# Curriculum Vitae
# Daniel J. Rosenkrantz

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## Personal

Born Brooklyn, New York, 1943.
U.S. citizenship. Married, four children.

## Education

B.S. Electrical Engineering, Columbia University, 1963
M.S. Electrical Engineering, Columbia University, 1964
Ph.D. Electrical Engineering, Columbia University, 1967

## Professional Experience

- Sept. 1977 – June 2005:
  Department of Computer Science, University at Albany – SUNY
  Professor Emeritus, July 2005 – present.
  Professor, Sept. 1977–June 2005.
  Department Chair: Sept. 1993 – Aug. 1999.
  Visiting Assistant Professor, Part Time: Fall 1975 and Fall 1976.
  Lecturer, Part Time: Spring 1974 and Spring 1975.

- Aug. 2010 – :
  Virginia Bioinformatics Institute, Virginia Tech
  Blacksburg, VA
  Visiting Research Scientist (part–time temporary faculty appointment).

- June 1983 – June 1985: (while on leave from University at Albany – SUNY)
  Phoenix Data Systems
  Albany, New York
  Principal Computer Scientist. Designed data structures, databases, algorithms, and languages germane to the development of VLSI computer–aided design products.

- July 1967 – Aug. 1977:
  General Electric Research and Development Center
  Schenectady, New York

Information Scientist. Research in compilers, formal languages, algorithms, database concurrency control, and software engineering.

- November 1966 – June 1967:
  Bell Telephone Laboratories
  Murray Hill, New Jersey

- Summers of 1964 and 1965:
  Devenco, Inc.
  New York, New York

- Summer of 1963:
  U.S. Naval Propellant Plant
  Indian Head, Maryland

## Professional Activities

- *J. ACM*
  - Editor–in–Chief, Aug. 1986 – Jan. 1991.
  - Area Editor for Formal Languages and Models of Computation, Aug. 1981 – July 1986.

- Member of National Science Foundation evaluation panels:
  - Parallel Computing Theory, 1989.
  - Presidential Young Investigator Program (in Computer Science), 1983.

- Member of NASA CESDIS Evaluation Panel on Applied Information Systems Research, 1990.

- Secretary of ACM SIGACT (Special Interest Group on Automata and Computability Theory) 1977–1979.

- Member of program committee for A Forum on Research and Technology Advances in Digital Libraries (ADL'95), McLean, VA, May 1995.

- Session chair and speaker (session entitled "Data Driven Decision Support: Data Warehousing and Data Mining"), Twenty–Eighth Annual New York State Government Data Processing Conference, Albany, NY, June 1998.

- Session chair and speaker (session entitled "Design and Quality Issues in Distributed Databases"), Twenty–Fifth Annual New York State Government Data Processing Conference, Albany, NY, June 1995.

- Session chair and speaker (session entitled "Modeling, Optimization and Algorithms"), Twenty–Fourth Annual New York State Government Data Processing Conference, Albany, NY, June 1994.

- Member of program committee for Third International Symposium on Artificial Intelligence and Mathematics, Ft. Lauderdale, FL, Jan. 1994.
- Member of program committee for Third International Workshop on Responsive Computing Systems, Loon Mountain, NH, Sept. 1993.
- Member of program committee for Third International Conference on Data and Knowledge Systems for Manufacturing and Engineering, Lyon, France, March 1992.
- Member of program committee for Second International Symposium on Artificial Intelligence and Mathematics, Ft. Lauderdale, FL, Jan. 1992.
- Member of Executive Committee for PODS (ACM SIGACT–SIGMOD–SIGART Symposium on Principles of Database Systems), 1990–1995.
- General Chairman for Tenth ACM SIGACT–SIGMOD–SIGART Symposium on Principles of Database Systems, Boulder, CO, May 1991.
- General Chairman for Ninth ACM SIGACT–SIGMOD–SIGART Symposium on Principles of Database Systems, Nashville, TN, April 1990.
- Member of program committee for Eighth ACM SIGACT–SIGMOD–SIGART Symposium on Principles of Database Systems, Philadelphia, PA, March 1989.
- Session Chairman for Twelfth New York Graph Theory Day, New York Academy of Sciences (sponsor), Albany, NY, Oct. 1986.
- General Chairman for Third ACM SIGACT–SIGMOD Symposium on Principles of Database Systems, Waterloo, Ontario, Canada, April 1984.
- Member of program committee for Second ACM SIGACT–SIGMOD Symposium on Principles of Database Systems, Atlanta, GA, March 1983.
- Member of program committee for ACM SIGMOD International Conference on Management of Data, Orlando, FL, June 1982.
- Member of program committee for ACM SIGACT–SIGMOD Symposium on Principles of Database Systems, Los Angles, CA, March 1982.
- Member of program committee for IEEE Twenty–Second Annual Symposium on Foundations of Computer Science, Nashville, TN, October 1981.
- Member of program committee for IEEE Symposium on Reliability in Distributed Software and Database Systems, Pittsburgh, PA, July 1981.
- Member of program committee for IEEE Nineteenth Annual Symposium on Foundations of Computer Science, Ann Arbor, MI, October 1978.
- Chairman of program committee for IEEE Sixteenth Annual Symposium on Foundations of Computer Science, Berkeley, CA, October 1975.

- Member of program committee for IEEE Fifteenth Annual Symposium on Switching and Automata Theory, New Orleans, LA, October 1974.
- Member of program committee for ACM Symposium on Principles of Programming Languages, Boston, MA, October 1973.
- Referee for: IEEE Trans. Computers, IEEE Trans. Software Eng., IEEE Trans. Knowledge and Data Eng., IEEE Trans. Parallel and Distributed Systems, SIAM J. Computing, J. ACM, ACM Trans. on Database Systems, Comm. ACM, J. Parallel and Distributed Computing, Theoretical Computer Science, J. Computer and System Sciences, Information Processing Letters, Information and Control, Software Practice and Experience, Intl. Trans. in Operational Research, European J. of Operational Research, Acta Informatica, Mathematical Systems Theory, Information Science RAIRO Informatique Theorique, SIAM J. of Applied Mathematics, Automation, Kluwer Publishers, Intl. Conf. on Distributed Data Bases, Intl. Conf. on Distributed Computing Systems, Symposium on Fault Tolerant Computing, Intl. Conf. on Software Engineering, IFIP Congress 1974, Spring Joint Computer Conference, Symposium on Computer and Information Science.
- Served as reviewer for: Mathematical Reviews, Computing Reviews, National Science Foundation, SUNY Research Foundation University Awards, Army Basic Research Committee, Addison–Wesley, Prentice–Hall, McGraw–Hill, Morgan Kaufmann, W. H. Freeman, Spartan Books, graduate program in computer science at SUNY at Stony Brook (evaluator in 1971).
- Fellow of Assoc. Computing Machinery, member of Special Interest Groups on Management of Data, and on Automata and Computability Theory.

## Grants

- Defense Threat Reduction Agency (DTRA) Grant HDTRA1-11-1-0016, Rigorous Approaches for Validation and Verification of Networked Systems, (with H. B. Hunt III, S. S. Ravi and R. E. Stearns), June 2011 to May 2014. (Subcontract from Virginia Bioinformatics Institute, Virginia Tech.)
- IBM Research, Financially-Oriented Stream Pattern Detection Language, (with J. Gangolly and J. Hwang), July 2010 to June 2011.
- IBM Research, Patterns of Interest in Financial Data Streams: Specification and Identification, (with J. Gangolly, J. Hwang, S. Lyu and S. S. Ravi), July 2009 to June 2010.
- NSF Grant CCR 01–05536, On the Analysis, Optimization, and Efficient Scalarization of Monolithic–Level Array Programs, (with L. R. Mullin and H. B. Hunt III), July 2001 to June 2003.

- University at Albany Faculty Research Awards Program, (with S. S. Ravi and G. K. Tayi), Models for Facility Dispersion and Transportation of Hazardous Materials, 1993.
- NSF Grant CCR 90–06396, The Processing and Properties of Hardware Description Mechanisms, January 1991 to December 1992 (extended to December 1993).
- NSF Grant CCR 88–03278, The Processing and Properties of Hardware Description Mechanisms, August 1988 to January 1991.
- NSF Grant CCR 88–05948, Computer and Information Science and Engineering Research Instrumentation, June 1988–May 1989. (R.E. Stearns, Principal Investigator)
- NSF Grant DCR 86–03184, Topics on the Complexity of Computation on Algebraic Structures and the Analysis and the Specification of Digital Circuits, (with H. B. Hunt, III), July 1986 – December 1988.
- NSF Grant MCS 82–03237, Analysis of Structures in Database Systems, June 1982 – November 1984 (extended to November 1986).
- NSF Grant MCS 78–03157, Design Theory of Database Systems, June 1978 – November 1982.
- Research Foundation of State University of New York, Grant–in–Aid, 1978.

## Awards:

- *Fellow of Association for Computing Machinery*, 1995.
- ACM SIGMOD (Special Interest Group on Management of Data) *Contributions Award*, 2001.
- *Excellence in Research Award*, University at Albany, Spring 1991.
- Listed in *Who's Who in America* since 1990, *American Men & Women of Science* since 1992, *Who's Who in American Education* since 1996, *Who's Who in Science and Engineering* since 1996, *Who's Who in the East* since 1997.

## Academic Honors

- Sigma Xi, Eta Kappa Nu, Tau Beta Pi, National Science Foundation Cooperative Graduate Fellow.

## Technical Interests

- Design and analysis of algorithms, database systems, complexity theory, compiler construction, high performance computing, software engineering.

## Ph.D. Students Supervised

**Philip Bernhard:** Thesis Title: "Algorithmic Aspects of Message Transmission Strategies for Multistage Interconnection Networks". Completed: August 1988.

**Lin Yu:** Thesis Title: "Configuration Control Mechanisms Supporting Versions and Alternatives in Engineering Design Database". Completed: August 1991.

**Dechang Gu:** Thesis Title: "Design and Analysis of Test Schemes for Multiprocessor Fault Tolerance". Completed: May 1992.

**Ragini Shamsunder–Narasimhan:** Thesis Title: "System and Logic Synthesis: Incorporating Fault Tolerance and Producing Minimum Cost Designs". Completed: August 1996.

**Parvathi Chundi:** Thesis Title: "Protocols for Achieving Consistency and Reliability in Replicated Database Systems that Utilize Asynchronous Updates". Completed: August 1996.

**Sandeep K. Shukla:** Thesis Title: "Uniform Approaches to the Verification of Finite State Systems". Completed: January 1997. (Jointly supervised with Prof. Harry B. Hunt III.)

**Ganesh Ramesh:** Thesis Title: "Data Mining Techniques for Frequent Itemsets: Construction and Analysis". Completed: May 2004. (Jointly supervised with Prof. William Maniatty.)

## Publications


Rosenkrantz, D. J., "Synchronizing Sequences for Incompletely Specified Flow Tables," *IEEE Trans. on Electronic Computers, EC–15, 1,* Feb. 1966, 104–105.

Rosenkrantz, D. J., "Matrix Equations and Normal Forms for Context–Free Grammars," *J. Assoc. Computing Mach., 14, 3,* July 1967, 501–507.

Rosenkrantz, D. J., "Programmed Grammars – A New Device for Generating Formal Languages," Ph.D. Thesis, Columbia University, New York, NY, 1967.

Rosenkrantz, D. J., "Programmed Grammars – A New Device for Generating Formal Languages, Extended Summary," *IEEE Conf. Record of 1967 Eighth Annual Symp. on Switching and Automata Theory,* Austin, TX, Oct. 1967, 14–20.

Rosenkrantz, D. J., "Programmed Grammars and Classes of Formal Languages," *J. Assoc. Computing Mach., 16, 1,* Jan. 1969, 107–131.

Rosenkrantz, D. J. and Stearns, R. E., "Properties of Deterministic Top Down Grammars," *Conf. Record of ACM Symp. on Theory of Computing,* Marina Del Rey, CA, May 1969, 165–180.

Stearns, R. E., and Rosenkrantz, D. J., "Table Machine Simulation," *IEEE Conf. Record of 1969 Tenth Annual Symp. on Switching and Automata Theory,* Waterloo, Ontario, Canada, Oct. 1969, 118–128.

Rosenkrantz, D. J., and Stearns, R. E., "Properties of Deterministic Top Down Grammars," *Information and Control, 17, 3,* Oct. 1970, 226–256.

Rosenkrantz, D. J., and Lewis, P. M., "Deterministic Left Corner Parsing," *IEEE Conf. Record of 1970 Eleventh Annual Symp. on Switching and Automata Theory,* Santa Monica, CA, Oct. 1970, 139–152.

Lewis, P. M., and Rosenkrantz, D. J., "An ALGOL Compiler Designed Using Automata Theory," *Proc. on Computers and Automata,* Microwave Research Institute Symposia Series, Vol. 21, Polytechnic Institute of Brooklyn, NY, 1971, 75–88.

Lewis, P. M., Rosenkrantz, D. J., and Stearns, R. E., "Attributed Translations–Extended Abstract," *Proc. of Fifth Annual ACM Symp. on Theory of Computing,* Austin, TX, May 1973, 160–171.

Lewis, P. M., Rosenkrantz, D. J., and Stearns, R. E., "Attributed Translations," *J. Computer and System Sciences, 9, 3,* Dec. 1974, 279–307.

Hunt, H. B. III, and Rosenkrantz, D. J., "On Equivalence and Containment Problems for Formal Languages," *Proc. Eighth Annual Princeton Conf. on Information Sciences and Systems,* March 1974.

Hunt, H. B. III, and Rosenkrantz, D. J., "Computational Parallels Between the Regular and Context–Free Languages," *Conf. Rec. Sixth Annual ACM Symp. on Theory of Computing,* Seattle, WA, May 1974, 64–74.

Rosenkrantz, D. J., Stearns, R. E., and Lewis, P. M., "Approximate Algorithms for the Traveling Salesperson Problem," *IEEE Conf. Record of 1974 Fifteenth Annual Symp. on Switching and Automata Theory,* New Orleans, LA, Oct. 1974, 33–42.

Lewis, P. M. II, Rosenkrantz, D. J., and Stearns, R. E., *Compiler Design Theory,* Addison–Wesley, Reading, MA, 1976.

Hunt, H. B. III, Rosenkrantz, D. J., and Szymanski, T. G., "The Covering Problem for Linear Context–Free Grammars," *Theoretical Computer Science, 2, 3,* Sept. 1976, 361–382.

Hunt, H. B. III, Rosenkrantz, D. J., and Szymanski, T. G., "On the Equivalence, Containment, and Covering Problems for the Regular and Context–Free Languages," *J. Computer and Systems Sciences, 12, 2,* April 1976, 222–268.

Stearns, R. E., Lewis, P. M., and Rosenkrantz, D. J., "Concurrency Control for Database Systems," *IEEE Proc. 1976 Seventeenth Annual Symp. on Foundations of Computer Science,* Houston, TX, Oct. 1976, 19–32.

Hunt, H. B. III, and Rosenkrantz, D. J., "On Equivalence and Containment Problems for Formal Languages," *J. Assoc. Computing Mach., 24, 3,* July 1977, 387–396.

Rosenkrantz, D. J., Stearns, R. E., and Lewis, P. M., "An Analysis of Several Heuristics for the Traveling Salesman Problem," *SIAM J. Computing, 6, 3,* Sept. 1977, 563–581.

Rosenkrantz, D. J., Stearns, R. E., and Lewis, P. M., "A System Level Concurrency Control for Distributed Database Systems," *Proc. Second Berkeley Workshop on Distributed Data Management and Computer Networks,* May 1977, 132–145.

Hunt, H. B. III, and Rosenkrantz, D. J., "Complexity of Grammatical Similarity Relations – Preliminary Report," *Proc. Conf. on Theoretical Computer Science,* Waterloo, Ontario, Canada, Aug. 1977, 139–145.

Hunt, H. B. III and Rosenkrantz, D. J., "Computational Parallels Between the Regular and Context–Free Languages," *SIAM J. Computing, 7, 1,* Feb. 1978, 99–114.

Rosenkrantz, D. J., Stearns, R. E., and Lewis, P. M. II, "System Level Concurrency Control for Distributed Database Systems," *ACM Trans. Database Systems, 3, 2,* June 1978, 178–198. Reprinted in *Tutorial: Distributed Database Management*, J. A. Larson, S Rahimi, eds., IEEE Computer Science Press, EH0222-0, 1984.

Rosenkrantz, D. J., and Hunt, H. B. III, "Polynomial Algorithms for Deterministic Pushdown Automata," *SIAM J. Computing, 7, 4,* Nov. 1978, 405–412.

Rosenkrantz, D. J., "Dynamic Database Dumping," *Proc. SIGMOD Intl. Conf. on Management of Data,* Austin, TX, June 1978, 3–8.

Hunt, H. B., III, and Rosenkrantz, D. J., "The Complexity of Testing Predicate Locks," *Proc. SIGMOD Intl. Conf. on Management of Data,* Boston, MA, May 1979, 127–133.

Hunt, H. B., III, and Rosenkrantz, D. J., "Efficient Algorithms for Structural Similarity of Grammars," *Proc. Seventh Annual ACM SIGACT–SIGPLAN Symp. on Principles of Programming Languages,* Las Vegas, NV, Jan. 1980, 213–219.

Rosenkrantz, D. J., and Hunt, H. B. III, "Processing Conjunctive Predicates and Queries," *Proc. Sixth Intl. Conf. on Very Large Data Bases,* Montreal, Canada, Oct. 1980, 64–72.

Hunt, H. B. III, and Rosenkrantz, D. J., "The Complexity of Recursion Schemes and Recursive Programming Languages," *Proc. IEEE 21st Annual Symp. on Foundations of Computer Science,* Syracuse, NY, Oct. 1980, 152–160.

Stearns, R. E., and Rosenkrantz, D. J., "Distributed Database Concurrency Controls Using Before Values," *ACM SIGMOD Intl. Conf. on Management of Data,* Ann Arbor, MI, April 1981, 74–83.

Rosenkrantz, D. J., and Stearns, R. E., "NP–Complete Problems," *Encyclopedia of Computer Science and Engineering, Second Edition,* A. Ralston and E. D. Reilly, Jr. (Editors), Van Nostrand Reinhold Co., New York, 1983, 1026–1029. Also in *Third Edition*, 1993, 938–941, and in *Fourth Edition*, A. Ralston, E. D. Reilly, and D. Hemmendinger (Editors), Grove's Dictionaries Inc., New York, 2000.

Hunt, H. B. III, and Rosenkrantz, D. J., "The Complexity of Monadic Recursion Schemes: Executability Problems, Nesting Depth and Applications," *Theoretical Computer Science, 27, 1,* Nov. 1983, 3–38.

Rosenkrantz, D. J., "High Level Languages" and "Interpreters and Compilers", two articles in *Handbook of Electrical and Computer Engineering Vol. III,* S. J. Chang (Editor), John Wiley and Sons, New York, 1983.

Bloniarz, P. A., Hunt, H. B. III, and Rosenkrantz, D. J., "On the Complexity of Algebra on Lattices," *Proc. 1983 Conf. on Information Sciences and Systems,* Baltimore, MD, March 1983, 328–333.

Hunt, H. B. III, and Rosenkrantz, D. J., "The Complexity of Monadic Recursion Schemes: Exponential Time Bounds," *J. Computer and System Sciences, 28, 3,* June 1984, 395–418.

Xie, L., and Rosenkrantz, D. J., "The Performance Evaluation of Concurrency Control Policy Using Before–Values in Distributed Database Systems," *IEEE Proc. First Intl. Conf. on Computers and Applications,* Beijing, China, June 1984, 600–607.

Rosenkrantz, D. J., Stearns, R. E., and Lewis, P. M. II, "Consistency and Serializability of Concurrent Database Systems," *SIAM J. Computing, 13, 3,* Aug. 1984, 508–530.

Bloniarz, P. A., Hunt, H. B. III, and Rosenkrantz, D. J., "Algebraic Structures with Hard Equivalence and Minimization Problems," *J. Assoc. Computing Mach., 31, 4,* Oct. 1984, 879–904.

Rosenkrantz, D. J., and Hunt, H. B. III, "Testing for Grammatical Coverings, " *Theoretical Computer Science, 38, 2–3,* June 1985, 323–341.

Chakravarty, S., Hunt, H. B. III, Ravi, S. S., and Rosenkrantz, D. J., "On the Complexity of Computing Minimum Test Sets for PLAs," *Proc. Twentieth Annual Conf. on Information Sciences and Systems,* Princeton, NJ, March 1986, 347–349.

Hunt, H. B. III, and Rosenkrantz, D. J., "Recursion Schemes and Recursive Programs are Exponentially Hard to Analyze," *SIAM J. Computing, 15, 3,* Aug. 1986, 831–850.

Hunt, H. B. III, Rosenkrantz, D. J., and Bloniarz, P. A., "On the Computational Complexity of Algebra on Lattices 1," *SIAM J. Computing, 16, 1,* Feb. 1987, 129–148.

Rosenkrantz, D. J., and Hunt, H. B. III, "Efficient Algorithms for "Automatic Construction and Compactification of Parsing Grammars," *ACM Trans. Programming Languages and Systems, 9, 4,* Oct. 1987, 543–566.

Bernhard, P. J. and Rosenkrantz, D. J., "The Complexity of Routing Through an Omega Network," *Proc. Twenty–Fifth Annual Allerton Conf. on Communication, Control, and Computing,* Sept. 1987, 1027–1036.

Yu, L., and Rosenkrantz, D. J., "Minimizing Time–Space Cost for Database Version Control," *Proc. Seventh ACM SIGACT–SIGMOD–SIGART Symp. on Principles of Database Systems,* Austin, TX, March 1988, 294–301.

Rosenkrantz, D. J., and Hunt, H. B. III, "Matrix Multiplication for Finite Algebraic Systems," *Information Processing Letters, 28, 4,* July 1988, 189–192.

Rosenkrantz, D. J., and Ravi., S. S., "Improved Upper Bounds for Algorithm–Based Fault–Tolerance (Extended Abstract)," *Proc. Twenty–Sixth Annual Allerton Conf. on Communication, Control, and Computing,* Sept. 1988, 388–397.

Bernhard, P. J., and Rosenkrantz, D. J., "An Efficient Method for the Representation and Transmission of Message Patterns on Multiprocessor Interconnection Networks," *Frontiers '88: Second Symp. on the Frontiers of Massively Parallel Computation,*, George Mason Univ., Fairfax, VA, Oct. 1988, 115–119 (poster presentation).

Chakravarty, S., Hunt, H. B. III, Ravi, S. S., and Rosenkrantz, D. J., "On the Complexity of Generating Minimum Test Sets for PLAs and Monotone Combinational Circuits," *IEEE Trans. Computers, 38, 6,* June 1989, 865–869.

Bernhard, P. J., Hunt, H. B. III, and Rosenkrantz, D. J., "Compaction of Message Patterns into Space–Efficient Representations for Multiprocessor Interconnection Networks," *Proc. 1989 Intl. Conf. on Parallel Processing,* Penn. State Univ., University Park, PA, Vol. I, Aug. 1989, 111–115.

Yu, L., and Rosenkrantz, D. J., "Ancestor–Controlled Submodule Inclusion in Design Databases," *Proc. Second Intl. Conf. on Data and Knowledge Systems for Manufacturing and Engineering*, Gaithersburg, MD, Oct. 1989, 28–37.

Rosenkrantz, D. J., "Half–Hot State Assignments for Finite State Machines," *IEEE Trans. Computers, 39, 5,* May 1990, 700–702.

Yu, L., and Rosenkrantz, D. J., "Minimizing Time–Space Cost for Database Version Control," *Acta Informatica, 27, 7,* 1990, 627–663.

Yu, L., and Rosenkrantz, D. J., "Representability of Design Objects by Ancestor–Controlled Hierarchical Specifications," *Proc. Ninth ACM SIGACT–SIGMOD–SIGART Symp. on Principles of Database Systems,* Nashville, TN, April 1990, 28–39.

Gu, D., Rosenkrantz, D. J., and Ravi, S. S., "Design and Analysis of Test Schemes for Algorithm–Based Fault Tolerance," *Proc. Twentieth Intl. Symp. on Fault–Tolerant Computing,* Newcastle Upon Tyne, U.K., June 1990, 106–113.

Bernhard, P. J., and Rosenkrantz, D. J., "Maximizing Congestion–Free Message Patterns for Bundled Omega Networks," *Proc. Twenty–Eighth Annual Allerton Conf. on Communication, Control, and Computing,* Oct. 1990, 911–913.

Bernhard, P. J., and Rosenkrantz, D. J., "An Efficient Method for Representing and Transmitting Message Patterns on Multiprocessor Interconnection Networks," *J. Parallel and Distributed Computing, 11, 1*, Jan. 1991, 72–85.

Kapur, D., Narendran, P., Rosenkrantz, D. J., and Zhang, H., "Sufficient–Completeness, Ground–Reducibility and Their Complexity," *Acta Informatica, 28, 4*, April 1991, 311–350.

Bernhard, P. J., Hunt, H. B. III, and Rosenkrantz, D. J., "Compaction of Message Patterns into Succinct Representations for Multiprocessor Interconnection Networks," *J. Parallel and Distributed Computing, 12, 1,* May 1991, 39–49.

Bernhard, P. J., and Rosenkrantz, D. J., "Using the Dual Path Property of Omega Networks to Obtain Conflict–Free Message Routing," *IEEE Trans. on Parallel and Distributed Systems, 2, 4,* Oct. 1991, 503–507.

Gu, D., Rosenkrantz, D. J., and Ravi, S. S., "Construction and Analysis of Fault–Secure Multiprocessor Schedules," *Proc. Twenty–First Intl. Symp. on Fault–Tolerant Computing,* Montreal, Canada, June 1991, 120–127.

Yu, L., and Rosenkrantz, D. J., "A Linear–Time Scheme for Version Reconstruction," in *Algorithms and Data Structures, Proc. 2nd Workshop, WADS '91*, F. Dehne, J.–R. Sack, and N. Santoro (Eds.), Ottawa, Canada, Aug. 1991, Lecture Notes in Computer Science, Vol. 519, Springer–Verlag, Berlin, 1991, 141–152.

Ravi, S. S., Rosenkrantz, D. J., and Tayi, G. K., "Facility Dispersion Problems: Heuristics and Special Cases," in *Algorithms and Data Structures, Proc. 2nd Workshop, WADS '91*, F. Dehne, J.–R. Sack, N. Santoro (Eds.), Ottawa, Canada, Aug. 1991, Lecture Notes in Computer Science, Vol. 519, Springer–Verlag, Berlin, 1991, 355–366.

Rosenkrantz, D. J., and Hunt, H. B. III, "The Complexity of Structural Containment and Equivalence," in *Theoretical Studies in Computer Science,* J. D. Ullman (Editor), Academic Press, Inc., San Diego, CA, 1992, 101–132.

Bruno, J. M., and Rosenkrantz, D. J., "Interactive Control Restructuring," *Proc. Second Intl. Symp. on Environments and Tools for Ada (SETA–2),* Washington, D.C., Jan. 1992, 36–53.

Gu, D., Rosenkrantz, D. J., and Ravi, S. S., "Fault/Error Models and Their Impact on Reliable Multiprocessor Schedules," *Proc. 1992 IEEE Workshop on Fault–Tolerant Parallel and Distributed Systems,* Amherst, MA, July 1992, 176–184.

Yu, L., and Rosenkrantz, D. J., "Representability of Design Objects by Ancestor–Controlled Hierarchical Specifications," *SIAM J. Computing, 21, 5*, Oct. 1992, 824–855.

Yu, L., and Rosenkrantz, D. J., "Ancestor Controlled Submodule Inclusion in Design Databases," *IEEE Transactions on Knowledge and Data Engineering, 5, 2,* April 1993, 352–362.

Gu, D., Rosenkrantz, D. J., and Ravi, S. S., "Determining Performance Measures of Algorithm–Based Fault Tolerant Systems," *J. Parallel and Distributed Computing, 18, 1*, May 1993, 56–70.

Rosenkrantz, D. J., and Ravi, S. S., "Improved Bounds for Algorithm–Based Fault Tolerance," *IEEE Trans. Computers, 42, 5,* May 1993, 630–635.

Ravi, R., Marathe, M. V., Ravi, S. S., Rosenkrantz, D. J., and Hunt, H. B. III, "Many Birds With One Stone: Multi–Objective Approximation Algorithms," *Proc. Twenty–Fifth Annual ACM Symp. on the Theory of Computing (STOC '93),* San Diego, CA, May 1993, 438–447.

Rosenkrantz, D. J., and Hunt, H. B. III, "The Complexity of Processing Hierarchical Specifications," *SIAM J. Computing, 22, 3*, June 1993, 627–649.

Shamsunder, R., Rosenkrantz, D. J., and Ravi, S. S., "Exploiting Data Flow Information in Algorithm–Based Fault Tolerance," *Proc. Twenty–Third Annual Intl. Symp. on Fault–Tolerant Computing (FTCS '93),* Toulouse, France, June 1993, 280–289.

Rosenkrantz, D. J., Gu, D., and Ravi, S. S., "Fault Tolerance Via Output–Guaranteed Schedules," *Proc. Second IASTED Intl. Conf. on Reliability, Quality Control and Risk Assessment,* Cambridge, MA, Oct. 1993, 121–124.

Radhakrishnan, V., Krumke, S. O., Marathe, M. V., Rosenkrantz, D. J., and Ravi, S. S., "Compact Location Problems," *Foundations of Software Technology and Theoretical Computer Science, Proc. Thirteenth Conf. (FST&TCS '93),* R. K. Shyamasundar (Ed.), Bombay, India, Dec. 1993, Lecture Notes in Computer Science, Vol. 761, Springer–Verlag, Berlin, 1993, 238–247.

Ravi, R., Sundaram, R. Marathe, M. V., Rosenkrantz, D. J., and Ravi, S. S., "Spanning Trees Short or Small," *Proc. Fifth Annual ACM–SIAM Symp. on Discrete Algorithms (SODA '94),* Arlington, VA, Jan. 1994, 546–555.

Ravi, S. S., Rosenkrantz, D. J., and Tayi, G. K., "Heuristics and Special Case Algorithms for Dispersion Problems," *Operations Research, 42, 2*, March–April 1994, 299–310.

Bernhard, P. J., and Rosenkrantz, D. J., "Partitioning Message Patterns for Bundled Omega Networks," *IEEE Trans. on Parallel and Distributed Systems, 5, 4,* April 1994, 353–363.

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