analysis of Bilinear Algorithms", *Journal of Algorithms*, 2, 301–310 (1981).
28. "The Bit Operation Complexity of Matrix Multiplication and All Pair Shortest Path Problem", *Computers and Mathematics (with Applications)*, 7, 5, 431–438 (1981).
29. "The Lower Bounds on the Additive Complexity of Bilinear Problems in Terms of Some Algebraic Quantities", *Information Processing Letters*, 13, 2, 71–72 (1981).
30. "Trilinear Aggregating with Implicit Canceling for a New Acceleration of Matrix Multiplication", *Computers and Mathematics (with Applications)*, 8, 1, 23–34 (1982).
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32. "Fast Matrix Multiplication without APA-Algorithms", *Computers and Mathematics (with Applications)*, 8, 5, 343–366 (1982).
33. "Trilinear Aggregating is the Basis for the Asymptotically Fastest Known Algorithms for Matrix Multiplication", *Conference Record, Second Conference on Foundations of Software Technology and Theoretical Computer Science (FST and TCS'82)*, 321–337, Indian Institute of Technology, Bangalore, India (December 1982).
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37. "Trilinear Aggregating and the Recent Progress in the Asymptotic Acceleration of Matrix Operations", *Theoretical Computer Science*, 33, 117–138 (1984).
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40. "The Bit Complexity of Matrix Multiplication and of the Related Computations in Linear Algebra. The Segmented λ -algorithms", *Computers and Mathematics (with Applications)*, 11, 9, 919–928 (1985).
41. "On Application of Some Recent Techniques of the Design of Algebraic Algorithms to the Sequential and Parallel Evaluation of the Roots of a Polynomial and to Some Other Numerical Problems", *Computers and Mathematics (with Applications)*, 11, 9, 911–917 (1985).

42. "Fast Parallel Polynomial Division via Reduction to Polynomial Inversion Modulo a Power" (by D. Bini and V. Y. Pan), *Information Processing Letters*, 21, 79–81 (1985).
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45. "Improved Processor Bounds for Algebraic and Combinatorial Problems in RNC" (by Z. Galil and V. Y. Pan), *Proc. 26th Annual IEEE Symposium on Foundations of Computer Science (FOCS'85)*, 490–495, IEEE Computer Society Press, Los Angeles, California (1985).
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47. "Fast and Efficient Parallel Algorithms for the Exact Inversion of Integer Matrices", *Proc. Fifth Conf. on Foundations of Software Technology and Theoretical Computer Science (FST and TCS'85)*, (edited by K. V. Nori), *Lecture Notes in Computer Science*, 206, 504–521, Springer, Berlin (1985).
48. "Algorithms for Polynomial Division" (by D. Bini and V. Y. Pan), *Proc. European Conference on Computer Algebra, Linz, Austria, Lecture Notes in Computer Science*, 204, 1–3, Springer (1985).
49. "The Trade-off Between the Additive Complexity and Asynchronicity of Linear and Bilinear Algorithms", *Information Processing Letters*, 22, 11–14 (1986).
50. "Fast and Efficient Parallel Linear Programming and Least Squares Computations" (by V. Y. Pan and J. Reif), *VLSI Algorithms and Architectures, Lecture Notes in Computer Science*, 227, 283–295, Springer, Berlin (1986).
51. "A Logarithmic Boolean Time Algorithm for Parallel Polynomial Division" (by D. Bini and V. Y. Pan), *VLSI Algorithms and Architectures, Lecture Notes in Computer Science*, 227, 246–251, Springer, Berlin (1986).
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53. "Fast Parallel Algorithms for Polynomial Division over Arbitrary Field of Constants" (by D. Bini and V. Y. Pan), *Computers and Mathematics (with Applications)*, 12A, 11, 1105–1118 (1986).
54. "Extension of the Parallel Nested Dissection Algorithm to the Path Algebra Problems" (by V. Y. Pan and J. Reif), *Proc. Sixth Conference on Foundations of Software Technology and Theoretical Computer Science (FST and TCS'86)*, (New Delhi, India), *Lecture Notes in Computer Science*, 241, 470–487, Springer, Berlin (1986).
55. "Fast and Efficient Linear Programming and Linear Least-Squares Computations" (by V. Y. Pan and J. Reif), *Computers and Mathematics (with Applications)*, 12A, 12, 1217–1227 (1986).
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57. "Efficient Parallel Linear Programming" (by V. Y. Pan and J. Reif), *Operations Research Letters*, 5, 3, 127–135 (1986).
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61. "Sequential and Parallel Complexity of Approximate Evaluation of Polynomial Zeros", *Computers and Mathematics (with Applications)*, 14, 8, 591–622 (1987).
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63. "Improved Processor Bounds for Combinatorial Problems in RNC" (by Z. Galil and V. Y. Pan), *Combinatorica*, 8, 2, 189–200 (1988).
64. "Efficient Algorithms for the Evaluation of the Eigenvalues of (Block) Banded Toeplitz Matrices" (by D. Bini and V. Y. Pan), *Mathematics of Computation*, 50, 182, 431–448 (1988).
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66. "Fast and Efficient Solution of Path Algebra Problems" (by V. Y. Pan and J. Reif), *Journal of Computer and Systems Sciences*, 38, 3, 494–510 (1989).
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69. "Fast and Efficient Parallel Solution of Dense Linear Systems" (by V. Y. Pan and J. Reif), *Computers and Mathematics (with Applications)*, 17, 11, 1481–1491 (1989).
70. "Fast Evaluation and Interpolation at the Chebyshev Sets of Points", *Applied Mathematics Letters*, 2, 3, 255–258 (1989).
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73. "On the Bit-Complexity of Discrete Solution of PDEs: Compact Multigrid" (by V. Y. Pan and J. Reif), *Proc. 17th International Colloquium on Automata, Languages and Programming (ICALP'90)*, Springer's Lecture Notes in Computer Science, 443, 612–625 (1990).
74. "Parallel Least-Squares Solution of General and Toeplitz-like Linear Systems", *Proc. 2nd Annual ACM Symposium on Parallel Algorithms and Architecture (SPAA'90)*, 244–253, ACM Press, New York (1990).
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81. "Improved Parallel Computations with Matrices and Polynomials" (by D. Bini, L. Gemignani and V. Y. Pan), *Proc. 18th International Colloquium on Automata, Languages and Programming (ICALP'91)*, *Lecture Notes in Computer Science*, 510, 520–531, Springer, Berlin (1991).
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83. "An Improved Newton Iteration for the Generalized Inverse of a Matrix, with Applications" (by V. Y. Pan and R. Schreiber), *SIAM J. on Scientific and Statistical Computing*, 12, 5, 1109–1131 (1991).
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