June 24, 2007

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Curriculum Vitae

Date and place of birth: February 8, 1943, Haifa, Israel
Marital status: Married, 3 children, 6 grandchildren

Academic Degrees

1966	B.Sc. Mathematics, Technion
1968	M.Sc. Mathematics, Technion
1970	Ph.D. Applied Mathematics, Northwestern University, Evanston, Illinois, U.S.A.

Professional Experience

1972-81	Senior Lecturer, Department of Mathematics, Technion
1981-89	Associate Professor, Department of Mathematics, Technion
1989-	Professor, Department of Mathematics, Technion
1995-2000, 2005-	Professor, Department of Education in Sciences and Technology, Technion
2007-	The Israel Pollak Academic Chair

Visiting Professorships

1971-72	Department of Mathematics, McGill University, Montreal, P.Q., Canada
1975-76	Departments of Mathematics and Computer Sciences, The University of Tennessee, Knoxville, Tennessee, U.S.A.
1979-80	Department of Mathematical Sciences, Rensselaer Polytechnic Institute, Troy, New York, U.S.A.
1986-87	Departments of Mathematics, University of California, San Diego and Santa Barbara, California, U.S.A.
1990 (July)	Department of Mathematics, University of New South Wales, Sydney, Australia
1997, 2001 2005	Department of Mathematics, University of California, San Diego, California, U.S.A.

Visiting Research Positions

1970-72	Centre de Recherches Mathematiques, Universite de Montreal, Montreal, P.Q., Canada.
1976 (Summer)	Department of Mathematics and Statistics Research, Nuclear Division, Oak Ridge, Tennessee, U.S.A.
1980 (Summer)	National Research Institute for Mathematical Sciences, Council for Scientific and Industrial Research, Pretoria, South Africa.
1986 (Summer)	Department of Mathematics, Bielefeld University, Bielefeld, West Germany.

1987 (Summer)	Department of Mathematics, University of Victoria, Victoria, British Columbia, Canada.
1990 (Sept.)	Department of Mathematics, University of Lisbon, Lisbon, Portugal.
1993, 1995 (Feb.)	Department of Mathematics, Wake Forest University, Winston Salem, North Carolina, U.S.A.
1996 (July)	Department of Mathematics, University of Victoria, Victoria, British Columbia, Canada.
1996 (Sept.)	Department of Mathematics, University of Science and Technology of China, Hefei, Anhui, China.
1997 (Aug.)	Department of Mathematics, Brigham Young University, Provo, Utah, U.S.A.
1997 (Sept.)	Department of Combinatorics and Optimization, University of Waterloo, Waterloo, Ontario, Canada.
2000 (Feb.)	Department of Mathematics, Princeton University.
2001 (Feb.-March)	Institute for Advanced Study, Princeton.
2001 (July), 2003 (July) 2004 (Aug.), 2005 (Feb.)	Department of Mathematics, Technical University, Berlin.
2001 (Sept.)	Department of Mathematical Sciences, University College, Dublin.
2002 (Feb.)	Laboratory for Population Dynamics, Rockefeller University, New York.
2003 (Sept.-October) 2004 (July) 2005 (March, Sept.)	The Hamilton Institute, Maynooth.

Research Field:
Matrix Theory, Mathematics Education

Administrative Posts

1981-83	Coordinator, Committee for Graduate Studies in Mathematics.
1986	Interdepartmental Committee for Graduate Studies in Applied Mathematics.
1988-91	Chair, Interdepartmental Committee for Graduate Studies in Applied Mathematics.
1989-91	Senate Committee on Appointments of Lecturers.
1989-91	Senate Committee on Undergraduate and Graduate Studies.
1990-95	Head, Center of Pre University Studies.
1991-95	Head, Department of Youth Activities.
1991-95	Interdepartmental Committee for Graduate Studies in Science Teaching.
1992-	Committee for Tenure and Appointments, Department of Education in Technology and Science.
1993	Chair, Special Meeting of the Senate.
1993-94	Senate Committee on Academic Development.
1993-95	Graduate Studies Committee.
1994-95	Senate Committee on Tenure and Senior Appointments.
1995-97	Head, Department of Pre University Studies and Youth Activities.
1995-97	Senate Committee on Honorary Degrees.
1998-01	Senate Representative in the Board of Governors and the Technion Council.

1999-01	Board of Governors Committee on Honorary Degrees.
2002-04	Coordinator, Math Club.
2002-04	Awards Committee, The Graduate School.
2005-	Chair, Committee on Basic Mathematics Service Courses.
2006-	Advisor, Gifted Students.
2006	Senate Steering Committee.
2007	Head, Department of Education in Technology and Science

Teaching Experience

- *At the Technion:* Linear Algebra, Matrix Theory, Nonnegative Matrices, Convexity, Calculus, Advanced Calculus, Combinatorics, Differential Equations, Partial Differential Equations, Optimization, Problem Solving Seminar, Modern Analysis.
- *At U.C.S.D.:* Applications of M-Matrices, Linear Algebra, Numerical Linear Algebra, Calculus.
- *Courses for Gifted Children:* Introduction to Graph Theory, Introduction to Group Theory, Introduction to Number Theory, Introduction to Probability.

Awards

- The Muriel and David Jacknow Award for Excellence in Teaching, 2002.

Invited Talks at International Conferences

1980	*Matrix Theory Conference*, Auburn, U.S.A. "The linear complementary problem".
1981	*The 8th Gatlinburg Conference on Numerical Algebra*, Oxford, England. "Sign patterns of inverse positive matrices".
1983	Conference on Matrix Theory and Numerical Linear Algebra, Oberwolfach, Germany. "Acyclic stable matrices".
1983	*Conference on Linear Algebra and its Applications*, Vitoria, Spain. "Stable acyclic matrices".
1984	*The 9th Gatlinburg Conference on Numerical Algebra*, Waterloo, Canada. "Inverse M-matrices".
1984	*A.M.S. Summer Research Conference on Linear Algebra and its Role in Systems Theory*, Brunswick, Maine. "Graph theoretical methods in studying stability".
1987	*Conference on Linear Algebra and its Application*, Logan, Utah. "Diagonal stability and diagonal semistability".
1987	*Conference on Combinatorial Matrix Theory*, Victoria, British Columbia. "Completely positive matrices and bipartite graphs".
1987	*Conference in Honour of Professor Abraham Charnes*, Austin, Texas. "m Applications of M-matrices".
1989	*The ILAS Inaugural Meeting*, Provo, Utah. "Complete positivity".
1990	*The Auburn Matrix Theory Conference*, Auburn, Alabama, "Inertia preserving matrices".
1991	*Workshop on Graph Theoretic and Combinatorial Methods in Linear Algebra*, Institute of Mathematics and its Applications, Minneapolis, Minnesota. "Completely positive graphs".

1993 *Conference on Algorithmic Graph Theory*, Oberwolfach, Germany. "Completely positive matrices, ranks and graphs".

1996 *The 2nd Chinese Linear Algebra Conference*, August, Jilin, China. "Recent results on complete positivity".

1999 *Linear Algebra Workshop*, June, Bled, Slovenia. "Complete positivity".

1999 *Linear Algebra, Theory, Applications and Computations*, January, Wake Forest, North Carolina, U.S.A. "Graphs of matrices and matrices of graphs".

1999 *Matrix Theory Conference*, December, Columbia, South Carolina. "Spectral radius graphs with cut points".

2000 *Workshop on Nonnegative Matrices and M-matrices*, December, Oberwolfach, Germany. "Upper bounds for graphs and matrices".

2001 *Linear Algebra Workshop*, May, Northridge, CA. "Bounds for eigenvalues of matrices associated with graphs".

2002 *Linear Algebra Workshop*, June, Bled, Slovenia. "Increasing the weight of an edge".

2002 *Creativity in Mathematics*, July, Riga, Latvia. "The research work of talented high school students at the Technion".

2002 *The 5th Chinese Conference on Matrix Theory and its Applications*, Shanghai, China. Plenary Talk: "Graphs of matrices and matrices of graphs".

2004 *Workshop on Nonnegative Matrices and their Application*, Maynooth, Ireland. "Open problems on nonnegative matrices".

2005 *ILAS Conference*, June, Regina, Canada. Plenary Talk: "Positive matrices and TCP".

2006 *POSTA VI*, August, Grenoble, France. Plenary Talk: "Nonnegative matrices – old problems, new results".

2006 *Workshop on spectra of families of matrices described by graphs, digraphs, and sign patterns*, October, American Institute of Mathematics, Palo Alto, CA.

Public Professional Activities

1977- Supervision of High School Final Projects.

1978-80 Secretary, Israeli Society for the Applications of Mathematics.

1985- Advisory Committee on Mathematics, Ministry of Education.

1987-90 International Board, International Linear Algebra Society.

1988-90 Secretary, Israel Mathematical Union.

1988-90 The National Committee on Mathematics.

1991-03 Board of Directors, The National Museum of Science, Planning and Technology.

1992-01 Board of Directors, Institute of Industrial Mathematics, Ben Gurion University of the Negev.

1995- Management, Technion Alumni Association.

1999-00 Committee on Matriculation Exams, UPC and the Ministry of Education.

2003 Scientific Advisor, Hamilton Institute, Ireland

2003- Board of Governors, The Reali School.

2003- Academic Board, ISEF.

2005- Chair, Advisory Committee, MATACH

2007 - Head, The Israeli Society for Research on and Promotion of Giftedness and Excellence

Editorial Posts

1984-97	Editor, Etgar-Gilionot Matematica
1988-90, 2004-06	Special Editor, Linear Algebra and its Applications
1989-95	Editorial Board, SIAM Journal on Matrix Analysis and Applications
2004	Special Editor, Electronic Journal of Linear Algebra

Organizing Committees

1982	ISAM Conference on Optimization
1984-	The Haifa Matrix Theory Conferences (Member and Chair)
1993	Workshop on Nonnegative Matrices, Haifa
2001	ILAS 9th Conference
2003	Chair, Panel on Education, IMU
2004,2006, 2008	The Hamilton Workshops on Nonnegative Matrices and their Applications, Ireland
2008	The 5th International Conference on Creativity in Mathematics and Education of Gifted Students, Haifa

Research Grants

1974	Israel Ministry of Education
1982	Israel Ministry of Defense–Military Industries
1983	Elbit
1984,1989, 2000-01,2004	The Sam Neeman Foundation
1991	The Henry Guthwirth Research Fund
2004-5	Science Foundation Ireland, International Collaborator

Graduate Students

Ron Aharoni	1979, Ph.D. "Combinatorial Problems in Matrix Theory".
Ron Adin	1981, M.Sc. "Extreme Positive Operators on Minimal and Almost-Minimal Cones".
Daniel Hershkowitz	1982, Ph.D. "Stable Matrices and Matrices with Nonnegative Principal Minors".
Avital Livne	1983, M.Sc. "Copositive Matrices".
Ofra Kessler	1984, M.Sc. "Inverse M-matrices".
Dan Shemesh	1984, Ph.D. "Commutativity Subspaces".
Ron Irmai	1985, M.Sc. "Multicriteria Decision Problems by Dynamic Programmig".
Dafna Shasha	1987, Ph.D. (Co-Supervisor D. Hershkowitz) "Diagonal Semistability of Matrices".
Natali Kogan	1989, M.Sc. "Completely Positive Matrices and Completely Positive Graphs".
Sarel Kagan	1991, M.Sc. "Constrained Matrix Scaling".
Naomi Shaked Monderer	1992, Ph.D. "Convex Sets of Positive Semidefinite Matrices".

Natali Kogan	1993, Ph.D. (Co-Supervisor D. Hershkowitz) "Combinatorial Spectral Theory".
Avi B. Sigler	1994, Ph.D. "Geometric Investigations of High School and Pre Service Students".
Mark Krupnik	1994, Ph.D. "Completion Problems in Matrix Theory".
Marina Arab	1995, M.Sc. "The Extended Linear Complimentarity Problem".
Alex Kuperman	1996, Ph.D. (Co-Supervisor N. Movshovitz–Hadar) "Misconceptions in Linear Algebra".
Galit Dremer	1996, M.Sc. "Seeing Mathematics".
Roza Leikin	1997, Ph.D. (Co-Supervisor O. Zaslavsky) "Symmetry as a Way of Thought".
Amal Sherif Rasslan	2000, Ph.D. University Professor as a High School Teacher– a Case Study".
Shmuel Aruchas	2000, M.Sc. "Mathematical Problems that Can Be Used to Identify Gifted Students".
Nurit Katchalsky	2002, M.Sc. "The Majority Rule in Graphs".
Boris Koichu	2003, Ph.D. (Co-Supervisor M. Moore) "Senior High School Student's Heuristic Behaviors in Mathematical Problem Solving".
Sagit Ophrain	2003, M.Sc. "Final Paper on Teaching Analytic Geometry".
Yulia Bulgaev	2004, M.Sc. "The Wiener Index of a Graph".
Felix Goldberg	2004, M.Sc. "Laplacian at Graphs, Quasi-Strongly Regular Graphs and CompletelyPositive Praphs".
Olga Bortnik	2004, M.Sc. "Words in Positive Definite Matrices".
Shmuel Aruchas	2005, Ph.D. (Co-Supervisor I. Verner) "Applications–Motivated Calculus Course"
Alon Hadad	M.Sc. (in progress)
Ovadia Debby	M.Sc. (in progress)
Yevgeny Rochlin	M.Sc. (in progress)
Felix Goldberg	Ph.D. (in progress)
Yefim Katz	Ph.D. (in progress) (Co-Supervisor B. Koichu)
Batia Amit	Ph.D. (in progress) (Co-Supervisor N. Movshovitz–Hadar)

Postdoctoral Students

Xiao–Dong Zhang	1998-2000
Changquing Xu	2002-2003

Visiting Ph.D. Students

Francesco Barioli, University of Padova	2000
Rade Stansojevic, The National University of Ireland	2004

LIST OF PUBLICATIONS

Theses:

M.Sc. Thesis: A. Berman, *The permanent and other generalized matrix functions*, Technion, 1968.

Ph.D. Thesis: A. Berman, *Linear inequalities in matrix theory,* Northwestern, 1970.

In Print

1. A. Berman and A. Ben-Israel, More on linear inequalities with applications to matrix theory, J. Math. Anal. Appl., 33 (1971), 482-496.
2. A. Berman and A. Ben-Israel, A note on pencils of Hermitian or symmetric matrices, SIAM J. Appl. Math., 21 (1971), 41-54.
3. A. Berman and A. Ben-Israel, Linear inequalities, mathematical programming and matrix theory, Math. Programming, 1 (1971), 291-300.
4. A. Berman and P. Gaiha, A generalization of irreducible monotonicity, Linear Algebra and its Appl., 5 (1972), 29-38.
5. A. Berman and R.J. Plemmons, Monotonicity and the generalized inverse, SIAM J. Appl. Math., 22 (1972), 155-161.
6. A. Berman, Consistency of linear ineqalities over sets, Proc. Amer. Math. Soc., 36 (1972), 13-17.
7. A. Berman and A. Ben-Israel, Linear equations over cones with interior; a solvability theory with applications to matrix theory, Linear Algebra and its Appl., 7 (1973), 139-149.
8. A. Berman, Linear inequalities over complex cones, Canad. Math. Bull., 16 (1973), 19-21.
9. A. Berman, Complementary problem and duality over convex cones, Canad. Math. Bull., 7 (1974), 19-25.
10. A. Berman and R.J. Plemmons, Cones and iterative methods for best least squares solutions to linear systems, SIAM J. Numer. Anal., 1 (1974), 145-154.
11. A. Berman and R.J. Plemmons, Inverses of nonnegative matrices, Linear and Multilinear Algebra, 2 (1974), 161-172.
12. A. Berman and R.J. Plemmons, Matrix group monotonicity, Proc. Amer. Math. Soc., 46 (1974), 355-359.
13. A. Berman, Nonnegative matrices which are equal to their generalized inverses, Linear Algebra and its Appl., 9 (1974), 261-265.

14. A. Berman and R.J. Plemmons, Eight types of matrix monotonicity, Linear Algebra and its Appl., 13 (1976), 115-123.

15. A. Berman and M. Neumann, Proper splittings of rectangular matrices, SIAM J. Appl. Math., 31 (1976), 307-312.

16. A. Berman with M. Neumann, Consistency and splittings, SIAM J. Numer. Anal., 13 (1976), 877-888.

17. A. Berman and R.C. Ward, Stability and semipositivity of real matrices, Bull. Amer. Math. Soc., 83 (1977), 262-263.

18. A. Berman and A. Kotzig, The length of a (0,1) matrix, Linear Algebra and Appl., 20 (1978), 197-203.

19. G.P. Barker, A. Berman and R.J. Plemmons, Positive diagonal solutions to the Lyapunov equation, Linear and Multilinear Algebra, 5 (1978), 249-256.

20. A. Berman and M. Tarsi, On Tucker's key theorem, Internal J. Math. Sciences, 1 (1978), 63-68.

21. A. Berman, The spectral radius of a nonnegative matrix, Canad. Math. Bull., 2 (1978), 113-114.

22. A. Berman and R.C. Ward, ALPS: Classes of stable and semi-positive matrices, Linear Algebra and Appl., 21 (1978), 163-174.

23. A. Berman, R.S. Varga and R.C. Ward, ALPS: Matrices with nonpositive off-diagonal entries, Linear Algebra and Appl., 21 (1978), 233-244.

24. A. Berman and A. Kotzig, The order of cyclicity of bipartite tournaments and (0,1) matrices, Kyungpook Math. J., 19 (1978), 127-134.

25. A. Berman, Generalized interval programming, Bull. Calcutta Math. Soc., 71 (1980), 169-176.

26. A. Berman and A. Kotzig, Bipartite graphs with a central symmetry and (0,1) matrices, Annals of Discrete Math., 8 (1980), 37-42.

27. A. Berman, B.N. Parlett and R.J. Plemmons, Diagonal scaling to an orthogonal matrix, SIAM J. on Algebraic and Discrete Methods, 2 (1981), 57-65.

28. A. Berman and B.D. Saunders, Matrices with zero line sums and maximal rank, Linear Algebra and its Appl., 40 (1981), 229-235.

29. A. Berman, Matrices and the linear complementarity problem, Letters in Linear Algebra, 40 (1981), 249-256.

30. A. Berman, Skew Hadamard matrices of order 16, Annals of Discrete Math., 12 (1982), 45-47.

31. R. Aharoni, A. Berman and Y. Censor, An interior points algorithm for the convex feasibility problem, Advances in Applied Mathematics, 4 (1983), 479-489.

32. D. Hershkowitz and A. Berman, Necessary conditions and a sufficient condition for the Fischer-Hadamard inequalities, Linear and Multilinear Algebra, 13 (1983), 67-72.

33. A. Berman and D. Hershkowitz, Matrix diagonal stability and its implications, SIAM J. on Algebraic and Discrete Methods, 4 (1983), 377-382.

34. D. Hershkowitz and A. Berman, Localization of the spectra of P- and P_0 -matrices, Linear Algebra and Appl., 52/53 (1983), 387-397.

35. A. Berman, Convexity, graph theory and nonnegative matrices, Annals of Discrete Math., 20 (1984), 55-59.

36. A. Berman and D. Hershkowitz, Characterization of acyclic D-stable matrices, Linear Algebra and Appl., 58 (1984), 17-31.

37. D. Hershkowitz and A. Berman, Notes on w- and t-matrices, Linear Algebra and Appl., 58 (1984), 169-183.

38. A. Berman, D. Hershkowitz and C.R. Johnson, Linear transformations that preserve certain positivity classes of matrices, Linear Algebra and Appl., 68 (1985), 9-29.

39. O. Kessler and A. Berman, Matrices with a transitive graph and inverse M-matrices, Linear Algebra and its Appl., 71 (1985), 175-185.

40. A. Berman and D. Hershkowitz, Graph theoretical methods in studying stability, Contemporary Math., 47 (1985), 1-6.

41. A. Berman, M. Neumann and R.J. Stern, Cone reachability for non-diagonal linear differential systems, Linear Algebra and its Appl. (1986), 263-280.

42. D. Shasha and A. Berman, On the uniqueness of the Lyapunov scaling factors, Linear Algebra and its Appl., 91 (1987), 53-63.

43. A. Berman and D. Hershkowitz, Combinatorial results on completely positive matrices, Linear Algebra and its Appl., 95 (1987), 111-125.

44. A. Berman and R.J. Stern, Linear feedback, irreducibility and M-matrices, Linear Algebra and its Appl., 97 (1987), 141-152.

45. A. Berman and B. Grone, Bipartite completely positive matrices, Proc. of the Cambridge Phil. Society, 103 (1988), 269-276.

46. A. Berman and A. Kotzig, Cross cloning and antipodal graphs, Discrete Mathematics, 69 (1988), 107-114.

47. A. Berman, Complete positivity, Linear Algebra and its Applications, 107 (1988), 57-63.

48. A. Berman and S.K. Jain, Nonnegative generalized inverses of powers of nonnegative matrices, Linear Algebra and its Applications, 10 (1988); 169-179.

49. D. Shasha and A. Berman, More on the uniqueness of the Lyapunov scaling factors, Linear Algebra and its Applications, 107 (1988), 253-273.

50. A. Berman and D. Shasha, Inertia preserving matrices, SIAM Journal on Matrix Analysis and Applications, (1991), 209-219.

51. N. Shaked-Monderer and A. Berman, More on extremal positive semidefinite doubly stochastic matrices, Linear Algebra and its Applications, 167 (1992), 17-34.

52. N. Kogan and A. Berman, Characterization of completely positive graphs, Discrete Mathematics, 114 (1993), 297-304.

53. A. Berman and D. Shasha, Strongly inertia preserving matrices SIAM Journal on Matrix Analysis and Applications, 15 (1994), 729-732.

54. R. Leikin, A. Berman and O. Zaslavsky, The role of symmetry in mathematical problem solving: an interdisciplinary approach, *Symmetry: Culture and Science* **6** (1995), 332-335.

55. A. Berman and D. Shasha, Set inertia preserving matrices, Set inertia preserving matrices, *Linear and Multilinear Algebra* **43** (1997), 169-179.

56. A. Berman and M. Krupnik, Spectrum preserving lower triangular case, *Electronic J. Linear Algebra* **2** (1997), 9-16.

57. A. Berman and R. J. Plemmons, A note on simultaneous diagonalizable matrices, *Mathematical Inequalities and Applications* **1** (1998), 149-152.

58. A. Berman and N. Shaked-Monderer, Remarks on completely positive matrices, *Linear and Multilinear Algebra* **44** (1998), 149-163.

59. R. Leikin, A. Berman and O. Zaslavsky, On the definition of symmetry, *Symmetry: Culture and Science* **9** (1998), 375-382.

60. A. Berman and X. D. Zhang, A note on degree antiregular graphs, *Linear and Multilinear Algebra* **47** (2000), 307-311.

61. A. Berman and X. D. Zhang, Lower bounds for the eigenvalues of Laplacian matrices, *Linear Algebra and its Applications* **316** (2000), 13-20.

62. M. Berezina and A. Berman, 'Proof reading' and multiple choice tests, *International Journal of Mathematical Education in Science and Technology* **31** (2000), 613-619.

63. R. Leikin, A. Berman and O. Zaslavsky, Applications of symmetry to problem solving, *International Journal of Mathematical Education in Science and Technology* **31** (2000), 799-809.

64. R. Leikin, A. Berman and O. Zaslavsky, Learning through teaching: The case of symmetry, *Mathematics Education Research Journal* **12** (2000), 16-34.

65. A. Berman and X. D. Zhang, On the spectral radius of graphs with cut vertices, *Journal of Combinatorial Theory, Series B* **83** (2001), 233-240.

66. B. Abramovitz, M. Berezina and A. Berman, Incorrect but instructive, *International Journal of Mathematical Education in Science and Technology* **33** (2002), 465-475.

67. A. Berman and S. Gueron, A note on the inverse of Hilbert matrix, *The Mathematical Gazette* **86** (2002), 274-277.

68. F. Barioli and A. Berman, The maximal *cp*-rank of rank k completely positive matrices, *Linear Algebra and its Applications* **363** (2003), 57-63.

69. A. Berman and X. D. Zhang, Bipartite density of cubic line graphs, *Discrete Math.* **260** (2003), 27-35.

70. A. Berman, Graphs of matrices and matrices of graphs, *Numerical Mathematics, a Journal of Chinese Universities* (English series) Vol. **12** (supplement) (2003), 12-14.

71. B. Abramovitz, M. Berezina and A. Berman, Useful mistakes, *International Journal of Mathematical Education in Science and Technology.*

72. B. Koichu and A. Berman, 3-D dynamic geometry: Ceva's Theorem in space, *International Journal of Computers for Mathematical Learning* **9** (2004), 95-108.

73. B. Koichu, A. Berman and M. Moore, Promoting heuristic literacy, *For the Learning of Mathematics* 24 (1) (2004), 33–39.

74. A. Berman, R. Shorten and D. Leith, Positive matrices associated with synchronized communication networks, *Linear Algebra and its Applications* **393** (2004), 47-54.

75. A. Berman and C. Xu, 5×5 completely positive matrices, *Linear Algebra Appl.* **393** (2004), 55–71.

76. B. Abramovitz, M. Berezina and A. Berman, How not to formulate multiple choice problems, *Int. J, Math. Ed. Sci. Technol.* **36(4)** (2005).

77. A. Berman and K. H. Foerster, Algebraic connectivity of trees with a pendant edge of infinite weight, *Electronic J. Linear Algebra* **13** (2005), 175–186.

78. A. Berman and C. Xu, $[0, 1]$ completely positive matrices, *Linear Algebra Appl.* **399** (2005), 35–51.

79. A. Berman and T. Laffey, Similarity classes and principal submatrices, *Linear Algebra Appl.* **401** (2005), 341–351.

80. B. Koichu and A. Berman, When do gifted high-school students use geometry to solve geometry problems? *Journal of Secondary Gifted Education* **XVI** (2005), 168–179.

81. A. Berman, F. Goldberg and B. Koichu, 'Good research' conducted by talented high school students: The case of SciTech, *Gifted Education International* **20** (2005), 220–228.

82. A. Berman, T. Laffey, A. Leizarowitz and R. Shorten, On the second eigenvalue of matrices associated with TCP, *Linear Algebra Appl.* **416** (2006), 175–183.

83. A. Berman and U. G. Rothblum, A note on the computation of the CP-rank, *Linear Algebra Appl.* **419** (2006), 1–7.

84. B. Koichu, A. Berman, and M. Moore, Heuristic literacy development and its relation to mathematical achievements of middle school students, *Instructional Science* (Published online) (2006).

85. B. Koichu, A. Berman, and M. Moore, The effect of promoting heuristic literacy on the mathematic aptitude of middle-school students, *International Journal of Mathematical Education in Science and Technology* **38** (2007), 1–17.

Accepted for Publication

1. A. Berman and C. Xu, Minimal (0,1) cp matrices, *Linear and Multilinear Algebra.*

Submitted for Publication

1. I. Verner, A. Aroshas, and A. Berman, Integrating Supplementary Application-Based Tutorials in the Multivariable Calculus Course, *International Journal of Mathematical Education in Science and Technology.*

Conference Proceedings

1. A. Berman, Incidence matrices of Boolean functions and $(0,1)$ programming, in: "Applications of Number Theory to Numerical Analysis", edited by S.K. Zaremba, Academic Press, New York–London, 1972., 465-477.

2. A. Berman, A. Evyatar and T. Globerzon, Mathematical patterns for gifted children, in: "Gifted Children: Challenging their Potential, New Perspectives and Alternatives", edited by A. Evyatar, Trillium Press, N.Y., 1981, pp. 71-81.

3. A. Berman, Stable acyclic matrices, Proceedings of the Conference on Linear Algebra and its Applications, Vitoria, Spain, 1983.

4. M.A. Pollatschek, A. Berman, Z. Rosberg and A. Zaks, The gain of common inventory, Proceedings of the Industrial Engineering/Management Science Conference, Tel-Aviv, 1984.

5. A. Berman, A. Kotzig and G. Sabbidussi, Antipodal graphs of diameter 4 and extremal girth, Contemporary Methods, in: "Graph Theory", edited by R. Bodendiek, Wissenschaftsverlag, Manheim/Wien/Zurich, 1990, pp.137-150.

6. A. Berman, m applications of M-matrices, in: "Systems and Management Science by Extremal Methods", edited by F. Y. Phillips and J. J. Rousseau, Kluwer Academic Publishers, Boston, Dordrecht, London, 1992, pp. 15-126.

7. A. Berman, Completely positive graphs, in: "Combinational and Graph Theoretical Problems in Linear Algebra", edited by R. Brualdi, S. Friedland and V. Klee, Springer, NY, 1993, pp. 229-233.

8. R. Leikin, A. Berman and O. Zaslavsky, Defining and understanding symmetry, in: "Proceedings of the 21st International Conference for the Psychology of Mathematical Education", edited by J. P. da Ponte and J. F. Matos, Vol. 3, 1997, pp. 192-199.

9. B. Koichu and A. Berman, "The research work of talented high school students at the Technion", Creativity in Mathematics, Riga, Latvia, 2002.

10. B. Koichu, A. Berman and M. Moore, Changing teachers' beliefs about student' heuristics in problem solving, *CERME* **3**, 2003.

11. S. Aroshas and A. Berman, Mathematical problems used to identify gifted students, in: "Proceedings of the 3rd international Conference on Creativity in Mathematics Education and the Education of Gifted Students", edited by E. Velikova, 2003, pp. 310–313. Rousse, Bulgaria, University of Rousse.

12. B. Koichu, A. Berman, M. Moore, Very able students think aloud: An attempt at heuristic microanalysis, in:"Proceedings of the 3rd international Conference on Creativity in Mathematics Education and the Education of Gifted Students", edited by E. Velikova, 2003, pp. 318–325. Rousse, Bulgaria, University of Rousse.

13. A. Berman, R. Shorten and D. Leith, Convergence results for synchronised communication networks, 2004 American Control Conference.

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