

André L. Tits

Born in Verviers, Belgium, on April 13, 1951.
Belgian Citizen, Permanent Resident of the USA.

Education

Electrical Engineer, University of Liège, Belgium, July 1974.
Special certificate in Computer Science, University of Liège, Belgium, July 1976.
M.Sc. in Electrical Engineering, University of California, Berkeley, June 1979.
Ph.D. in Electrical Engineering, University of California, Berkeley, December 1980.

Professional Experience

- Professor at the Department of Electrical and Computer Engineering, University of Maryland (known as the Department of Electrical Engineering until 1999), College Park, since July 1990. Joint appointment with the Institute for Systems Research (known as Systems Research Center until 1992) since August 1988; permanent joint appointment since July 1995. Affiliate appointment with the Computer Science Department since 2003.
- Associate Professor at the Department of Electrical Engineering, University of Maryland, College Park, August 1985–June 1990.
- Assistant Professor at the Department of Electrical Engineering, University of Maryland, College Park, August 1981–August 1985.
- Visiting Professor at the the Australian National University, Canberra, Australia, October 1995.
- Visiting Professor at CESAME, Catholic University of Louvain, Louvain-la-Neuve, Belgium, January–June 1995.
- Visiting Professor at INRIA, Le Chesnay, France, October–December 1988.
- Visiting Professor at the the Lund Institute of Technology, Lund, Sweden, September 1988.
- Consultant with Harris Semiconductor (1981–1984) and with SEPI, Inc. (1982–1984).
- Research Engineer at the University of California, Berkeley, January 1981–August 1981 (except Spring quarter: see below).
- Visiting Lecturer at the EECS Department, University of California, Berkeley, Spring quarter 1981.
- Research Assistant (half time) at the University of California, Berkeley, July 1978–December 1980.
- Teaching Assistant (half time) at the University of California, Berkeley, September 1977–June 1978.
- Military service (Belgian Air Force), September 1976–June 1977.
- Full time Research and Teaching Assistant at the University of Liège, Belgium, October 1974–August 1976.
- Student training (Summer Course) at the European Organization for Nuclear Research (CERN), Geneva, Switzerland, August–September 1973.
- Student training at Standard Electrica (ITT), Madrid, Spain, August 1972.

Publications

0. Articles in Books

- 0.1. (E. Polak and A.L. Tits) *On Globally Stabilized Quasi-Newton Methods for Inequality Constrained Optimization Problems*, Proceedings of the 10th IFIP Conference on System Modeling and Optimization, New York, NY, August–September 1981, Lecture Notes in Control and Information Sciences 38, R.F. Drenick and F. Kozin, eds., Springer-Verlag, 1982, pp. 539–547.
- 0.2. (E.R. Panier and A.L. Tits) *A Superlinearly Convergent Method of Feasible Directions for Optimization Problems Arising in the Design of Engineering Systems*, Proceedings of the 7th International Conference on Analysis and Optimization of Systems, Antibes, France, 1986, Lecture

- Notes in Control and Information Sciences 83, A. Bensoussan and J.L Lions, eds., Springer-Verlag, 1986, pp. 65–73.
- 0.3. (E.R. Panier and A.L. Tits) *An Algorithm for Semi-Infinite Optimization Problems Arising in Engineering Design*, Proceedings of the International Conference on Optimization: Techniques and Applications, Singapore, April 1987, K.L. Teo, H. Paul, K.L. Chew, and C.M. Wang, eds., National University of Singapore, 1987, pp. 932–937. (*subsequent extended version: paper 1.17*)
 - 0.4. (J.C. Wang, M.K.H. Fan and A.L. Tits) *Structured Singular Value and Geometry of the M-Form Numerical Range*, in “Linear Circuits, Systems and Signal Processing: Theory and Application”, C.I. Byrnes, C.F. Martin and R. Saeks, eds., North Holland, pp. 609–615, 1988.
 - 0.5. (L. Saydy, A.L. Tits and E.H. Abed) *Robust Stability of Linear Systems Relative to Guarded Domains*, in “Recent Advances in Robust Control,” P. Dorato and R.K. Yedavalli, eds., IEEE Press, pp. 131–138, 1990. (*subsequent extended version: paper 1.21*)
 - 0.6. (L. Saydy, A.L. Tits and E.H. Abed) *Robust Stability of Complex Families of Matrices or Polynomials*, in “Control of Uncertain Systems. Proceedings of an International Workshop, Bremen, West Germany, June 1989,” D. Hinrichsen and B. Martensson, eds., Birkhäuser, 1990.
 - 0.7. (E.H. Abed, L. Saydy and A.L. Tits) *Generalized Stability of Linear Singularly Perturbed Systems Including Calculation of Maximal Parameter Range*, in “Realization and Modelling in System Theory. Proceedings of the International Symposium MTNS-89 – Volume 2”, M.A. Kaashoek, J.H. van Schuppen and A.C.M. Ran, eds., Birkhäuser, 197–203, 1990.
 - 0.8. (L. Lee and A.L. Tits) *On Phase Information in Multivariable Systems*, in “Recent Advances in Mathematical Theory of Systems, Control, Networks and Signal Processing I. Proceedings of the International Symposium MTNS-91 – Volume I”, H. Kimura and S. Kodama, Eds., Mita Press, Osaka, Japan, pp. 221–226, 1992.
 - 0.9. (A.L. Tits, M.K.H. Fan and E.R. Panier) *Aspects of Optimization-Based CADCS*, in “Computer Aided Design in Control Systems 1988 – Selected Papers from the 4th IFAC Symposium, Beijing, China, August 1988,” ed. Chen Zhen-Yu, Pergamon Press, 1988, pp. 47–57.
 - 0.10. (M.K.H. Fan, J.C. Doyle and A.L. Tits) *Robustness in the Presence of Parametric Uncertainty and Unmodeled Dynamics*, in “Advances in Computing and Control: Proceedings of the 1988 COMCON,” Lecture Notes in Control and Information Sciences, Vol. 130, W.A. Porter, S.C. Kak and J.L. Aravena, Eds., Springer-Verlag, Berlin, 1989, pp. 363–367.
 - 0.11. (M.K.H. Fan and A.L. Tits) *Worst-Case H_∞ Performance Under Structured Perturbations with Known Bounds*, in “New Trends in Systems Theory. Proceedings of the Università di Genova – The Ohio State University Joint Conference, July 9–11, 1990” G. Conte, A.M. Perdon and B. Wyman, Eds., Birkhäuser, 268–275, 1991.
 - 0.12. (L. Lee and A.L. Tits) *Linear Fractional Transformations for the Approximation of Various Uncertainty Sets*, in “Control of Uncertain Dynamic Systems,” S.P. Bhattacharyya and L. Keel, eds., CRC Press, 1991, pp. 53–62.
 - 0.13. (N.-K. Tsing and A.L. Tits) *On the Multiaffine Image of a Cube*, in “Robustness of Dynamic Systems with Parameter Uncertainties,” M. Mansour, S. Balemi and W. Truöl, eds., Birkhäuser, Basel-Bosten-Berlin, 1992, pp. 105–110.
 - 0.14. (N.-K. Tsing, M.K.H. Fan, J. Barlow, A.L. Tits, M.B. Tischler) *Optimization-Based Controller Design for Rotorcraft*, in “Proceedings of the Fifth NASA/NSF/DOD Workshop on Aerospace Computational Control (Santa Barbara, California, August 1992),” JPL Publication 93–02, February 15, 1993, M. Wette and G. K. Man, Editors, pp. 379–393.
 - 0.15. (A.L. Tits and J.L. Zhou) *Fast Feasible Direction Methods, with Engineering Applications*, in “Recent Advances in Computer Aided Control Systems Engineering”, M. Jamshidi and C.J. Herget, eds., Elsevier, 1992, pp. 21–32.
 - 0.16. (A.L. Tits and J.L. Zhou) *A Simple, Quadratically Convergent Interior Point Algorithm for Linear Programming and Convex Quadratic Programming*, in “Large Scale Optimization: State

- of the Art”, W.W. Hager, D.W. Hearn and P.M. Pardalos, eds., Kluwer, 1993, pp. 411–427.
- 0.17. (V. Balakrishnan and A.L. Tits) *Numerical Optimization-Based Design*, pp. 749–758 in “The Control Handbook,” W.S. Levine, ed., CRC Press Inc., 1996.
 - 0.18. (J. Sreedhar, P. Van Dooren and A.L. Tits) *A fast algorithm to compute the real structured stability radius*, in “Stability Theory: Proceedings of Centenary Conference”, Ticino, Switzerland, May 21–26, 1995, Rolf Jeltsch and Mohamed Mansour, eds., International Series of Numerical Mathematics (ISNM) Vol. 121, Birkhäuser Verlag, Basel, Switzerland, 1996, pp. 219–230.
 - 0.19. (C.T. Lawrence and A.L. Tits) *Feasible sequential quadratic programming for finely discretized problems from SIP*, in “Semi-Infinite Programming”, R. Reemtsen and J.-J. Rückmann, eds., pp. 159–193, Kluwer Academic Publishers, series “Nonconvex Optimization and Its Applications”, Boston-London-Dordrecht, 1998.
 - 0.20. (J. Chen and A.L. Tits) *Robust Control Analysis*, pp. 602–616 in Vol. 18 of “Encyclopedia of Electrical and Electronics Engineering”, John G. Webster, Ed., Wiley, 1998.
 - 0.21. (A.L. Tits and V. Balakrishnan) *Phase-Sensitive Structured Singular Value*, “Open Problems in Mathematical Systems and Control Theory”, Vincent D. Blondel, Eduardo D. Sontag, M. Vidyasagar and Jan C. Willems, Eds., Springer, 1998.
 - 0.22. (A.L. Tits) *FSQP: Introduction, Theoretical Advances, Algorithms, Applications*, in “Encyclopedia of Optimization”, C. Floudas and P. Pardalos, Eds., Kluwer Academic Publishers, Volume II, pp. 91–94, 2001.

1. Refereed Journal Papers

- 1.1. (A.L. Tits) *Some Investigations About a Unified Approach to Quadratically Convergent Algorithms in Function Optimization*, J. Optimization Theory Appl., vol. 20, No.4, 1976, pp. 489–496.
- 1.2. (J. Gazon and A.L. Tits) *A Structural Approach to Stability in Linear Systems. A Sufficient Condition*, International Journal of Systems Science, vol. 9, 1978, pp. 681–694.
- 1.3. (E. Polak and A.L. Tits) *A Globally Convergent, Implementable Multiplier Method with Automatic Penalty Limitation*, J. of Applied Mathematics and Optimization, vol. 6, 1980, pp. 335–360.
- 1.4. (E. Polak and A.L. Tits) *A Recursive Quadratic Programming Algorithm for Semi-Infinite Optimization Problems*, J. of Applied Mathematics and Optimization, vol. 8, 1982, pp. 325–349.
- 1.5. (T.P. Lee, W.T. Nye and A.L. Tits) *Design of Digital Filters Using Interactive Optimization*, IEEE Transactions on Circuits and Systems, CAS-30, No.11, 1983, pp. 821–824.
- 1.6. (A.L. Tits) *On the Optimal Design Centering, Tolerancing and Tuning Problem*, J. Optimization Theory Appl., vol. 45, No.3, 1985, pp. 487–494.
- 1.7. (K.A. McDonald, T.J. McAvoy and A.L. Tits) *Optimal Averaging Level Control*, J. of the American Institute of Chemical Engineers, vol. 32, No.1, 1986, pp. 75–86.
- 1.8. (A.L. Tits, W.T. Nye and A.L. Sangiovanni-Vincentelli) *Enhanced Methods of Feasible Directions for Engineering Design Problems*, J. Optimization Theory Appl., vol. 51, No.3, 1986, pp. 475–504.
- 1.9. (W.T. Nye and A.L. Tits) *An Application-Oriented, Optimization-Based Methodology for Interactive Design of Engineering Systems*, International Journal of Control, vol. 43, No.6, 1986, pp. 1693–1721.
- 1.10. (E.H. Abed and A.L. Tits) *On the Stability of Multiple Time-Scale Systems*, International Journal of Control, vol. 44, No.1, 1986, pp. 211–218.
- 1.11. (M.K.H. Fan and A.L. Tits) *Characterization and Efficient Computation of the Structured Singular Value*, IEEE Transactions on Automatic Control, vol. AC-31, No.8, 1986, pp. 734–743.

- 1.12. (E.R. Panier and A.L. Tits) *A Superlinearly Convergent Feasible Method for the Solution of Inequality Constrained Optimization Problems*, SIAM J. on Control and Optimization, vol. 25, No.4, 1987, pp. 934–950.
- 1.13. (M.K.H. Fan and A.L. Tits) *On the Generalized Numerical Range*, Linear and Multilinear Algebra, vol. 21, 1987, pp. 313–320.
- 1.14. (E.R. Panier, A.L. Tits and J.N. Herskovits) *A QP-Free, Globally Convergent, Locally Superlinearly Convergent Algorithm for Inequality Constrained Optimization*, SIAM J. on Control and Optimization, vol. 26, No.4, 1988, pp. 788–811.
- 1.15. (W.T. Nye, D.C. Riley, A.L. Sangiovanni-Vincentelli and A.L. Tits) *DELIGHT.SPICE: An Optimization-Based System for the Design of Integrated Circuits*, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, vol. CAD-7, No.4, 1988, pp. 501–519.
- 1.16. (M.K.H. Fan and A.L. Tits) *m-Form Numerical Range and the Computation of the Structured Singular Value*, IEEE Transactions on Automatic Control, vol. AC-33, No.3, 1988, pp. 284–289.
- 1.17. (E.R. Panier and A.L. Tits) *A Globally Convergent Algorithm with Adaptively Refined Discretization for Semi-Infinite Optimization Problems Arising in Engineering Design*, IEEE Transactions on Automatic Control, vol. AC-34, No.8, 1989, pp. 903–908.
- 1.18. (E.H. Abed and A.L. Tits) *Comment on ‘Sufficient Condition for the Asymptotic Stability of Interval Matrices’*, International Journal of Control, vol. 47, No.6, 1988, p. 1975.
- 1.19. (E.R. Panier, M.K.H. Fan and A.L. Tits) *On the Robust Stability of Polynomials with no Cross-Coupling between the Perturbations in the Coefficients of Even and Odd Powers*, Systems and Control Letters, vol. 12, No.4, 1989, pp. 291–299.
- 1.20. (M.K.H. Fan, L.-S. Wang, J. Koninckx and A.L. Tits) *Software Package for Optimization-Based Design with User-Supplied Simulators*, IEEE Control Systems Magazine, vol. 9, No.1, 1989, pp. 66–71.
- 1.21. (L. Saydy, A.L. Tits and E.H. Abed) *Guardian Maps and the Generalized Stability of Parametrized Families of Matrices and Polynomials*, Mathematics of Control, Signals and Systems, vol. 3, No. 4, 1990, pp. 345–371.
- 1.22. (M.K.H. Fan, A.L. Tits and J.C. Doyle) *Robustness in the Presence of Mixed Parametric Uncertainty and Unmodeled Dynamics*, IEEE Transactions on Automatic Control, vol. AC-36, No. 1, 1991, pp. 25–38.
- 1.23. (L. Saydy, E.H. Abed and A.L. Tits) *Maximal Range for Generalized Stability – Application to Two Physically Motivated Examples*, Internat. J. of Control, vol. 53, No. 4, 1991, pp. 837–846.
- 1.24. (A.L. Tits) *Comment on ‘Polytopes of Polynomials with Zeros in a Prescribed Set’*, IEEE Transactions on Automatic Control, vol AC-35, No. 11, 1990, pp. 1276–1277.
- 1.25. (A.L. Tits and L. Saydy) *On Robust Eigenvalue Configuration*, IEEE Transactions and Circuits and Systems, vol. CAS-38, No. 1, 1991, pp. 138–139.
- 1.26. (E.R. Panier and A.L. Tits) *Avoiding the Maratos Effect by Means of a Nonmonotone Line Search. I. General Constrained Problems*, SIAM J. on Numerical Analysis, vol. 28, No. 4, August 1991, pp. 1183–1195.
- 1.27. (L. Saydy, A.L. Tits and E.H. Abed) *Comments on “Invariance of the Aperiodic Property for Polynomials with Perturbed Coefficients”*, IEEE Transactions on Automatic Control, vol. AC-37, No. 5, 1992, pp. 697–698.
- 1.28. (E.R. Panier, M.K.H. Fan and A.L. Tits) *Comments on “On the Stability of Uncertain Polynomials with Dependent Coefficients”*, IEEE Transactions on Automatic Control, vol. AC-37, No. 8, 1992, p. 1201.
- 1.29. (J.L. Zhou and A.L. Tits) *Nonmonotone Line Search for Minimax Optimization*, J. Optimization Theory Appl., vol. 76, No. 3, 1993, pp. 455–476.

- 1.30. (M.K.H. Fan and A.L. Tits) *On Worst-Case H-infinity Performance in the Presence of Uncertainty*, Systems and Control Letters, vol. 18, No. 6, 1992, pp. 409–421.
- 1.31. (E.R. Panier and A.L. Tits) *On Combining Feasibility, Descent and Superlinear Convergence in Inequality Constrained Optimization*, Mathematical Programming, vol. 59, No. 2, pp. 261–276, 1993.
- 1.32. (J.F. Bonnans, E.R. Panier, A.L. Tits and J. Zhou) *Avoiding the Maratos Effect by Means of a Nonmonotone Line Search. II. Inequality Constrained Problems – Feasible Iterates*, SIAM J. on Numerical Analysis, vol. 29, No. 4, 1992, pp. 1187–1202.
- 1.33. (L. Lee and A.L. Tits) *On Continuity/Discontinuity in Robustness Indicators*, IEEE Transactions on Automatic Control, vol. AC-38, No. 10, 1993, pp. 1551–1553.
- 1.34. (N.-K. Tsing and A.L. Tits) *When is the Multiaffine Image of a Cube a Polygon?* Systems and Control Letters, vol. 20, No. 3, 1993, pp. 439–445.
- 1.35. (L. Qiu, A.L. Tits and Y. Yang) *On the Computation of the Real Hurwitz-Stability Radius*, IEEE Transactions on Automatic Control, vol. 40, No. 8, 1995, pp. 1475–1476.
- 1.36. (A.L. Tits and M.K.H. Fan) *On the Small μ Theorem*, Automatica, vol. 31, No. 8, 1995, pp. 1199–1201.
- 1.37. (J.L. Zhou and A.L. Tits) *An SQP Algorithm for Finely Discretized Continuous Minimax Problems and Other Minimax Problems with Many Objective Functions*, SIAM J. on Optimization, vol. 6, No. 2, May 1996, pp. 461–487. Also see Erratum, SIAM Journal on Optimization, Vol. 8, No. 1, February 1998, pp. 284–285.
- 1.38. (C.T. Lawrence and A.L. Tits) *Nonlinear Equality Constraints in Feasible Sequential Quadratic Programming*, Optimization Methods and Software, vol. 6, pp. 265–282, March 1996, 1996.
- 1.39. (W.B. Shieh, W.L. Tsai, S. Azarm and A.L. Tits) *Multiobjective Optimization of a Leg Mechanism with Various Spring Configurations for Force Reduction*, Trans. ASME, Journal of Mechanical Design, Vol. 118, June 1996, pp. 179–185.
- 1.40. (A.L. Tits and Y. Yang) *Globally Convergent Algorithms for Robust Pole Placement by State Feedback*, IEEE Transactions on Automatic Control, vol. 41, No. 10, 1996, pp. 1432–1452.
- 1.41. (V. Sahasrabudhe, R. Celi and A.L. Tits) *Integrated Rotor-Flight Control System Optimization with Aeroelastic and Handling Qualities Constraints*, Journal of Guidance, Control, and Dynamics, Vol. 20, No. 2, March-April 1997, pp. 217–224.
- 1.42. (W.B. Shieh, L.W. Tsai, S. Azarm and A.L. Tits) *A New Class of Six-Bar Mechanisms with Symmetrical Coupler Curves*, Trans. ASME, Journal of Mechanical Design, vol. 120, March 1998, pp. 150–153.
- 1.43. (A.L. Tits and V. Balakrishnan) *Small- μ Theorems with Frequency-Dependent Uncertainty Bounds*, Mathematics of Control, Signals, and Systems, Vol. 11, No. 3, pp. 220–243, 1998.
- 1.44. (A.L. Tits, V. Balakrishnan and L. Lee) *Robustness under Bounded Uncertainty with Phase Information*, IEEE Trans. on Automatic Control, Vol. 44, No. 1, January 1999, pp. 50–65.
- 1.45. (Y.S. Chou, A.L. Tits and V. Balakrishnan) *Absolute Stability Theory, μ Theory, and State-Space Verification of Frequency-Domain Conditions: Connections and Implications for Computation*, IEEE Trans. on Automatic Control, vol. 44, No. 5, May 1999, pp. 906–913.
- 1.46. (C.T. Lawrence, A.L. Tits and P. Van Dooren) *A Fast Algorithm for the Computation of an Upper Bound on the μ -Norm*, Automatica, Vol. 36, No. 3, 2000, pp. 449–456.
- 1.47. (A.A. Kale and A.L. Tits) *On Kharitonov’s Theorem Without Invariant Degree Assumption*, Automatica, vol. 36, No. 7, 2000, pp. 1075–1076.
- 1.48. (A.L. Tits and Y.-S. Chou) *On Mixed- μ Synthesis* Automatica, vol. 36, No. 7, 2000, pp. 1077–1079.
- 1.49. (C.T. Lawrence and A.L. Tits) *A Computationally Efficient Feasible Sequential Quadratic Programming Algorithm*, SIAM J. Optimization, Vol. 11, No. 4, 2001, pp. 1092–1118.

- 1.50. (A.L. Tits) *Comment on “The use of Routh array for testing the Hurwitz property of a segment of polynomials”*, Automatica, Vol. 38, No. 3, 2002, pp. 559–560.
- 1.51. (A.L. Tits, A. Wächter, S. Bakhtiari, T.J. Urban and C.T. Lawrence) *A Primal-Dual Interior-Point Method for Nonlinear Programming with Strong Global and Local Convergence Properties*, SIAM J. Optimization, Vol. 14, No. 1, pp. 173–199, 2003.
- 1.52. (S. Bakhtiari and A.L. Tits) *A Simple Primal-Dual Feasible Interior-Point Method for Nonlinear Programming with Monotone Descent*, Computational Optimization and Applications, Vol. 25, pp. 17–38, 2003.
- 1.53. (A.L. Tits, P.A. Absil, and W.P. Woessner) *Constraint Reduction for Linear Programs with Many Inequality Constraints*, SIAM J. on Optimization, Vol. 17, No. 1, pp. 119–146, 2006. DOI: 10.1137/050633421
- 1.54. (P.A. Absil and A.L. Tits) *Newton-KKT Interior-Point Methods for Indefinite Quadratic Programming*, Computational Optimization and Applications, Vol. 36, pp. 5–41, January 2007. DOI: 10.1007/s10589-006-8717-1
- 1.55. (S. Schurr, A.L. Tits and D. O’Leary) *Universal Duality in Conic Convex Optimization*, Math. Prog. Series A, Vol. 109, No. 1, January 2007, pp. 69–88. DOI: 10.1007/s10107-005-0690-4
- 1.56. (A. Pantelidou, A. Ephremides and A.L. Tits) *A Cross-Layer Approach for Stable Throughput Maximization under Channel State Uncertainty*, Wireless Networks, 2008. DOI: 10.1007/s11276-007-0089-7
- 1.57. (C.D. Hauck, C.D. Levermore and A.L. Tits) *Convex Duality and Entropy-Based Moment Closures: Characterizing Degenerate Densities*, SIAM J. Control Optim., Vol. 47, No. 4, pp. 1977–2015, 2008. DOI: 10.1137/070691139
- 1.58. (J.H. Jung, D.P. O’Leary, and A.L. Tits) *Adaptive Constraint Reduction for Training Support Vector Machines*, Electronic Transactions on Numerical Analysis, 31, pp. 156–177, 2008.
- 1.59. (S. Schurr, A.L. Tits and D. O’Leary) *A Polynomial-Time Interior-Point Method for Conic Optimization, with Inexact Barrier Evaluations*, SIAM J. Optimization, Vol. 20, No. 1, pp. 548–571, 2009. DOI: 10.1137/080722825
- 1.60. (J.H. Jung, D.P. O’Leary, and A.L. Tits) *Adaptive Constraint Reduction for Convex Quadratic Programming*, Computational Optimization and Applications, vol. 51, No. 1, pp. 125–157, 2012. Published on-line in March 2010. DOI: 10.1007/s10589-010-9324-8
- 1.61. (L.B. Winternitz, S.O. Nicholls, A.L. Tits and D.P. O’Leary) *A Constraint-Reduced Variant of Mehrotra’s Predictor-Corrector Algorithm*, Computational Optimization and Applications. Published on-line in January 2011. DOI: 10.1007/s10589-010-9324-8
- 1.62. (M.Y. He and A.L. Tits) *Infeasible Constraint-Reduced Interior-Point Methods for Linear Optimization*, Optimization Methods and Software, Available online 14 Sep 2011. DOI: 10.1080/10556788.2011.589056

(submitted)

- 1.63. (G.W. Alldredge, C.D. Hauck, and A.L. Tits) *High-Order, Entropy-Based Closures for Linear Transport in Slab Geometry: A Computational Study of the Optimization Problem*, submitted for publication in SIAM J. on Scientific Computation, 2011.

2. Contributed Conference Papers

- 2.1. (E. Polak and A.L. Tits) *A Globally Convergent, Implementable Multiplier Method with Automatic Penalty Limitation*, Proceedings of the 19th IEEE Conference on Decision and Control, Albuquerque, New Mexico, December 1980, pp. 239–240. (*summary of 1.3*)

- 2.2. (E. Polak and A.L. Tits) *On Globally Stabilized Quasi-Newton Methods for Inequality Constrained Optimization Problems*, Proceedings of the 10th IFIP Conference on System Modeling and Optimization, New York, NY, August–September 1981, Lecture Notes in Control and Information Sciences 38, R.F. Drenick and F. Kozin, eds., Springer-Verlag, 1982, pp. 539–547. (see also 0.1)
- 2.3. (E. Polak and A.L. Tits) *A Recursive Quadratic Programming Algorithm for Semi-Infinite Optimization Problems*, International Symposium on Semi-Infinite Programming and Applications, Austin, Texas, September 1981. (summary of 1.4)
- 2.4. (T.P. Lee, W.T. Nye and A.L. Tits) *Design of Digital Filters Using Interactive Optimization*, Proc. of the 20th IEEE Conference on Decision and Control, San Diego, California, December 1981, pp. 819–820. (summary of 1.5)
- 2.5. (A.L. Tits, W.T. Nye and A.L. Sangiovanni-Vincentelli) *A Computationally Efficient Method of Feasible Directions for Optimization Problems with Ordinary, Semi-Infinite and Box Constraints*, Symposium Volume of the 11th International Symposium on Mathematical Programming, Bonn, Germany, August 1982. (summary of 1.8)
- 2.6. (W.T. Nye and A.L. Tits) *An Enhanced Methodology for Interactive Optimal Design*, Proceedings of the IEEE International Symposium on Circuits and Systems (ISCAS), Newport Beach, California, May 1983, pp. 1050–1051. (summary of 1.9)
- 2.7. (H. Parsa and A.L. Tits) *Nonuniform, Dynamically Adapted Discretization for Functional Constraints in Engineering Design Problems*, Proceedings of the 22nd IEEE Conference on Decision and Control, San Antonio, Texas, December 1983, pp. 410–411.
- 2.8. (J.S. Baras, M.K.H. Fan, W.T. Nye and A.L. Tits) *DELIGHT.LQG: A CAD System for Control System Design using LQG Controller Structure*, presented at the 18th Annual Conference on Information Sciences and Systems, Princeton, New Jersey, March 1984.
- 2.9. (M.K.H. Fan, C.D. Walrath, A.L. Tits, W.T. Nye, M. Rimer, R. Grant and W.S. Levine) *Two Case Studies in Optimization-Based Computer-Aided Design of Control Systems*, Proceedings of the IEEE CSS 2nd Symposium on Computer-Aided Control System Design, Santa Barbara, California, March 1985. Also, Proceedings of the 24th IEEE Conference on Decision and Control, Fort Lauderdale, Florida, December 1985, p. 1794.
- 2.10. (A.L. Tits and Z. Ma) *Interaction, Specification Refinement, and Tradeoff Exploration in Optimization-Based Design of Engineering Systems*, Proceedings of the 1985 IFAC Workshop on Control Applications of Nonlinear Programming and Optimization, Capri, Italy, June 1985. Pergamon Press, 1986, pp. 189–194.
- 2.11. (M.K.H. Fan and A.L. Tits) *A New Formula for the Structured Singular Value*, Proceedings of the 24th IEEE Conference on Decision and Control, Fort Lauderdale, Florida, December 1985, pp. 595–596. (summary of 1.11)
- 2.12. (E.R. Panier and A.L. Tits) *A Superlinearly Convergent Method of Feasible Directions for Optimization Problems Arising in the Design of Engineering Systems*, Proceedings of the 7th International Conference on Analysis and Optimization of Systems, Antibes, France, 1986, Lecture Notes in Control and Information Sciences 83, A. Bensoussan and J.L. Lions, eds., Springer-Verlag, 1986, pp. 65–73. (also see 0.2)
- 2.13. (E.R. Panier and A.L. Tits) *A Superlinearly Convergent Feasible Method for the Solution of Inequality Constrained Optimization Problems*, Optimization Days 1986, Montreal, Canada, April–May 1986, pp. 33–35. (Summary of 1.12)
- 2.14. (E.H. Abed and A.L. Tits) *On the Stability of Multiple Time-Scale Systems*, Proceedings of the 1986 International Symposium on Circuits and Systems, San Jose, California, May 5–7, 1986, pp. 267–268. (summary of 1.10)
- 2.15. (E.R. Panier and A.L. Tits) *An Algorithm for Semi-Infinite Optimization Problems Arising in Engineering Design*, Proceedings of the International Conference on Optimization: Techniques

- and Applications, Singapore, April 1987, K.L. Teo, H. Paul, K.L. Chew, and C.M. Wang, eds., National University of Singapore, 1987, pp. 932–937. (*also see* 0.3) (*summary of* 1.17)
- 2.16. (J.N. Herskovits, E.R. Panier and A.L. Tits) *A QP-Free, Globally Convergent, Locally Superlinearly Convergent Algorithm for Inequality Constrained Optimization*, presented at the SIAM Conference on Optimization, Houston, Texas, May 1987. (*summary of* 1.14)
 - 2.17. (M.K.H. Fan and A.L. Tits) *Toward a Structured Singular Value Decomposition*, Proceedings of the 26th IEEE CDC, Los Angeles, California, December 1987, pp. 1742–1743.
 - 2.18. (J.C. Wang, M.K.H. Fan and A.L. Tits) *Structured Singular Value and Geometry of the M-Form Numerical Range*, in “Linear Circuits, Systems and Signal Processing: Theory and Application (Proceedings of the 1987 MTNS)”, C.I. Byrnes, C.F. Martin and R. Saeks, eds., North Holland, pp. 609–615, 1988. (*also see* 0.4)
 - 2.19. (M.K.H. Fan, L.S. Wang, J. Koninckx and A.L. Tits) *CONSOLE: A CAD Tandem for Optimization-Based Design Interacting with User-Supplied Simulators*, Proceedings of the 1988 American Control Conference, Atlanta, Georgia, June 1988, pp. 701–706. (*summary of* 1.20)
 - 2.20. (L. Saydy, A.L. Tits and E.H. Abed) *Robust Stability of Linear Systems Relative to Guarded Domains*, Proceedings of the 27th IEEE CDC, Austin, Texas, December 1988, pp. 544–551. (*also see* 0.5) (*summary of* 1.21)
 - 2.21. (E.R. Panier and A.L. Tits) *A Globally Convergent Algorithm with Adaptively Refined Discretization for Semi-Infinite Programming*, presented at the 13th International Symposium on Mathematical Programming, Tokyo, Japan, August–September 1988.
 - 2.22. (M.K.H. Fan, J. Koninckx, A.L. Tits and L.-S. Wang, *Interactive Optimization-Based Engineering System Design: CONSOLE*, presented at the 13th International Symposium on Mathematical Programming, Tokyo, Japan, August–September 1988.
 - 2.23. (E.R. Panier and A.L. Tits) *A Global SQP Method with Feasible Iterates*, presented at the 13th International Symposium on Mathematical Programming, Tokyo, Japan, August–September 1988. (*summary of* 1.26)
 - 2.24. (L. Saydy, E.H. Abed and A.L. Tits) *On Stabilization with a Prescribed Region of Asymptotic Stability*, Proceedings of the 26th Allerton Conf. on Communication, Control and Computing, Univ. of Illinois, Urbana, Sept. 1988, pp. 348–355.
 - 2.25. (E.R. Panier, A.L. Tits and J. Zhou) *Numerical Experiments on an Algorithm Combining Feasibility, Descent and Superlinear Convergence*, presented at the Third SIAM Conference on Optimization, Boston, Massachusetts, April 3–5, 1989.
 - 2.26. (M.K.H. Fan and A.L. Tits) *Interactive Optimization-Based Engineering System Design: CONSOLE*, presented at the Third SIAM Conference on Optimization, Boston, Massachusetts, April 3–5, 1989.
 - 2.27. (L. Saydy, A.L. Tits and E.H. Abed) *Robust Stability of Complex Families of Matrices or Polynomials*, in “Control of Uncertain Systems. Proceedings of an International Workshop, Bremen, West Germany, June 1989,” D. Hinrichsen and B. Martensson, eds., Birkhäuser, 1990. (*also see* 0.6)
 - 2.28. (E.H. Abed, L. Saydy and A.L. Tits) *Generalized Stability of Linear Singularly Perturbed Systems Including Calculation of Maximal Parameter Range*, in “Realization and Modelling in System Theory. Proceedings of the International Symposium MTNS-89 – Volume 2”, M.A. Kaashoek, J.H. van Schuppen and A.C.M. Ran, eds., Birkhäuser, 197–203, 1990. (*also see* 0.7)
 - 2.29. (A.L. Tits, M.K.H. Fan and E.R. Panier) *Aspects of Optimization-Based Computer-Aided Design*, 14th IFIP Conference on System Modeling and Optimization, Leipzig, GDR, July 3–7, 1989.
 - 2.30. (L. Lee, A.L. Tits and M.K.H. Fan) *Robustness under Uncertainty with Phase Information*, Proceedings of the 28th IEEE CDC, Tampa, Florida, December 1989, pp. 2315–2316.

- 2.31. (J. Barlow, M.K.H. Fan, M. Takahashi, M. Tischler, A.L. Tits and N.-K. Tsing) *On the Design of Decoupling Controllers for Advanced Rotorcraft in the Hover Case*, presented at the 29th Aerospace Sciences Meeting, Reno, Nevada, Jan. 7–10, 1991.
- 2.32. (L. Lee and A.L. Tits) *On Phase Information in Multivariable Systems*, in “Recent Advances in Mathematical Theory of Systems, Control, Networks and Signal Processing I. Proceedings of the International Symposium MTNS-91 – Volume I”, H. Kimura and S. Kodama, Eds., Mita Press, Osaka, Japan, pp. 221–226, 1992. (*also see* 0.8)
- 2.33. (L. Lee and A.L. Tits) *On Continuity/Discontinuity in Robustness Indicators*, Proceedings of the 30th IEEE CDC, Brighton, United Kingdom, pp. 547–548, December 1991.
- 2.34. (J.L. Zhou and A.L. Tits) *Recent Improvements on FSQP*, presented at the Fourth SIAM Conference on Optimization, Chicago, Illinois, May 1992.
- 2.35. (Y. Yang and A.L. Tits) *On Robust Pole Assignment by State Feedback*, Proceedings of the 1993 American Control Conference, pp. 2765–2766, June 1993.
- 2.36. (S. Azarm, A.L. Tits and M.K.H. Fan) *Tradeoff-Driven Optimization-Based Design of Mechanical Systems*, Fourth AIAA/USAF/NASA/OAI Symposium on Multidisciplinary Analysis and Optimization, Cleveland, Ohio, September 1992, A Collection of Papers, Part I, pp. 551–558 (AIAA-92-4758-CP).
- 2.37. (L. Saydy, E.H. Abed and A.L. Tits) *Linear singularly perturbed systems with uncertainty: Necessary and sufficient conditions for stability and maximal parameter range computation*, Proceedings of the Twelfth Triennial IFAC World Congress, Sydney, Australia, July 1993, Vol. VIII, pp. 59–66.
- 2.38. (W.B. Shieh, S. Azarm, L.W. Tsai, and A.L. Tits) *Optimization-Based Design of a Leg Mechanism via Combined Kinematic and Structural Analysis*, Proceedings of the Twentieth Design Automation Conference 1994 ASME Design Tech. Conf. Minneapolis, Minn, Sept. 11–14, 1994, Advances in Design Automation (Gilmore et al., Eds.), DE-Vol.69-1, ASME Pub., 1994, pp. 199–209.
- 2.39. (L. Qiu, A.L. Tits and Y. Yang) *On the Computation of the Real Hurwitz-Stability Radius*, Proceedings of the 33rd IEEE Conference on Decision and Control, Orlando, Florida, December 1994, pp. 1905–1906. (*also see* 1.36)
- 2.40. (C. T. Lawrence and A. L. Tits) *Nonlinear Equality Constraints in Feasible Sequential Quadratic Programming. 15th International Symposium on Mathematical Programming*, presented at the 15th International Symposium on Mathematical Programming, Ann Arbor, Michigan, August 1994.
- 2.41. (C. T. Lawrence and A. L. Tits) *CFSQP: A C Code for Feasible Sequential Quadratic Programming*, presented at the 15th International Symposium on Mathematical Programming, Ann Arbor, Michigan, August 1994.
- 2.42. (A.L. Tits) *The Small μ Theorem Without Real-Rational Assumption*, Proceedings of the 1995 American Control Conference, Seattle, WA, June 1995, pp. 2870–2872.
- 2.43. (S. Azarm, W.P. Dayawansa, N. Farvardin, A.L. Tits, and W.L. Tsai) *Design and Control of a Walking Machine*, the Proceedings of the 1995 American Control Conference, Seattle, WA, June 1995, pp. 1082–1086.
- 2.44. (V. Sahasrabudhe, R. Celi, and A.L. Tits) *Integrated Rotor-Flight Control System Optimization with Aeroelastic and Handling Qualities Constraints*, Proceedings of the 51st Annual Forum of the American Helicopter Society, Ft. Worth, Texas, May 1995. pp. 905–923.
- 2.45. (V. Sahasrabudhe, R. Celi, and A.L. Tits) *Integrated Rotor-Flight Control System Optimization with Aeroelastic and Handling Qualities Constraints*, American Helicopter Society International Aeromechanics Specialist Conference, Fairfield County, CT, October 11–13, 1995, Session 4, pp. 11–28. *Modified version of 2.44.*

- 2.45. (Y. Yang and A.L. Tits) *Convergent Algorithms for Robust Pole Assignment by State Feedback*, Proceedings of the 1995 European Control Conference, Rome, Italy, September 1995, pp. 3382–3387.
- 2.46. (Y.-S. Chou and A.L. Tits) *On Robust Stability Under Slowly-Varying Memoryless Uncertainty*, Proceedings of the 34th IEEE Conference on Decision and Control, New Orleans, Louisiana, December 1995, pp. 4321–4326.
- 2.47. (W.B. Shieh, W.L. Tsai, S. Azarm and A.L. Tits) *Multiobjective Optimization of a Leg Mechanism with Various Spring Configurations for Force Reduction*, Advances in Design Automation, DE-Vol. 82, ASME Pub., 1995, pp. 811–818 (Proceedings of the 21st ASME Design and Automation Conference (Boston, Massachusetts, September 1995)). (conference version of 1.39)
- 2.48. (J. Sreedhar, P. Van Dooren, and A.L. Tits) *A Fast Algorithm to Compute the Real Structured Hurwitz-Stability Radius*, Proceedings of the 34th IEEE Conf. on Decision and Control, New Orleans, Louisiana, December 1995, pp. 126–127.
- 2.49. (C.T. Lawrence, A.L. Tits, and P. Van Dooren) *A Fast Algorithm for the Computation of an Upper Bound on the μ -Norm*, Proceedings of the 1996 IFAC World Congress, San Francisco, July 1996, vol. H, pp. 59–64.
- 2.50. (V. Sahasrabudhe, R. Celi and A.L. Tits) *Efficient Treatment of Moderate Amplitude Constraints for Handling Qualities Design Optimization*, 52nd Annual Forum of the American Helicopter Society, Washington, D.C., June 4–6, 1996.
- 2.51. (W.B. Shieh, L.W. Tsai, S. Azarm and A.L. Tits) *A New Class of Six-Bar Mechanisms with Symmetrical Coupler Curves*, CD-ROM Proceedings of the ASME Design Automation Conference, Irvine, CA, August 18-21, 1996, pp. 1-8. (conference version of 1.42)
- 2.52. (A.L. Tits and V. Balakrishnan) *Small- μ Theorems with Frequency-Dependent Uncertainty Bounds*, Proceedings of the European Control Conference, Brussels, Belgium, July 1997.
- 2.53. (C.T. Lawrence and A.L. Tits) *Computationally efficient feasible sequential quadratic programming algorithms*, 16th International Symposium on Mathematical Programming, Lausanne, Switzerland, 1997.
- 2.54. (C.T. Lawrence and A.L. Tits) *New features and experiences with the CFSQP software package*, 16th International Symposium on Mathematical Programming, Lausanne, Switzerland, 1997.
- 2.55. (M. Liu and A.L. Tits) *An Automatic Differentiation Interface for FFSQP*, 16th International Symposium on Mathematical Programming, Lausanne, Switzerland, 1997.
- 2.56. (Y. Yang and A.L. Tits) *Generic Pole Assignment May Produce Very Fragile Designs*, Proceedings of the 37th IEEE Conf. on Decision and Control, Tampa, Florida, December 1998.
- 2.57. (T. Urban, A.L. Tits and C.T. Lawrence) *A primal-dual interior-point method for nonconvex optimization with multiple logarithmic barrier parameters and with strong convergence properties*, SIAM Conference on Optimization, Atlanta, Georgia, May 10–12, 1999.
- 2.58. (C.T. Lawrence and A.L. Tits) *A Computationally Efficient Feasible SQP Algorithm*, IFIP TC7 Conference on System Modelling and Optimization, Cambridge, United Kingdom, July 12–16, 1999.
- 2.59. (C.T. Lawrence and A.L. Tits) *A Computationally Efficient Feasible SQP Algorithm*, International Workshop on Constrained Optimization, Sydney, Australia, December 10–12, 1999.
- 2.60. (S. Bakhtiari, W.P. Woessner and A.L. Tits) *On a feasible interior-point method for nonlinear programming*, INFORMS Annual Meeting, San Jose, California, November 17–20, 2002.
- 2.61. (A.L. Tits and P.-A. Absil) *Primal-dual interior-point algorithms for indefinite quadratic programming*, 18th International Symposium on Mathematical Programming, Copenhagen, Denmark, August 18–22, 2004.
- 2.62. (S.P. Schurr, A.L. Tits and D.P. O’Leary) *On duality in LP and SDP, with applications to two-player zero-sum games*, 18th International Symposium on Mathematical Programming, Copenhagen, Denmark, August 18–22, 2004.

- 2.63 (W. Woessner, A. Tits and P.A. Absil) *Working set strategies for interior point linear programming with many constraints*, 1st ICCOPT (International Conference on Continuous Optimization), Rensselaer Polytechnic Institute, Troy, NY, August 2004.
- 2.64 (S.P. Schurr, A.L. Tits, and D.P. O’Leary) *Universal Duality in Conic Convex Optimization*, SIAM Conference on Optimization, Stockholm Sweden, May 15–19, 2005.
- 2.65 (A. Pantelidou, A. Ephremides, and A.L. Tits) *Maximum Throughput Scheduling in Time-Varying-Topology Wireless As-Hoc Networks*, 2005 Conference on Information Sciences and Systems, The Johns Hopkins University, March 16–18, 2005, IEEE Catalog Number: 07EX1674.
- 2.66 (V. Sima, A. L. Tits, and Y. Yang) *Computational experience with robust pole assignment algorithms*, Proceedings of the 2006 IEEE International Conference on Control Applications (CCA), 2006 IEEE Conference on Computer-Aided Control Systems Design (CACSD), and 2006 IEEE International Symposium on Intelligent Control (ISIC), Technische Universitt Mnchen, Munich, Germany, October 4–6, 2006, pp.36–41, Omnipress.
- 2.67 (P.-A. Absil, A. L. Tits and D. P. O’Leary) *Constraint Reduction for Certain Degenerate Linear Programs*, presented at the 19th International Symposium on Mathematical Programming, Rio de Janeiro, Brazil, August 2006.
- 2.68. (A. Pantelidou, A. Ephremides, and A.L. Tits) *Joint Scheduling and Routing for Ad-hoc Networks Under Channel State Uncertainty*, 5th International Symposium on Modeling and Optimization in Mobile, Ad-hoc and Wireless Networks, WiOpt’07, 2007.
- 2.69. (C.D. Hauck, C.D. Levermore, and A.L. Tits) *Convex Duality and Entropy-Based Moment Closures: Characterizing Degenerate Densities*, Proceedings of the 47th IEEE Conf. on Decision and Control, Cancun, Mexico, 9–11 December 2008, pp. 5092–5097. DOI: 10.1109/CDC.2008.4739510
- 2.70. (M.Y. He, M. Kiemb, A.L. Tits, A. Greenfield, and V. Sahasrabudhe) *Constraint-Reduced Interior-Point Optimization for Model Predictive Rotorcraft Control*, Proceedings of the 2010 America Control Conference, Baltimore, MD, 30 June and 1–2 July 2010, pp. 2088–2094.

3. Invited Conference Papers

- 3.1. (M.A. Bhatti, T. Essebo, W.T. Nye, K.S. Pister, E. Polak, A.L. Sangiovanni-Vincentelli and A.L. Tits) *A Software System for Optimization-Based Interactive Computer-Aided Design*, University of California, Electronics Research Laboratory, Memo No. UCB/ERL M80/14, April 1980, presented at the International Symposium on Circuits and Systems (ISCAS), Houston, Texas, April 1980.
- 3.2. (W.T. Nye, E. Polak, A.L. Sangiovanni-Vincentelli and A.L. Tits) *DELIGHT: An Optimization-Based Computer-Aided Design System*, Proceedings of the IEEE International Symposium on Circuits and Systems (ISCAS), Chicago, Illinois, April 1981, pp. 851–855.
- 3.3. (A.L. Tits, W.T. Nye and A.L. Sangiovanni-Vincentelli) *Various Aspects of the Scaling Problem in Optimization-Based Computer-Aided Design*, Proceedings of the 21st IEEE Conference on Decision and Control, Orlando, Florida, December 1982, pp. 544–545.
- 3.4. (W.T. Nye, A.L. Sangiovanni-Vincentelli and J. Spoto and A.L. Tits) *DELIGHT.SPICE: An Optimization-Based System for the Design of Integrated Circuits*, Proceedings of the Custom Integrated Circuits Conference (CICC), Rochester, N.Y., May 1983, pp. 233–238.
- 3.5. (V. Visvanathan and E. Szeto and A.L. Tits) *Robust Simulation-Before-Test Technique for Nonlinear DC Fault Diagnosis*, Proceedings of the International Symposium on Circuits and Systems (ISCAS), Montreal, Canada, May 1984, pp. 689–692.
- 3.6. (M.K.H. Fan, C.D. Walrath, C. Lee, A.L. Tits, W.T. Nye, M. Rimer, R. Grant and W.S. Levine) *Two Case Studies in Optimization-Based Computer-Aided Design of Control Systems*, Proceedings of the 24th IEEE Conference on Decision and Control, Fort Lauderdale, Florida, December 1985, p. 1794.

- 3.7. (M.K.H. Fan and A.L. Tits) *Geometric Aspects in the Computation of the Structured Singular Value*, Proceedings of the 1986 American Control Conference, Seattle, Washington, June 1986, pp. 437–441. (*summary of 1.16*)
- 3.8. (M.K.H. Fan and A.L. Tits) *Recent Developments in the Computation of the Structured Singular Value*, presented at the 1986 Conference on Operator Theory and Systems Theory, University of Maryland, College Park, August 1986.
- 3.9. *Optimization Methods in CAD*, Conference on Computer-Aided Design and Manufacturing for Quality, Bell Laboratories, Holmdel, New Jersey, November 1986.
- 3.10. (J.C. Wang, M.K.H. Fan and A.L. Tits) *Structured Singular Value and Geometric Properties of the Generalized Numerical Range*, presented at the MTNS '87, Phoenix, Arizona, June 1987. Subsequently reviewed in revised form, and published in a book (see 2.18 above).
- 3.11. (A.L. Tits, M.K.H. Fan and E.R. Panier) *Aspects of Optimization-Based CADCS*, in Computer Aided Design in Control Systems 1988 – Selected Papers from the 4th IFAC Symposium, Beijing, China, August 1988, ed. Chen Zhen-Yu, Pergamon Press, 1988, pp. 47–57. (*also see 0.9*)
- 3.12. (M.K.H. Fan, A.L. Tits and J.C. Doyle) *Robustness in the Presence of Joint Parametric Uncertainty and Unmodeled Dynamics*, Proceedings of the 1988 American Control Conference, Atlanta, Georgia, June 1988, 1195–1200. (*summary of 1.22*)
- 3.13. (M.K.H. Fan, J.C. Doyle and A.L. Tits) *Robustness in the Presence of Parametric Uncertainty and Unmodeled Dynamics*, *Advances in Computing and Control* (Proceedings of the 1988 COMCON), (Lecture Notes in Control and Information Sciences, Vol. 130), W.A. Porter, S.C. Kak and J.L. Aravena, Eds., Springer-Verlag, Berlin, 1989, pp. 363–367. (*also see 0.10*)
- 3.14. (M.K.H. Fan and A.L. Tits) *A Generalization of the Structured Singular Value*, presented at the SIAM Conference on Control in the 90's, San Francisco, California, May 1989.
- 3.15. (L. Saydy, A.L. Tits and E.H. Abed) *Guardian Maps and the Robust Stability Problem*, presented at the SIAM Conference on Control in the 90's, San Francisco, California, May 1989.
- 3.16. (M.K.H. Fan and A.L. Tits) *Highlights of CONSOLE, an Optimization-Based Design System*, presented at the SIAM Conference on Control in the 90's, San Francisco, California, May 1989.
- 3.17. (E.R. Panier and A.L. Tits) *Superlinearly Converging Methods of Feasible Directions*, AFOSR Workshop on Shape Optimization, University of California, Berkeley, May 1989. (*summary of 1.23*)
- 3.18. (J.F. Bonnans, E.R. Panier, A.L. Tits and J. Zhou) *Nonmonotone Line Search in Inequality Constrained Optimization*, presented at the ORSA/TIMS Meeting, New York, NY, October 1989.
- 3.19. (L. Saydy, A.L. Tits and E.H. Abed) *On the Generalized Stability of Families of Polynomials*, Proceedings of the 28th IEEE Conf. on Dec. and Contr., Tampa, Florida, December 1989, pp. 1868–1869.
- 3.20. (L. Saydy, A.L. Tits and E.H. Abed) *Robust Stability Via the Guardian Map Approach: A Perspective*, Proceedings of the 1990 American Control Conference, San Diego, California, May 1990, pp. 2539–2541.
- 3.21. (J. Zhou and A.L. Tits) *A Fast Algorithm for Finely Discretized Semi-Infinite Optimization Problems*, presented at the ORSA/TIMS Meeting, Philadelphia, Pennsylvania, October 1990.
- 3.22. (M.K.H. Fan and A.L. Tits) *Worst-Case H_∞ Performance Under Structured Perturbations with Known Bounds*, in “New Trends in Systems Theory. Proceedings of the Università di Genova – The Ohio State University Joint Conference, July 9–11, 1990” G. Conte, A.M. Perdon and B. Wyman, Eds., Birkhäuser, 268–275, 1991. (*also see 0.11*)
- 3.23. (J. Zhou and A.L. Tits) *Fast Feasible Direction Methods, with Engineering Applications*, Proceedings of the 1991 European Control Conference, Grenoble, France, pp. 194–199.
- 3.24. (J. Zhou and A.L. Tits) *Fast Feasible Direction Methods, with Engineering Applications*, presented at First Working Conference of IFIP TC 7.6, The Hague, The Netherlands, April 1991.

- 3.25. (L. Lee and A.L. Tits) *Linear Fractional Transformations for the Approximation of Various Uncertainty Sets*, presented at the International Workshop on Robust Control, San Antonio, Texas, March 1991. (*also see* 0.12)
- 3.26. (M.K.H. Fan and A.L. Tits) *μ versus Kharitonov: Rivalry or Partnership?* presented at the International Workshop on Robustness of Control Systems, Kappel am Albis, Switzerland, September 1991.
- 3.27. (A.L. Tits and M.K.H. Fan) *Optimization-Based Computer-Aided Design of Engineering Systems*, Proc. of the 1992 NSF Design and Manufacturing Systems Conf., Atlanta, Georgia, January, 1992, pp. 781–783.
- 3.28. (N.-K. Tsing and A.L. Tits) *On the Multiaffine Image of a Cube*, presented at the International Workshop on Robust Control, Ascona, Switzerland, April 1992. (*also see* 0.13)
- 3.29. (L. Lee and A.L. Tits) *Mixed One- and Two-Sided Real Uncertainty. A Vertex Result*, Proceedings of the 1992 American Control Conference, Chicago, Illinois, June 24–26, 1992, pp. 2197–2199.
- 3.30. (N.-K. Tsing, M.K.H. Fan, J. Barlow, A.L. Tits, M.B. Tischler) *Optimization-Based Controller Design for Rotorcraft*, Proceedings of the Fifth NASA/NSF/DOD Workshop on Aerospace Computational Control (Santa Barbara, California, August 1992), JPL Publication 93-02, February 15, 1993, M. Wette and G. K. Man, Editors, pp. 379–393. (*also see* 0.14)
- 3.31. (A.L. Tits and J.L. Zhou) *A Simple, Quadratically Convergent Algorithm for Linear Programming and Convex Quadratic Programming*, presented at the Conference on Large Scale Optimization, Gainesville, Florida, February 15–17, 1993 (sponsored by NSF/ARO). (*also see* 0.16)
- 3.32. (L. Lee, V. Balakrishnan, and A.L. Tits) *Robustness under Bounded Uncertainty with Phase Information*, presented at the Third SIAM conference on Control and its Applications, Saint Louis, Missouri, April 27–29, 1995.
- 3.33. (E.H. Abed, Y.-S. Chou, A. Guran and A.L. Tits) *Nonlinear stabilization and parametric optimization in the benchmark nonlinear control design problem*, Proc. 1995 American Control Conference, Seattle, June 1995, pp. 4357–4359.
- 3.34. (A.L. Tits) *Feasible Sequential Quadratic Programming*, IMA Workshop on Large-Scale Optimization, Minneapolis, Minnesota, July 10–14, 1995 (by invitation only).
- 3.35. (A.L. Tits, C.T. Lawrence, P. Van Dooren) *A Fast Algorithm for the Computation of an Upper Bound on the μ -Norm*, international workshop “Control of Uncertain Systems. From the Calculus of Variations to Optimal and Robust Control,” Groningen, The Netherlands, August 28 – September 1, 1995 (by invitation only).
- 3.36. (A.L. Tits) *Sequential quadratic programming for finely discretized SIP problems*, invited plenary presentation at the International Workshop on Semi-Infinite Programming, Cottbus, Germany, September 23–26, 1996.
- 3.37. (A.L. Tits and V. Balakrishnan) *Phase-Sensitive Structured Singular Value*, “Workshop on Open Problems in Mathematical Systems Theory and Control”, Proceedings of a workshop held June 30, 1997 at the University of Liège, Belgium, pp. 74–76. (*later published as* 0.21)
- 3.38. (S.P. Schurr, D.P. O’Leary, and A.L. Tits) *Effects of Inexact Barrier Function Evaluations in Interior-Point Methods for Conic Optimization*, presented at the International Symposium on Mathematical Programming, Rio de Janeiro, Brazil, August 2006.
- 3.39. (J. H. Jung, D. P. O’Leary, and A. L. Tits) *A Constraint Reduction IPM for Convex Quadratic Programming, with Application to SVM Training*, presented at the INFORMS Annual Meeting, Pittsburgh, Pennsylvania, November 2006.
- 3.40. (L. Winternitz, S. Nicholls, A.L. Tits, and D.P. O’Leary) *Convergence of a Constraint-Reduced Predictor-Corrector Algorithm for Semi-Infinite Programming*, presented at the 22nd European Conference on Operational Research, Prague, Czech Republic, July 2007.

- 3.41 (L. Winternitz, S. Nicholls, A.L. Tits, and D.P. O’Leary) *Convergence of a Constraint-Reduced Variant of Mehrotra’s Predictor Corrector Algorithm*, presented at the 2nd International Conference on Continuous Optimization (ICCOPT), Hamilton, Ontario, August 2007.

4. Technical Reports

- 4.0. (S.S. Sastry and A.L. Tits) *Direct Computation of a Kalman Canonical Form for Linear Systems by Elementary Matrix Operations*, Technical Report, UC Berkeley, 1978.
- 4.1. (W.T. Nye and A.L. Tits) *DELIGHT for Beginners*, Memo No. UCB/ERL M82/55, Electronics Research Laboratory, University of California, Berkeley, California (July 1982).
- 4.2. (A.L. Tits and E. Polak) *On the Rate of Convergence of Quasi-Newton Methods for the Solution of Nonlinear Systems of Equations*, Systems Research Group report SRR-82-25, Electrical Engineering Department, University of Maryland, College Park, MD 20742, 1982.
- 4.3. (M.K.H. Fan, W.T. Nye and A.L. Tits) *DELIGHT.MaryLin User’s Guide*, SRR 85-7, Systems Research Center, 1985.
- 4.4. (M.K.H. Fan, C.D. Walrath, C. Lee, A.L. Tits, M. Rimer, R. Grant and W.S. Levine) *Design of a Flight Controller for an F14 Aircraft Using the DELIGHT.MaryLin Optimization-Based CACSD System*, TR-85-16, Systems Research Center, 1985.
- 4.5. (E.R. Panier and A.L. Tits) *Globally Convergent Algorithms for Semi-Infinite Optimization Problems Arising in Engineering Design*, TR-87-28, Systems Research Center, 1987.
- 4.6. (M.K.H. Fan, L.-S. Wang, J. Koninckx and A.L. Tits) *CONSOLE User’s Manual*, TR 87-212, Systems Research Center, 1987.
- 4.7. (J. Zhou and A.L. Tits) *User’s Guide for FSQP Version 1.0 – A Fortran Software for Solving Optimization Problems with General Inequality Constraints and Linear Equality Constraints, Generating Feasible Iterates*, TR 89-61, Systems Research Center, 1989.
- 4.8. (J. Zhou and A.L. Tits) *User’s Guide for FSQP Version 2.0 – A Fortran Code for Solving Optimization Problems, Possibly Minimax, with General Inequality Constraints and Linear Equality Constraints, Generating Feasible Iterates*, TR 90-60, Systems Research Center, 1990.
- 4.9. (M.K.H. Fan, A.L. Tits, J. Zhou, L.-S. Wang and J. Koninckx) *CONSOLE User’s Manual, Version 1.1*, TR 87-212, Systems Research Center, 1987.
- 4.10. (A.L. Tits) *On the Possible Discontinuity of the Robustness Margin for Stability*, May 1990.
- 4.11. (J.L. Zhou and A.L. Tits) *User’s Guide for FSQP Version 3.0 – A Fortran Code for Solving Constrained Nonlinear (Minimax) Optimization Problems, Generating Iterates Satisfying All Inequality and Linear Constraints*, TR 92-107, Systems Research Center, 1992.
- 4.12. (P.D. Mathur and A.L. Tits) *User’s Guide for JAKEFSQP Version 1.0*, TR 93-37, Institute for Systems Research, 1993.
- 4.13. (C.T. Lawrence, J.L. Zhou and A.L. Tits) *User’s Guide for CFSQP Version 2.0: A C Code for Solving Constrained Nonlinear (Minimax) Optimization Problems, Generating Iterates Satisfying All Inequality and Linear Constraints*, Technical Report, Institute for Systems Research, 1993.
- 4.14. (J.L. Zhou, A.L. Tits, and C.T. Lawrence) *User’s Guide for FFSQP Version 3.6: A FORTRAN Code for Solving Constrained Nonlinear (Minimax) Optimization Problems, Generating Iterates Satisfying All Inequality and Linear Constraints*, Technical Report, Institute for Systems Research, 1996.
- 4.15. (C.T. Lawrence, J.L. Zhou and A.L. Tits) *User’s Guide for CFSQP Version 2.4: A C Code for Solving (Large Scale) Constrained Nonlinear (Minimax) Optimization Problems, Generating Iterates Satisfying All Inequality Constraints*, Technical Report, Institute for Systems Research, 1996.

Awards

- Summer Research Award from the General Research Board of the University of Maryland, College Park, for the Summer of 1982 (\$3,200 - declined).
- NSF Research Initiation Grant, 1982. (Also see “Grants” below)
- ★ NSF 1985 Presidential Young Investigator Award. (Also see “Grants” below)
- Westinghouse Professor for the academic year 85–86. (Also see “Grants” below)
- Westinghouse Professor for the academic year 86–87. (Also see “Grants” below)
- 1987–1988 Outstanding Systems Engineering Faculty Award from the College of Engineering and the Systems Research Center, University of Maryland, College Park.
- 1996 George Corcoran Award (Department of Electrical Engineering at the University of Maryland) for Significant Contributions to Electrical Engineering Education.
- Listed in the Who’s Who in America — Science and Engineering.
- ★ Fellow of the IEEE

Research Grants

- NSF Research Initiation Grant, *Efficient Algorithms for Optimal Design of Engineering Systems*, (\$43,280), principal investigator, 4/1/82 – 10/31/84.
- Minta Martin Aeronautic Research Fund, *Optimization-Based Controller Design for High Performance Aircraft*, (\$20,000), co-principal investigator with W.S. Levine, 7/1/84–6/30/85.
- NSF Engineering Research Equipment Grant, *Artificial Intelligence and Interactive Graphics Methods in Computer-Aided Design of Control and Communication Systems*, (\$85,000), co-principal investigator with J.S. Baras, 9/15/84–2/28/86.
- DoD-University Research Instrumentation Program, *Computational Research Equipment for Systems Engineering Research*, (\$120,000), co-principal investigator with J.S. Baras, 1/1/85–12/31/85.
- Summer research support from the Engineering Research Center at the University of Maryland, (\$6,330.60), 6/15/84–8/15/84.
- Research support for post doctoral fellow, from the Engineering Research Center at the University of Maryland, (\$5,000), 4/1/85–6/30/85.
- Grant from Honeywell S & RC, (\$6,000), principal investigator, 1984.
- Westinghouse Professorship for the academic year 85–86, *Optimization of Control Systems*, (\$35,000).
- NSF 1985 Presidential Young Investigator Award, \$25,000 + up to \$37,500 in matching funds for industrial contributions. Renewable for a total of up to 5 years. Total for academic year 85–86: \$61,674. Total for academic year 86–87: \$62,500. Total for academic year 87–88: \$62,500. Total for academic year 88–89: \$62,500. Total for academic year 89–90: \$62,500. *Computational Aspects in the Use of the Structured Singular Value for Control System Design*.
- Co-investigator in the Systems Research Center, (\$16,000,000), 5/1/85–4/30/90.
- Grant from Honeywell S & RC, (\$5,000), principal investigator, 1985.
- NSF Grant, *Constrained Minimax Optimization in Computer-Aided Design of Engineering Systems*, (\$137,557), principal investigator, 9/1/85–2/28/89.
- Travel grant from the Partners of the Americas for a two week visit to COPPE/UFRJ, Rio de Janeiro, Brazil, August–September 1986.
- Grant from Westinghouse Corporation, *Optimization-Based Design of Airborne Servosystems*, (\$27,500), principal investigator, 1986–1987.
- Equipment Grant from Sun Microsystems, (\$25,000), principal investigator, 1986.
- Westinghouse Professorship for the academic year 86–87, *Optimization of Control Systems*, (\$35,000).
- NASA Ames University Consortium, *Rotorcraft Flight Control System Design Methodologies*, (\$60,000), co-principal investigator with M.K.H. Fan and J. Barlow, 4/1/88–3/31/90.
- NSF Grant, *Fast Algorithms for Optimization Problems Arising in the Design of Engineering Systems*, (\$150,000), co-principal investigator with M.K.H. Fan, 2/15/89–7/31/92.

- Grant from Rockwell International, *Structured Singular Value Algorithms*, (\$5,000), co-principal investigator with M.K.H. Fan, 1988.
- Grant from Shell Development Company, (\$5,000), co-principal investigator with M.K.H. Fan, 1988.
- Grant from Westinghouse, portion of Westinghouse's contribution to the Systems Research Center, earmarked for support of optimization-based design effort, (\$30,000), co-principal investigator with M.K.H. Fan, 1988.
- Grant from Westinghouse, portion of Westinghouse's contribution to the Systems Research Center, earmarked for support of optimization-based design effort, (\$30,000), co-principal investigator with M.K.H. Fan, 1989.
- Grant from Rockwell International, (\$10,000), principal investigator, 1989.
- NASA Ames University Consortium, *Rotorcraft Flight Control System Design Methodologies*, (\$80,000), co-principal investigator with M.K.H. Fan and J. Barlow, 4/1/90–3/31/92.
- Grant from Rockwell International, (\$10,000), principal investigator, 1990.
- Grant from Westinghouse, portion of Westinghouse's contribution to the Systems Research Center, earmarked for support of optimization-based design effort, (\$25,000), co-principal investigator with M.K.H. Fan, 1990.
- Co-investigator in the NSF ECSEL grant, (\$2,000,000) for five years, 1990.
- Grant from Westinghouse, portion of Westinghouse's contribution to the Systems Research Center, earmarked for support of optimization-based design effort, (\$25,000), co-principal investigator with M.K.H. Fan, 1991.
- Grant from Westinghouse, portion of Westinghouse's contribution to the Institute for Systems Research, earmarked for support of optimization-based design effort, (\$5,000), principal investigator, 1992.
- NSF, *Design and Control of a Walking Robot*, (\$365,000), co-principal investigator with S. Azarm, W. Dayawansa, N. Farvardin, A.L. Tits and L.W. Tsai, 8/1/92–7/31/95.
- Grant from Westinghouse, portion of Westinghouse's contribution to the Institute for Systems Research, earmarked for support of optimization-based design effort, (\$20,000), principal investigator, 1993.
- Grant from Westinghouse, portion of Westinghouse's contribution to the Institute for Systems Research, earmarked for support of research on pseudo-inverse, (\$20,000), co-principal investigator with J. Jájá, 1993.
- NSF, *Optimization Techniques for Problems Arising in Design and Other Engineering Applications*, (\$273,331), principal investigator, 9/1/93–2/28/97.
- Grant from Westinghouse, portion of Westinghouse's contribution to the Institute for Systems Research, earmarked for support of optimization-based design effort, (\$20,000), principal investigator, 1994.
- Grant from Westinghouse, portion of Westinghouse's contribution to the Institute for Systems Research, earmarked for support of research on pseudo-inverse, (\$20,000), co-principal investigator with K.J.R. Liu, 1994.
- Grant from Northrop Grumman (formerly Westinghouse), portion of Northrop Grumman's contribution to the Institute for Systems Research, earmarked for support of optimization-based design effort, (\$12,000), principal investigator, 1995.
- Grant from Northrop Grumman, portion of Northrop Grumman's contribution to the Institute for Systems Research, earmarked for support of optimization-based design effort, (\$45,000), principal investigator, 1996.
- NSF, *Optimization Techniques for Problems Arising in Design and Other Engineering Applications*, (\$371,645), principal investigator, 9/1/98–12/31/02.
- NSF, *Feasible Point Optimization Methods for Design and Other Engineering Applications*, (\$200,001), principal investigator, 09/01/04–08/31/08 (including a 12-month no-cost extension).

- DoE, *Interior Point Algorithms for Optimization Problems With Many Constraints*, (\$582,580), co-PI (PI: Dianne O’Leary), 09/15/04–09/14/08 (including a 12-month no-cost extension).
- DoE, *Advanced Optimization Techniques for Entropy-Based Moment Closures*, (\$769,918), PI (co-PI: Dianne O’Leary), 08/15/2009–08/14/2012.
- DoE, *Interior-Point Algorithms for Optimization Problems with Many Constraints*, (\$303,701), co-PI (PI: Dianne O’Leary), 06/17/2009–09/14/2012.

Major University Committee Service

- Associate Chair for Graduate Studies and Research, Department of Electrical and Computer Engineering, 1995-2003.
- Member of the Search Committee for a Chair for the Department of Electrical and Computer Engineering, 1986, 1992 and 2001.
- Member of the Electrical Engineering Department Council, 1989–1991, 1992–1994, and 1999–2005. Chaired the Council in 1989–1990, 1992–1993, 2000-2001, and 2004-2005.
- Chaired a committee appointed by the Dean to conduct a “self-study” of the Department of Electrical and Computer Eng., in preparation for an External Review, 2001–2002.
- Chaired the Search Committee for Director of Graduate Studies, 2004.
- Member of the Institute for Systems Research’s Executive Committee, 1988–1991 and 1993–1995.
- Member of the ISR Director Review Committee, 2007.
- Member of the College of Engineering Council, 1989–1991, 1992–1994 and 1999-2001. Chaired the Council in 1992–1993.
- Clark School Web Site Redesign Committee (04)
- Significant involvement in development of FAR (faculty activity report) system, 2004-2005.
- Chaired the Search Committee for Assistant Dean for Communications, 2004.
- Graduate Committee for Applied Mathematics and Scientific Computation, 2000–2002.
- Search Committee for Director of Graduate Studies, Computer Science Department, 2004.
- Campus Senator, 1990–1994.
- Campus Plan of Organization Review Committee, 1991–1992.
- Campus Senate Committee on Faculty Affairs, 1991–1993.
- Engineering Representative on Provost’s APT Point Committee, 1992–1994.
- Graduate Council Committee on Fellowships, 1992–1994.
- Council of University of Maryland System Faculty, 1993–1994.
- Graduate Council, 1996–1999.
- Ad-hoc committee to review the operation of the Graduate School, Spring 1999.
- Academic Planning Advisory Committee (APAC), 2002–2005.
- Graduate School Review Committee, 2004–2005.
- Committee on International Graduate Students, 2004–2005.
- Significant involvement in development of MEGS database system, 2001–2005.
- Member of Clark School’s Dean Search Committee, 2007–2008.

Professional Service

- Co-organizer of the *Optimization-Based Computer-Aided Design* session at the 21st IEEE Conference on Decision and Control, Orlando, Florida, December 1982.
- Member of the Program Committee for the 3rd IEEE CSS Symposium on Computer-Aided Control System Design, Arlington, Virginia, September 1986.

- Registration Chairman for the 25th IEEE Conference on Decision and Control, Athens, Greece, December 1986.
- Co-organizer of the *Optimization-Based Design of Control Systems* session at the SIAM Conference on Control in the 90's, San Francisco, California, May 1989.
- Member of the IFIP Working Group on Optimization-Based Computer-Aided Modelling and Design, since 1988.
- Panel member for evaluation of SBIR proposals, NSF, September 1989.
- Associate Editor of the IEEE Transactions on Automatic Control, 1/1/1990–12/31/93.
- Associate Editor of Systems and Control Letters, 1/1/91–7/1/95.
- Program Committee Member for the 1992 American Control Conference.
- Program Vice-Chairman for Contributed Papers, 31st IEEE Conference on Decision and Control, 1992.
- Associate Editor of Automatica, 1/1/94–12/01/99.
- International Program Committee member for the IFIP 3rd WG-7.6 Working Conference on Optimization-Based Computer-Aided Modelling and Design, Prague, the Czech Republic, May 24–26, 1994.
- International Program Committee member for the 17th IFIP TC7 Conference and System Modelling and Optimization, Prague, the Czech Republic, July 10–14, 1995.
- Associate Editor at Large of the IEEE Transactions on Automatic Control, 1/1/1995–1998.
- International Program Committee member for the 1997 European Control Conference, Brussels, Belgium, July 1–4, 1997.
- International Program Committee member for the 7th Symposium on Computer Aided Control Systems Design, Ghent, Belgium, April 28–30, 1997.
- ★ Editor for Technical Notes and Correspondence, IEEE Transactions on Automatic Control, 1998–2005.
- Appointed member of the Board of Governors of the IEEE Control Systems Society, 1998.
- Associate Editor of Optimization and Engineering, 2002–.
- Associate Editor of Computational Optimization and Applications, 2002–.
- Associate Editor for Operations Research, 2004–.
- ★ Editor for Rapid Publications for Automatica, 2005–.
- Member of IEEE CSS Fellow Selection Committee, 2006, 2007.

Membership in Professional Societies

- IEEE (Control Systems Society)
- Mathematical Programming Society
- SIAM (Optimization)

Invited Lectures

- at Harris Corporation, Semi-Conductor Division, Melbourne, Florida, on November 13, 1981.
- at INRIA, Le Chesnay, France, on December 22, 1982.
- at Drexel University, Mechanical Eng. Dept., Philadelphia, Pennsylvania, on November 15, 1983.
- at DFVLR, Oberpfaffenhofen, Federal Republic of Germany, on December 20, 1984.
- at the University of Manchester Institute of Sciences and Technology (U. K.), on July 12, 1985.
- at AT&T Bell Laboratories, Murray Hill, New Jersey, on November 11, 1985.
- at the University of Liège, Belgium, on July 11, 1986.
- at Georgia Institute of Technology, Atlanta, Georgia, on August 1, 1986.
- at COPPE, Federal University of Rio de Janeiro, Brazil, on August 27-28, 1986.
- at National Laboratory for Scientific Computations, Rio de Janeiro, Brazil, on September 4, 1986.

- at Eidgenoessische Technische Hochschule, Zurich, Switzerland, on December 17, 1986.
- at the National University of Singapore, Electrical Engineering Dept., on April 7, 1987.
- at General Electric C&RD, Schenectady, NY, on June 1, 1988.
- at Cambridge University, Cambridge, UK, on July 8, 1988.
- at the Tokyo Institute of Technology, Tokyo, Japan, on September 1, 1988.
- at the Lund Institute of Technology, Lund, Sweden, on September 13, 20, and 23, 1988.
- at the Laboratoire des Signaux et Systèmes, Gif-s/Yvette, France, on October 27, 1988.
- at INRIA, Le Chesnay, France, on November 3, November 10, December 1 and December 22, 1988.
- at CNR-IASI, Rome, Italy, on December 13, 1988.
- at UMBC, Mathematics Department, on February 28, 1989.
- at Georgia Institute of Technology, on December 18, 1989.
- at Princeton University, on March 15, 1990.
- at Johns Hopkins University, Department of Mathematical Sciences, on October 11, 1990.
- at Johns Hopkins University, Department of Electrical and Computer Engineering, on November 12, 1992.
- at Georgia Institute of Technology, on April 1, 1993 (first invited Colloquium speaker in a monthly cross-departmental colloquium series).
- at University of Trier, Trier, Germany, on July 12, 1993.
- at Technical University Berlin, Berlin, Germany, on July 15, 1993.
- at University of Louvain, CESAME, Louvain-la-Neuve, Belgium, on January 3, 1994.
- at Purdue University, School of Electrical Engineering, West Lafayette, Indiana, on November 18, 1994.
- at Catholic University of Louvain, CESAME, Louvain-la-Neuve, Belgium, on January 23, 1995.
- at Catholic Univ. of Leuven, ESAT, Belgium, on Feb. 8, 1995.
- at the Department of Mathematics, Faculty Universitaires Notre Dame de la Paix, Namur, Belgium, on May 8, 1995.
- at the Department of Mathematics, University of Reading, UK, on May 12, 1995.
- at the Institut Montefiore, University of Liège, Belgium, on June 6, 1995.
- at the Australian National University, Canberra, Australia, on October 10, 1995.
- at the Australian National University, Canberra, Australia, on October 17, 1995.
- at Hong Kong University of Science and Technology, Kowloon, Hong Kong, on October 31, 1995.
- at National Sun Yet-Sen University, Kaohsiung, Taiwan, R.O.C., on November 3, 1995.
- at National Kaohsiung Institute of Technology, Kaohsiung, Taiwan, R.O.C., on November 4, 1995.
- at Department of Control Engineering, National Chiao Tung University, Hsinchu, Taiwan, R.O.C., on November 6, 1995.
- at Institute of Applied Mechanics, National Taiwan University, Taipei, Taiwan, R.O.C., on November 7, 1995.
- Old Dominion University, October 1, 1999.
- LIDS, Massachusetts Institute of Technology, March 12, 2002.
- University of Florida, January 31, 2003.
- Johns Hopkins University, October 23, 2003.
- University of Maryland, Baltimore County, March 11, 2005.
- ★ *Featured speaker* at the Conference on Computer-Aided Design and Manufacturing for Quality, Bell Laboratories, Holmdel, New Jersey, November 1986.
- ★ *Plenary talk* at the 1988 IFAC CADCS, Beijing, China, August 1988.
- ★ *Featured speaker* at the biannual meeting of the FNRS Contact Group on Automatic Control, Catholic University of Leuven, Leuven, Belgium, on December 19, 1988.

- ★ *Two-hour invited plenary talk* joint with M.K.H. Fan at the International Workshop on Robustness of Control Systems, Kappel am Albis, Switzerland, September 1991: μ versus Kharitonov: Rivalry or partnership?
- ★ *Invited plenary speaker* at the International Workshop on Semi-Infinite Programming, Cottbus, Germany, September 23-26, 1996.

Doctoral and M.S. Students

Ph.D. Students (at the University of Maryland, College Park)

1. Michael K.H. Fan, *Characterization and Computation of the Structured Singular Value*, 1986. Current position: Associate Professor at the School of Electrical Engineering, Georgia Institute of Technology, Atlanta, Georgia.
2. Lahcen Saydy (jointly advised by Prof. E. Abed), *Studies in Robust Stability*, 1988. Current position: Associate Professor (Professeur Agrégé) at the Département de Génie Electrique et Informatique, Ecole Polytechnique de Montréal, Montreal, Quebec, Canada.
3. Li Lee, *Robustness Study of Systems with Phase-Informed Uncertainty*, 1992. Current position: Associate Professor at the Department of Electrical Engineering, National Sun Yet-Sen University, Kaohsiung, Taiwan, R.O.C.
4. Jian Zhou, *Fast, Globally Convergent Optimization Algorithms, with Application to Engineering System Design*, 1992. Current position: Systems Specialist, Fannie Mae, Washington, DC.
5. Nam-Kiu Tsing, *Computer-Based Techniques for Control System Design, with Applications to Rotorcraft Control*, 1992. Current position: Lecturer, Department of Mathematics, University of Hong Kong, Hong Kong.
6. Win-Bin Shieh (jointly advised by S. Azarm and L.W. Tsai), *Design and Optimization of Planar Mechanisms Featuring Symmetrical Foot Point Paths*, June 1996.
7. Yung-Shan Chou, *Robustness of Systems Under Structured Time-Varying Uncertainty: Stability and Performance*, December 1996.
8. Yaguang Yang, *Robust System Design: Pole Assignment Approaches*, December 1996.
9. Vineet Sahasrabudhe (jointly advised by R. Celi), *Multi-Disciplinary Optimization of a Helicopter Rotor and Flight Control System*, December 1996.
10. Craig Lawrence, *A Computationally Efficient Feasible Sequential Quadratic Programming Algorithm*, December 1998.
11. Simon Schurr (jointly advised by Prof. Dianne O'Leary), *An Inexact Interior-Point Algorithm for Conic Convex Optimization Problems*, December 2006.
12. Luke Winternitz, *Primal-dual interior-point algorithms for linear programming problems with many inequality constraints*, May 2010.

M.S. Thesis Students

(at the University of California, Berkeley)

Tom P. Lee, *The Design of Digital Filters Using Interactive Optimization*, 1981.

(at the University of Maryland, College Park)

Hassan Parsa, *Nonuniform, Dynamically Adapted Discretization for Functional Constraints in Engineering Problems*, 1984.

Michael K.H. Fan, *DELIGHT.LQG: A System for Optimization-Based Control System Design Using LQG Controller Structure and Efficient Derivative Computation*, 1984.

Zidu Ma, *Interaction, Specification Refinement and Tradeoff Exploration in Optimization-Based Design of Engineering Systems*, 1986.

Edgar Bertaut, *A Preconverter for Computer-Aided Optimization of a Network of Single-Input, Single-Output Linear Time-Invariant Systems*, 1987.

Joe-Ren Shyng, *An Algorithm for Optimization Problems with Positive Semi-Definite Matrix Constraints*, 1987.

Stefano Coraluppi (jointly advised by E. Abed), *Optimal Estimation of Domains of Attraction of Nonlinear Dynamical Systems*, 1992.

Sasan Bakhtiari, *Contributions to Primal-Dual Interior-Point Methods for Nonlinear Programming*, 2003.