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Curriculum Vitae

Identification number: 05162180/3.
Date and Place of Birth: January 2, 1953; Haifa, Israel.
Marital Status: Married, five children.
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Academic Degrees

1973	B.Sc. (Summa cum lauda)	Mathematics	Technion - Israel Institute of Technology
1976	M.Sc. (Grade awarded on thesis and final examination: Excellent)	Mathematics	Technion - Israel Institute of Technology
1982	D.Sc.	Mathematics	Technion - Israel Institute of Technology

Appointments

1971-73	Teaching Assistant	Technion - Israel Institute of Technology
1979-82	Instructor	Technion - Israel Institute of Technology
1982-83	Research Fellow	Technion - Israel Institute of Technology
1983-86	Van Vleck Professor	University of Wisconsin - Madison
1985-89	Senior Lecturer	Technion - Israel Institute of Technology
1988-89	Visiting Associate Professor	University of Wisconsin - Madison
1989-96	Associate Professor	Technion - Israel Institute of Technology
1996-	Professor	Technion - Israel Institute of Technology

Teaching Experience

The variety of undergraduate and graduate courses I have taught includes the following courses:

Taught at the Technion (1982-83):

Mathematics 1A

Algebra I

Ordinary and Partial Differential Equations

Taught at the University of Wisconsin (1983-85, 1988):

Intermediate Algebra

Linear Algebra and Differential Equations

Advanced Linear Algebra

Topics in Matrix Theory - an Advanced Course for Graduate Students

Taught at the Technion (since 1985):

Differential and Integral Calculus I

Mathematics I/Medicine

Mathematics 2 Medicine /B

Ordinary Differential Equations /H (also videotaped)

Linear Algebra /AER

Linear Algebra H

Infinitesimal Calculus 2

Linear Algebra A

Matrix Theory

Matrix Theory Seminar

Topics in Matrix Analysis

Administrative posts and membership in Technion committees

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|----------------|--|
| 1989-92 | Representative of the Mathematics Department in the Senate. |
| 1991-94 | Member of the Loans Committee of the Graduate School. |
| 1.1991-12.1994 | Judge in the Disciplinary Court for students. In the years 93-94 - vice-president of the Court. |
| 1993-97 | Board member of the Faculty Association. |
| 1993-96 | Member of the Board of Governors (representative of the associate professors and of the professors). |
| 1994-95 | Judge in the Disciplinary Court for faculty. |
| 1.1996-12.1999 | President of the Disciplinary Court for students. |

- 1996- Member of the Harry J. Stern Family Enrollment Action Committee.
- 8.1996-12.1999 Head of the Division of Continuing Education and External Studies.
- 1.1997-12.1999 Member (elected by the Senate) of the Senate Steering Committee.
- 1997-98 Member of the Board of Trustees of the Technion Institute of Management (TIM).
- 1998-05 Chairman of the Technion synagogue committee.
- 1999-03 Member of the disciplinary bylaws review and update committee.
- 2002-03 Member of the review committee of new appointments and promotions procedures
- 1.2000-12.2004 Dean of the faculty of Mathematics
- 1.2005-12.2006 Head of the Technion Faculty Association

Active participation in international congresses

Invited Talks

1. Invited minisymposium speaker, SIAM Conference on Linear Algebra in Signals, Systems and Control, August 12-14, 1986, Boston, Massachusetts, USA. Title of talk: "Matrix stability".
2. Invited speaker, Combinatorial Matrix Analysis Conference, May 20-23, 1987, Victoria, British Columbia, Canada. Title of talk: "The combinatorial structure of generalized nullspaces".
3. Invited special session speaker, International Conference on Linear Algebra and Applications, September 28-30, 1987, Valencia, Spain. Title of talk: "Recent results in matrix stability".
4. Invited speaker, Mini Conference on Linear Algebra and Numerical Linear Algebra and Applications, April 29-30, 1989, DeKalb, Illinois, USA. (Invitation declined).
5. Invited session speaker, International Symposium on the Mathematical Theory of Networks and Systems (MTNS-89), June 19-23, 1989, Amsterdam, The Netherlands. Title of talk: "Various stability types for acyclic matrices and H-matrices".

6. Invited 30 minutes speaker, Workshop on Matrix and Operator Theory, June 26-29, 1989, Rotterdam, The Netherlands. Title of talk: "Linear preservers of acyclicity properties".
7. Invited speaker, The Inaugural Meeting of the International Linear Algebra Society, August 12-15, 1989, Provo, Utah, USA. Title of talk: "Height bases and level bases".
8. Invited speaker, Householder Symposium XI on Numerical Algebra, June 18-22, 1990, Halmstad, Sweden. Title of talk: "Matrix inertia and stability".
9. Invited speaker, 5th Conference on Numerical Methods, August 20-25, 1990, Miskolc, Hungary. (Invitation declined).
10. Invited speaker, Second SIAM Conference on Linear Algebra in Signals, Systems and Control (LASSC), November 5-7, 1990, San Francisco, California, USA. Title of talk: "Stability and D-stability".
11. Invited speaker, Second NIU Conference on Linear Algebra, Numerical Linear Algebra and Applications, May 3-5, 1991, DeKalb, Illinois, USA. Title of talk: "Peak characteristic and nonnegative signature".
12. A sequence of four invited lectures in the Netherlands, August 22-28, 1991: A two hour lecture in the Vrije Universiteit, Amsterdam; A one hour lecture in the Center for Mathematics and Computer Science (CWI), Amsterdam; A one hour and a two hour lectures in the Econometric Institute, Erasmus University, Rotterdam, The Netherlands. Title of talks: "Various types of matrix stability"; "Combinatorial spectral theory for nonnegative matrices and their applications"; "Generalizations of well known graph theoretic results using matrix theory".
13. Invited speaker, Workshop "Combinatorial and Graph-Theoretic Problems in Linear Algebra", November 11-15, 1991, Minneapolis, Minnesota, USA. (Invitation declined).
14. Invited speaker, Workshop "Computational Linear Algebra in Algebraic and Related Problems", July 27 - August 1, 1992, Essen, Germany. Title of talk: "Paths in digraphs and spectral properties of matrices".
15. Invited "The New Generation Speaker", The 1993 UWF/ILAS Conference on "Pure and Applied Linear Algebra: The New Generation", March 17-20, 1993, Pensacola, Florida, USA. Title of talk: "On graphs and matrices".
16. Invited minisymposium speaker, Third SIAM Conference on Linear Algebra in Signals, Systems and Control, August 16-19, 1993, Seattle, Washington, USA. (Invitation declined).
17. Invited speaker, The Second Workshop on Numerical Ranges and Radii, August 8-12, 1994, Coimbra, Portugal. (Invitation declined).

18. Invited speaker, Closing workshop for the STRIDE project "Desenvolvimentos Recentes em Algebra Linear", January 11-13, 1995, Lisbon, Portugal. Title of talk: "Existence of matrices under prescribed conditions on their elements".
19. Invited speaker, semester Linear Operators II, January 8 - February 24, 1996, Warsaw, Poland. (Invitation declined).
20. Invited 50 minutes speaker, The Sixth Conference of the International Linear Algebra Society, August 14-17, 1996, Chemnitz, Germany. Title of talk: "Cones and Stability".
21. Invited speaker (five plenary talks), Summer School on Matrix Stability, June 23-27, 1997, Lisbon, Portugal. Titles of talks: "Matrix stability: the basics"; "Sufficient conditions for stability"; "Positivity of principal minors"; "Special classes"; "Cones and stability".
22. Invited speaker, Conference in honor of the 80-th birthday of M. Livsic, June 29 - July 4, 1997, Beer-Sheva, Israel. Title of talk: "Theorems and conjectures on sufficient conditions for matrix Stability".
23. Invited 45 minutes speaker, The "Hans Schneider" Conference of the International Linear Algebra Society, June 3-6, 1998, Madison, Wisconsin, USA. Title of talk: "The combinatorial structure of generalized eigenspaces - from nonnegative matrices to general matrices".
24. Invited speaker, The Third China Matrix Theory and Its Applications Conference (3CMC), August 8-13, 1998, Zhang-Jia-Jie, China. (Invitation declined).
25. Invited 30 minutes speaker, Applied Linear Algebra Workshop, January 21-23, 1999, Bielefeld, Germany. Title of talk: "On the spectral radius of multi-matrix functions".
26. Invited speaker, Workshop on Operator Theory and its Applications dedicated to Harry Dym on the occasion of his 60th birthday, March 7-12, 1999, Rehovot, Israel. Title of talk: "On the spectral radius of multi-matrix functions".
27. Invited 60 minutes speaker, The Fourth SIAM Conference on Linear Algebra in Signals, Systems and Control, August 13-16, 2001, Boston, Massachusetts, USA. Title of talk: "Directions in the study of matrix inertia and stability".
28. Invited speaker, International Conference on Combinatorial Matrix Theory, January 14-17, 2002, Pohang, Korea. (Invitation declined).
29. Invited speaker, "Topics in Linear Algebra" - a conference at Iowa State University, September 13-14, 2002, Ames, Iowa, USA. (Invitation declined).

30. Invited speaker, the international conference on Matrix Analysis and Applications, December 14-16, 2003, Nova Southeastern University (NSU), Fort Lauderdale, Florida, USA. Title of talk: "Positivity of principal minors, sign symmetry and stability".
31. Invited speaker, the 13th annual conference of "Keshet-Cham", March 30, 2004, Haifa, Israel. Title of talk: "Mathematical problems in Jewish halachic sources".
32. Invited speaker, Workshop "Directions in Combinatorial Matrix Theory", May 6-8, 2004, Banff International Research Station for Mathematical Innovation and Discovery (BIRS), Alberta, Canada. (Invitation declined).
33. Invited speaker, Workshop on nonnegative matrices, July 11-14, 2004, Barberstown Castle and the Hamilton Institute, National University of Ireland, Maynooth, Ireland. Title of talk: "Nonnegativity and stability".
34. Invited minisymposium speaker, The 12th Meeting of the International Linear Algebra Society, June 26-29, 2005, Regina, Canada. Title of talk: "The relationship between the height characteristic of a matrix and its digraph".

Contributed Talks

1. Gatlinburg IX, July 9-14, 1984, Waterloo, Canada. Title of talk: "Spectral properties of P- and P₀-matrices".
2. Summer Research Conference on Linear Algebra and its Role in Systems Theory, July 9- August 4, 1984, Brunswick, Maine, USA. (Plenary talk). Title of talk: "Scalings of vector spaces and the uniqueness of Lyapunov scaling factors".
3. The First Haifa Conference on Matrix Theory, December 30-31, 1984, Haifa, Israel. Title of talk: "Lyapunov diagonal semistability of some classes of matrices".
4. Second SIAM Conference on Applied Linear Algebra, April 29- May 2, 1985, Raleigh, North Carolina, USA. Title of talk: "Semistability factors and semifactors".
5. The Second Haifa Conference on Matrix Theory, December 29-31, 1985, Haifa, Israel. Title of talk: "Linear operators which map the classes of P-matrices, ω -matrices and τ -matrices into or onto themselves".
6. The Third Haifa Matrix Theory Conference, January 5-7, 1987, Haifa, Israel. Title of talk: "The rank of powers of matrices in a block triangular form".

7. The Annual Meeting of the Israel Mathematical Union, March 29, 1988, Tel-Aviv, Israel. Title of talk: "On MM- and ZM- matrices".
8. Third SIAM Conference on Applied Linear Algebra, May 23-26, 1988, Madison, Wisconsin, USA. Title of talk: "On the spectral radius of functions of nonnegative matrices".
9. Technion Summer Linear Algebra Workshop, June 18-19, 1989, Haifa, Israel. Title of talk: "Inverse eigenvalue problems".
10. The Sixth Haifa Matrix Theory Conference, June 11-14, 1990, Haifa, Israel. Title of talk: "The height characteristic of block triangular matrices".
11. The Seventh Haifa Matrix Theory Conference, June 3-6, 1991, Haifa, Israel. Title of talk: "Block diagonal semistability factors and Lyapunov semistability of block triangular matrices".
12. Workshop on "Nonnegative Matrices, Generalizations and Applications", May 31 - June 4, 1993, Haifa, Israel. Title of talk: "Sum decompositions of symmetric matrices".
13. The Fourth Meeting of the International Linear Algebra Society, August 15-19, 1994, Rotterdam, The Netherlands. Title of talk: "Minimization of norms and the spectral radius of a nonnegative matrix under diagonal equivalence".

Professional Activities

Editorial Activities

- 1987-88 Special Editor, special issue of the journal "Linear Algebra and its Applications", devoted to the Fourth Haifa Matrix Theory Conference.
- 1988-04 Associate Editor of the journal "Linear Algebra and its Applications".
- 1988-90 Special Editor, special issue of the journal "Linear Algebra and its Applications", devoted to the Inaugural Meeting of the International Linear Algebra Society.
- 1989-91 Special Editor, special issue of the journal "Linear Algebra and its Applications", devoted to the Sixth Haifa Matrix Theory Conference.
- 1992-94 Special Editor, special issue of the journal "Linear Algebra and its Applications", devoted to the workshop on "Nonnegative Matrices, Applications and Generalizations" and to the Eighth Haifa Matrix Theory Conference.
- 1995- Editor-in-Chief and Managing Editor of the journal "Electronic journal of

Linear Algebra" (ELA).

- 2000-03 Special Editor, special issue of the journal "Linear Algebra and its Applications", devoted to the workshop on "Nichtnegative Matrizen, M-Matrizen und deren Verallgemeinerungen, Oberwolfach (November 2000).
- 2001- Member of the editorial board of the Shaanan College Annual
- 2005-08 Senior Editor of the journal "Linear Algebra and its Applications".

Conference organizational activities

- 1986-87 Member of the organizing committee of the Third Haifa Matrix Theory Conference, Haifa, Israel (January 1987).
- 1987-88 Member of the organizing committee of the Fourth Haifa Matrix Theory Conference, Haifa, Israel (January 1988).
- 1988-89 Member of the organizing committee of the Fifth Haifa Matrix Theory Conference, Haifa, Israel (January 1989).
- 1988-89 Member of the organizing committee of the Inaugural Meeting of the International Linear Algebra Society, Provo, Utah, USA (August 1989).
- 1989-90 Co-chairman of the organizing committee of the Sixth Haifa Matrix Theory Conference, Haifa, Israel (June 1990).
- 1989-90 Co-chairman of the organizing committee of the Seventh Haifa Matrix Theory Conference, Haifa, Israel (June 1991).
- 1990-91 Minisymposium organizer, Fourth SIAM Conference on Applied Linear Algebra, Minneapolis, Minnesota, USA (September 1991).
- 1990-92 Member of the organizing committee of the Second Meeting of the International Linear Algebra Society, Lisbon, Portugal (August 1992).
- 1991-93 Member of the organizing committee of the special month in Linear Algebra, organized by the Institute for Advanced Studies in Mathematics at the Technion, June 1993 (including a workshop on "Nonnegative Matrices, Generalizations and Applications" and the Eighth Haifa Matrix Theory Conference).
- 1991-94 Member of the organizing committee of the Fourth Meeting of the International Linear Algebra Society, Rotterdam, The Netherlands (August 1994).
- 1992-95 Member of the organizing committee of the Fifth Meeting of the International Linear Algebra Society, Atlanta, Georgia, USA (August

- 1995).
- 1994-95 Member of the organizing committee of the Ninth Haifa Matrix Theory Conference, Haifa, Israel (May-June 1995).
- 1997-98 Chairman of the organizing committee of the Tenth Haifa Matrix Theory Conference, Haifa, Israel (January 1998).
- 1998-99 Member of the organizing committee of the Eleventh Haifa Matrix Theory Conference, Haifa, Israel (June 1999).
- 1999-00 Member of the organizing committee of the workshop on “Nichtnegative Matrizen, M-Matrizen und deren Verallgemeinerungen, Oberwolfach, Germany (November 2000).
- 1999-01 Chairman of the organizing committee of the Ninth Meeting of the International Linear Algebra Society, combined with the Twelfth Haifa Matrix Theory Conference, Haifa, Israel (June 2001).
- 2002-04 Member of the organizing committee of the Eleventh Meeting of the International Linear Algebra Society, Coimbra, Portugal (July 2004).
- 2002-05 Member of the organizing committee of the Twelfth Meeting of the International Linear Algebra Society, Regina, Canada (June 2005).
- 2002-06 Member of the organizing committee of the Thirteenth Meeting of the International Linear Algebra Society, Amsterdam, The Netherlands (July 2006).
- 2003- Member of the organizing committee of the 2005 Haifa Matrix Theory Conference, Haifa, Israel (January 2005).
- 2004- Member of the organizing committee for the 2006 SIAM Linear Algebra meeting, Duesseldorf, Germany (2006).

Other public professional activities

- 1987- Member of the executive board and of the board of directors of the International Linear Algebra Society (ILAS). Reelected in 1991. Reelected in 1993. Reelected in 1995. Reelected in 1998
- 1987-95 Secretary of the International Linear Algebra Society. Reelected in 1991. Reelected in 1993
- 1987-02 Manager of ILAS-NET - the electronic newsletter of the International Linear Algebra Society
- 1989-90 Manager of IMU-NET - the electronic newsletter of the Israel

Mathematical Union

- 1990-96 Manager of TECHMATH-NET (formerly TECMAT-NET) - the electronic newsletter of the Mathematics Department at the Technion
- 1991-93 Member of the Guidelines Committee for the Hans Schneider Prize in Linear Algebra
- 1992-02 Manager of IIC - the electronic information center of the International Linear Algebra Society.
- 1994-97 Member of the board of directors of Elementrix Technologies Ltd., Haifa
- 1995-01 Vice President of the International Linear Algebra Society. Reelected in 1998
- 1995-97 Chairman of the Hans Schneider Prize (in Linear Algebra) Committee
- 1996-02 Member of ILAS Journals Committee
- 1997- Chairman of the Board of Governors of the Shaanan College, Haifa
- 1997- Member of the council of the Institute of Internal Auditors, Israel
- 1997-99 Member of the Academic Committee of the Study Center in Shlomi
- 1999-03 Member of the Haifa Municipal Education Committee
- 1999-00 Member of the selection committee for the SIAM Activity Group on Linear Algebra Prize
- 2001- Member of the Committee for National Responsibility
- 2002-08 President of the International Linear Algebra Society. Reelected in 2005
- 2002-06 Member of the Board of Governors of the Jerusalem College of Technology
- 2002- Member of the academic council of the Academic Arab College for Education in Israel – Haifa
- 2002- Member of the northern council of the Constitution Project of the Israel Democracy Institute
- 2003- Rabbi of the neighborhood of Ahuza, Haifa
- 2003- Member of the national steering committee of Science and Technology Education in Israel

- 2003- Chairman of the Executive Board of the Study Center in Shlomi
- 2004- Member of the academic council of the Shaanan College, Haifa
- 2005- Member of the Board of Directors of the Center for Jewish Education,
Haifa University

Membership in scientific and professional associations

International Linear Algebra Society
Israel Mathematical Union

Prizes and Awards

- 1982 Landau Research Prize in Mathematics.
- 1990 The New England Academic Award (for Excellence in Research).
- 1990 Technion's Award for Excellence in Teaching.
- 1991 The Henri Gutwirth Award for Promotion of Research.

Research grants

Granting agency: The Center of Absorption in Science, Ministry of Absorption, Israel.
Grant title: "Various problems in matrix analysis".
period: 1986-1987.
Amount: 4500 Sheqel (\$3000).
Principal investigators: D.Hershkowitz

Granting agency: United States - Israel Binational Science Foundation (BSF),
grant number 85-00153.
Grant title: "Matrix stability and nonnegative matrices with generalizations".
period: 1986-1990.
Amount: \$28500.
Principal investigators: D.Hershkowitz and H.Schneider.

Granting agency: United States - Israel Binational Science Foundation (BSF),
grant number 90-00434.
Grant title: "Combinatorial spectral matrix theory, matrix scaling and related topics".
period: 1991-1995.
Amount: \$35000.
Principal investigators: D.Hershkowitz, U.G.Rothblum and H.Schneider.

Graduate Students

Dafna Shasha, D.Sc., 1987,
"Lyapunov diagonal semistability of matrices".
(Joint supervision with Abraham Berman).

Nader Agha, M.Sc., 1990,
"Height and level characteristics for matrices".

Felix Shmidel, M.Sc., 1992,
"The eigenvalues of P-matrices".

Gershon Hanoach, M.Sc., 1992,
"Forcing sequences".

Nataly Kogan-Mogilevsky, D.Sc., 1993,
"Relationship between spectral and combinatorial properties of a matrix".
(Joint supervision with Abraham Berman).

Nader Agha, D.Sc., 1994,
"Ranks of matrices with a given pattern".

Saleh Fathi, D.Sc., 1995,
"Duality between partitions and packings in graphs".
(Joint supervision with Irith Ben-Arroyo Hartman).

Nira Mashal, M.Sc., 1998,
"On stability and block stability of matrices".

Shlomo Harir, Ph.D., 1999,
"The use of Talmudic-Mathematical problems in teaching".

Marina Arav, Ph.D., 2000,
"Recursive inverse eigenvalue problem".

Nathan Keller, M.Sc., 2002,
"Positivity of principal minors and sign symmetry".

List of Publications

Theses:

M.Sc.: *Existence of matrices satisfying prescribed conditions.*
Advisor: Professor David London (1978).

Ph.D.: *Stable matrices and matrices with nonnegative principal minors.*
Advisor: Professor Abraham Berman (1982).

Papers in refereed professional journals - In Press:

1. D. Hershkowitz and A. Berman, Necessary conditions and a sufficient condition for the Fischer Hadamard inequalities, *Linear and Multilinear Algebra* 13 (1983), 67-72.
2. D. Hershkowitz and A. Berman, Localization of the spectra of P- and P₀-matrices, *Linear Algebra and its Applications* 52/53 (1983), 383-397.
3. A. Berman and D. Hershkowitz, Matrix diagonal stability and its implications, *SIAM journal on Algebraic and Discrete Methods* 4 (1983), 377-382.
4. D. Hershkowitz, Existence of matrices with prescribed eigenvalues and entries, *Linear and Multilinear Algebra* 14 (1983), 315-342.
5. D. Hershkowitz and A. Berman, Notes on ω - and τ -matrices, *Linear Algebra and its Applications* 58 (1984), 169-183.
6. A. Berman and D. Hershkowitz, Characterization of acyclic D-stable matrices, *Linear Algebra and its Applications* 58 (1984), 17-31.
7. D. Hershkowitz, On the spectra of matrices having nonnegative sums of principal minors, *Linear Algebra and its Applications* 55 (1983), 81-86.
8. A. Berman, D. Hershkowitz and C.R. Johnson, Linear operators which preserve certain positivity classes of matrices, *Linear Algebra and its Applications* 68 (1985), 9-29. Also appeared in *Algebra Lineal Y Aplicaciones, Actas del Encuentro Internacional de Algebra Lineal Y Aplicaciones celebrado en Vitoria-Gasteiz, Septiembre 1983*, 58-84.
9. D. Hershkowitz and H. Schneider, Scalings of vector spaces and the uniqueness of Lyapunov scaling factors, *Linear and Multilinear Algebra* 17 (1985), 203-226.

10. D. Hershkowitz and H. Schneider, Lyapunov diagonal semistability of real H-matrices, *Linear Algebra and its Applications* 71 (1985), 119-149.
11. A. Berman and D. Hershkowitz, Graph theoretical methods in studying stability, *Contemporary Mathematics* 47 (1985), 1-6.
12. D. Hershkowitz and H. Schneider, Semistability factors and semifactors, *Contemporary Mathematics* 47 (1985), 203-216.
13. D. Hershkowitz, Stability of acyclic matrices, *Linear Algebra and its Applications* 73 (1986), 157-169.
14. D. Hershkowitz and C.R. Johnson, Linear transformations that map the P-matrices into themselves, *Linear Algebra and its Applications* 74 (1986), 23-38.
15. D. Hershkowitz and V. Mehrmann, Linear transformations which map the classes of ω -matrices and τ -matrices into or onto themselves, *Linear Algebra and its Applications* 78 (1986), 79-106.
16. D. Hershkowitz and C.R. Johnson, Spectra of matrices with P-matrix powers, *Linear Algebra and its Applications* 80 (1986), 159-171.
17. D. Hershkowitz and H. Schneider, Matrices with a sequence of accretive powers, *Israel Journal of Mathematics* 55 (1986), 327-344.
18. D. Hershkowitz, V. Mehrmann and H. Schneider, Matrices with sign symmetric diagonal shifts or scalar shifts, *SIAM Journal on Algebraic and Discrete Methods* 8 (1987), 108-122.
19. D. Hershkowitz and H. Schneider, On $2k$ -twisted graphs, *European Journal of Combinatorics* 8 (1987), 297-302.
20. S. Friedland, D. Hershkowitz and H. Schneider, Matrices whose powers are M-matrices or Z-matrices, *Transactions of the American Mathematical Society* 300 (1987), 343-366.
21. D. Hershkowitz, Linear mappings which preserve acyclicity properties of graphs and digraphs and applications to matrices, *Discrete Mathematics* 64 (1987), 157-190.
22. D. Hershkowitz, V. Mehrmann and H. Schneider, Eigenvalue interlacing for certain classes of matrices with real principal minors, *Linear Algebra and its Applications* 88/89 (1987), 373-403.
23. A. Berman and D. Hershkowitz, Combinatorial results on completely positive matrices, *Linear Algebra and its Applications* 95 (1987), 111-125.

24. S. Friedland and D. Hershkowitz, The rank of powers of matrices in a block triangular form, *Linear Algebra and its Applications* 107 (1988), 17-22.
25. D. Hershkowitz and H. Schneider, Sequences, wedges and associated sets of complex numbers, *Czechoslovak Mathematical Journal* 38 (113) (1988), 138-156.
26. D. Hershkowitz, Lyapunov diagonal semistability of acyclic matrices, *Linear and Multilinear Algebra* 22 (1988), 267-283.
27. D. Hershkowitz and H. Schneider, Equality classes of Matrices, *SIAM journal on Matrix Analysis and Applications* 9 (1988), 1-18.
28. D. Hershkowitz and H. Schneider, On Lyapunov scaling factors for real symmetric matrices, *Linear and Multilinear Algebra* 22 (1988), 373-384.
29. D. Hershkowitz and H. Schneider, On the generalized nullspace of M-matrices and Z-matrices, *Linear Algebra and its Applications* 106 (1988), 5-23.
30. D. Hershkowitz, U.G. Rothblum and H. Schneider, Characterizations and classifications of M-matrices using generalized nullspaces, *Linear Algebra and its Applications* 109 (1988), 59-69.
31. D. Hershkowitz and H. Schneider, Solutions of Z-matrix equations, *Linear Algebra and its Applications* 106 (1988), 25-38.
32. D. Hershkowitz, U.G. Rothblum and H. Schneider, Classifications of nonnegative matrices using diagonal equivalence, *SIAM journal on Matrix Analysis and Applications* 9 (1988), 455-460.
33. D. Shasha and D. Hershkowitz, Maximal Lyapunov scaling factors and their applications in the study of Lyapunov diagonal semistability of block triangular matrices, *Linear Algebra and its Applications* 103 (1988), 21-39.
34. D. Hershkowitz and D. Shasha, Cones of real positive semidefinite matrices associated with matrix stability, *Linear and Multilinear Algebra* 23 (1988), 165-181.
35. D. Hershkowitz, U.G. Rothblum and H. Schneider, The combinatorial structure of the generalized nullspace of a block triangular matrix, *Linear Algebra and its Applications* 116 (1989), 9-26.
36. D.H. Carlson and D. Hershkowitz, Nonsingularity criteria for general combinatorially symmetric matrices, *Linear Algebra and its Applications* 114/115 (1989), 399-416.
37. D. Hershkowitz and H. Schneider, Height bases, level bases, and the equality of the height and the level characteristics of an M-matrix, *Linear and Multilinear Algebra* 25 (1989), 149-171.

38. D. Hershkowitz, A majorization relation between the height and the level characteristics, *Linear Algebra and its Applications* 125 (1989), 97-101.
39. L. Elsner, D. Hershkowitz and A. Pinkus, Functional inequalities for spectral radii of non-negative matrices, *Linear Algebra and its Applications* 129 (1990), 103-130.
40. D. Hershkowitz and H. Schneider, On the inertia of intervals of matrices, *SIAM journal on Matrix Analysis and Applications* 11 (1990), 565-574.
41. D. Hershkowitz, Positive semidefinite pattern decompositions, *SIAM journal on Matrix Analysis and Applications* 11 (1990), 612-619.
42. N. Agha and D. Hershkowitz, The relation between the height and level characteristics for a matrix with simple singular vertices, *Linear Algebra and its Applications* 142 (1990), 113-119.
43. D. Hershkowitz and H. Schneider, Combinatorial bases, derived Jordan sets and the equality of the height and the level characteristics of an M-matrix, *Linear and Multilinear Algebra* 29 (1991), 21-42.
44. D. Hershkowitz, Peak characteristic and nonnegative signature, *Linear Algebra and its Applications* 147 (1991), 55-73.
45. D. Hershkowitz and H. Schneider, On the existence of matrices with prescribed height and level characteristics, *Israel Journal of Mathematics* 75 (1991), 105-117.
46. D. Hershkowitz, The height characteristic of block triangular matrices, *Linear Algebra and its Applications* 167 (1992), 3-15.
47. D. Hershkowitz, Recent directions in matrix stability, *Linear Algebra and its Applications* 171 (1992), 161-186.
48. D.H. Carlson, D. Hershkowitz and D. Shasha, Block diagonal semistability factors and Lyapunov semistability of block triangular matrices, *Linear Algebra and its Applications* 172 (1992), 1-25.
49. N. Agha, D. Hershkowitz and N. Kogan, A solution to an inverse height and level characteristic problem, *Linear and Multilinear Algebra* 31 (1992), 139-146.
50. D. Hershkowitz and H. Schneider, Path coverings of graphs and height characteristics of matrices, *Journal of Combinatorial Theory, Series B*, 59 (1993), 172-187.
51. D. Hershkowitz, The relation between the Jordan structure of a matrix and its graph, *Linear Algebra and its Applications* 184 (1993), 55-69.
52. D. Hershkowitz and H. Schneider, Ranks of zero patterns and sign patterns, *Linear and Multilinear Algebra* 34 (1993), 3-19.

53. L. Elsner, D. Hershkowitz and H. Schneider, Spectral radii of certain iteration matrices and cycle means of graphs, *Linear Algebra and its Applications* 192 (1993), 61-81.
54. D. Hershkowitz and F. Shmidel, On a conjecture on the eigenvalues of P-matrices, *Linear and Multilinear Algebra* 36 (1993), 103-110.
55. I. Ben-Arroyo Hartman, S. Fathi and D. Hershkowitz, On Greene's Theorem for digraphs, *Journal of Graph Theory* 18 (1994), 169-175.
56. J.A. Dias Da Silva, D. Hershkowitz and H. Schneider, Sum decompositions of symmetric matrices, *Linear Algebra and its Applications* 208/209 (1994), 523-537.
57. J.A. Dias Da Silva, D. Hershkowitz and H. Schneider, Existence of matrices with prescribed off-diagonal block element maxima, *Linear Algebra and its Applications*, 212/213 (1994), 367-385.
58. D. Hershkowitz, Paths in directed graphs and spectral properties of matrices, *Linear Algebra and its Applications*, 212/213 (1994), 309-337.
59. G. Hanoch and D. Hershkowitz, Forcing sequences of positive integers, *Czechoslovak Mathematical Journal* 45 (120) (1995), 149-169.
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