

PUBLICATIONS by MICHAEL G. SAFONOV

Books

- [1] M. G. Safonov. *Stability and Robustness of Multivariable Feedback Systems*. MIT Press, Cambridge, MA, 1980. Based on author's PhD Thesis, "Robustness and Stability Aspects of Stochastic Multivariable Feedback System Design," MIT, 1977.
- [2] R. Y. Chiang and M. G. Safonov. *Robust Control Toolbox*. MathWorks, South Natick, MA, 1988.
- [3] R. Y. Chiang and M. G. Safonov. *Robust Control Toolbox*. MathWorks, Natick, MA, 1988 (Ver. 2.0, 1992). 221 pages.
- [4] G. J. Balas, R. Y. Chiang, A. K. Packard, and M. G. Safonov. *Robust Control Toolbox, Version 3*. MathWorks, Natick, MA, 2005.
- [5] M. Stefanovic and M. G. Safonov. *Safe Adaptive Control: Data-driven Stability Analysis and Robust Synthesis*. Springer-Verlag, Berlin, 2011. Lecture Notes in Control and Information Sciences, Vol. 405. <http://dx.doi.org/10.1007/978-1-84996-453-1>

Book Chapters and Articles

- [1] M. G. Safonov. Large systems control theory. In *Encyclopedia of Science and Technology*. McGraw-Hill, NY, 5th edition, 1982.
- [2] M. G. Safonov and J. C. Doyle. Minimizing conservativeness of robustness singular values. In S. G. Tzafestas, editor, *Multivariable Control*, chapter 11. D.Reidel, Dordrecht, Holland, 1984.
- [3] M. G. Safonov. Imaginary-axis zeros in multivariable H^∞ optimal control. In R. F. Curtain, editor, *Modelling, Robustness and Sensitivity Reduction in Control Systems*, pages 71–82. Springer-Verlag, New York, 1987.
- [4] M. G. Safonov. Robustness in linear systems. In *Encyclopedia of Systems and Control*. Pergamon Press, Oxford, 1987.
- [5] M. G. Safonov and V. X. Le. An alternative solution to the H^∞ control problem. In C. I. Byrnes, C. F. Martin, and R. E. Saeks, editors, *Linear Circuits, Systems and Signal Processing: Theory and Application*, chapter 8. Elsevier, Amsterdam, 1988.
- [6] M. G. Safonov. Linear systems: Robustness. In *Systems and Control Encyclopedia, Supplementary Volume 1*. Pergamon Press, Oxford, U.K., 1990.
- [7] M. G. Safonov. Quantifying the modeling accuracy needed for control. In S.P. Bhattacharyya and L. H. Keel, editors, *Control of Uncertain Dynamic Systems*, pages 141–148. CRC Press, Boca Raton, FL, 1991.

- [8] B. R. Copeland and M. G. Safonov. A generalized eigenproblem solution for singular H^2 and H^∞ problems. In C.T. Leondes, editor, *Control and Dynamic Systems*, volume 50 (Part 1), pages 331–394. Academic Press, New York, 1992.
- [9] A. M. Holohan and M. G. Safonov. Neoclassical control theory: A functional analysis approach to optimal frequency domain controller synthesis. In C.T. Leondes, editor, *Control and Dynamic Systems*, volume 50 (Part 1), pages 297–329. Academic Press, New York, 1992.
- [10] M. G. Safonov and R. Y. Chiang. Real/complex K_m -synthesis without curve fitting. In C.T. Leondes, editor, *Control and Dynamic Systems*, volume 56 (Part 2), pages 303–324. Academic Press, New York, 1993. <http://routh.usc.edu/pub/safonov/saf093h.pdf>
- [11] T. C. Tsao and M. G. Safonov. A robust ellipsoidal-bound approach to direct adaptive control. In R. S. Smith and M. Dahleh, editors, *The Modeling of Uncertainty in Control Systems: Proc. of the 1992 Santa Barbara Workshop*, pages 181–196. Springer-Verlag, New York, 1994.
- [12] M. G. Safonov. Thoughts on identification for control. In R. S. Smith and M. Dahleh, editors, *The Modeling of Uncertainty in Control Systems: Proc. of the 1992 Santa Barbara Workshop*, pages 15–17. Springer-Verlag, New York, 1994. <http://link.springer.com/chapter/10.1007/BFb0036242>
- [13] M. G. Safonov and T.-C. Tsao. The unfalsified control concept: A direct path from experiment to controller. In B. A. Francis and A. R. Tannenbaum, editors, *Feedback Control, Nonlinear Systems and Complexity*, pages 196–214. Springer-Verlag, Berlin, 1995.
- [14] M. G. Safonov. Focusing on the knowable: Controller invalidation and learning. In A. S. Morse, editor, *Control Using Logic-Based Switching*, pages 224–233. Springer-Verlag, Berlin, 1996. <http://dx.doi.org/10.1007/BFb0036098>
- [15] M. G. Safonov. Robust control. In J. G. Webster, editor, *Encyclopedia of Electrical and Electronics Engineering*, volume 18, pages 592–602. Wiley, NY, 1999.
- [16] M. Mesbahi, M. G. Safonov, and G. P. Papavassilopoulos. Bilinearity and complementarity in robust control. In L. El Ghaoui and S. Niculescu, editors, *Advances in Linear Matrix Inequality Methods in Control*, pages 269–292. SIAM, Philadelphia, PA, 2000.
- [17] M. G. Safonov. Recent advances in robust control, feedback and learning. In S. O. R. Moheimani, editor, *Perspectives in Robust Control*, pages 283–296. Springer-Verlag, London, 2001.
- [18] M. G. Safonov. Data-driven robust control design: Unfalsified control. In *Proc. NATO Lecture Series 236, Robust Integrated Control Systems Design Methods for 21st Century Military Applications*, pages 4.1–4.18. NATO Research and Technology Organisation, BP 25, F-92201 Nueilly-sur-Seine Cedex, France, October 2004. NATO SCI-142, ISBN 92-837-1129-7. <ftp://ftp.rta.nato.int/PubFullText/RTO/EN/RTO-EN-SCI-142/EN-SCI-142-04.pdf>

- [19] M. G. Safonov. Data-driven robust control design: Unfalsified control. In *Achieving Successful Robust Integrated Control System Designs for 21st Century Military Applications — Part II*, pages 3–1 to 3–14. NATO Research and Technology Organisation, BP 25, F-92201 Nueilly-sur-Seine Cedex, France, 2007. RTO Educational Notes EN-SCI-166, ISBNs 92-837-0064-3 / 978-92-837-0064-7. <ftp://ftp.rta.nato.int//PubFullText/RTO/EN/RTO-EN-SCI-166/EN-SCI-166-03.pdf>
- [20] M. G. Safonov. Robust control. In C. A. Floudas and P. M. Pardalos, editors, *Encyclopedia of Optimization (2nd ed.)*, pages 3300–3305. Springer US, 2009. <http://dx.doi.org/10.1007/978-0-387-74759-0-565>
- [21] M. G. Safonov. Robust control, stability margin. In P. M. Pardalos and C. A. Floudas, editors, *Encyclopedia of Optimization*, volume 5, pages 44–49. Kluwer, Boston, MA, June 2001. http://dx.doi.org/10.1007/978-0-387-74759-0_565

Refereed Journal Articles

- [1] M. G. Safonov and M. Athans. Gain and phase margin for multiloop LQG regulators. *IEEE Trans. Autom. Control*, AC-22(2):173–178, 1977.
- [2] M. G. Safonov and M. Athans. Robustness and computational aspects of nonlinear stochastic estimators and regulators. *IEEE Trans. Autom. Control*, AC-23(4):715–725, 1978. <http://dx.doi.org/10.1109/TAC.1978.1101825>
- [3] N. R. Sandell, P. Varaiya, M. Athans, and M. G. Safonov. A survey of decentralized control methods for large scale systems. *IEEE Trans. Autom. Control*, AC-23(2):108–128, 1978.
- [4] M. G. Safonov, A. J. Laub, and G. L. Hartmann. Feedback properties of multivariable systems: The role and use of the return difference matrix. *IEEE Trans. Autom. Control*, AC-26(1):47–65, February 1981.
- [5] M. G. Safonov and M. Athans. A multiloop generalization of the circle criterion for stability margin analysis. *IEEE Trans. Autom. Control*, AC-26(2):415–422, April 1981.
- [6] M. G. Safonov and B. S. Chen. Multivariable stability margin optimization with decoupling and output regulation. *IEE Proceedings*, 129-D:276–282, November 1982.
- [7] M. G. Safonov. Stability margins of diagonally perturbed multivariable feedback systems. *Control Theory and Applications, IEE Proceedings D*, 129(6):251–255, November 1982.
- [8] M. G. Safonov. Propagation of conic model uncertainty in hierarchical systems. *IEEE Trans. Autom. Control*, AC-28:701–709, 1983.
- [9] M. G. Safonov. Propagation of conic model uncertainty in hierarchical systems. *IEEE Transactions on Systems, Man and Cybernetics*, SMC-13:500–508, 1983.

- [10] M. G. Safonov. Propagation of conic model uncertainty in hierarchical systems. *IEEE Transactions on Circuits and Systems*, CAS-30:388–396, 1983.
- [11] M. G. Safonov. Review of ‘large scale systems modelling and control’ (Jamshidi, M.; 1983). *IEEE Circuits and Systems Magazine*, 6, June 1984.
- [12] M. G. Safonov and M. Verma. L^∞ optimization and Hankel approximation. *IEEE Trans. Autom. Control*, AC-30(3):279 – 280, March 1985. <http://dx.doi.org/10.1109/TAC.1985.1103943>
- [13] M. G. Safonov. Optimal diagonal scaling for infinity norm optimization. *Systems and Control Letters*, 7:257–260, July 1986.
- [14] M. G. Safonov and G. Wyetzner. Computer-aided stability analysis renders Popov criterion obsolete. *IEEE Trans. Autom. Control*, AC-32(12):1128–1131, December 1987. <http://dx.doi.org/10.1109/TAC.1987.1104510>
- [15] M. G. Safonov, E. A. Jonckheere, M. Verma, and D. J. N. Limebeer. Synthesis of positive real multivariable feedback systems. *Int. J. Control*, 45:817–842, 1987.
- [16] M. G. Safonov and V. X. Le. An alternative solution to the multivariable H^∞ optimization problem. *Systems and Control Letters*, 10(2):155–158, February 1988.
- [17] M. G. Safonov and R. Y. Chiang. CACSD using the state-space L^∞ theory—A design example. *IEEE Trans. Autom. Control*, AC-33:477–479, 1988.
- [18] R. E. DeGaston and M. G. Safonov. Exact calculation of the multivariable stability margin. *IEEE Trans. Autom. Control*, AC-33:156–171, February 1988.
- [19] M. G. Safonov and R. Y. Chiang. Model reduction for robust control: A Schur relative error method. *Int. J. Adaptive Control and Signal Processing*, 2(4):259–272, 1988.
- [20] M. G. Safonov and R. Y. Chiang. A Schur method for balanced model reduction. *IEEE Trans. Autom. Control*, AC-34(7):729–733, July 1989. <http://dx.doi.org/10.1109/9.29399>
- [21] M. G. Safonov, D. J. N. Limebeer, and R. Y. Chiang. Simplifying the H^∞ theory via loop-shifting, matrix-pencil and descriptor concepts. *International Journal of Control*, 50(6):2467–2488, 1989.
- [22] M. G. Safonov, R. Y. Chiang, and D. J. N. Limebeer. Optimal Hankel model reduction for nonminimal systems. *IEEE Trans. Autom. Control*, 35(4):496–502, 1990.
- [23] P. Opdenacker, E. A. Jonckheere, M. G. Safonov, J. C. Juang, and M. Lukich. Reduced order compensator design for a flexible structure. *AIAA J. Guidance and Control*, 13(1):46–56, 1990.
- [24] W. Wang and M. G. Safonov. A tighter relative-error bound for balanced stochastic truncation. *Systems and Control Letters*, 14:307–317, 1990.

- [25] K. Glover, D. J. Limebeer, J. C. Doyle, E. M. Kasenally, and M. G. Safonov. A characterization of all solutions to the four block general distance problem. *SIAM J. Control and Optimization*, 29:283–324, March 1991.
- [26] M. G. Safonov, R. Y. Chiang, and H. Flashner. H^∞ robust control synthesis for a large space structure. *AIAA J. Guidance, Control and Dynamics*, 14(3):513–519, May-June 1991.
- [27] W. Wang and M. G. Safonov. A relative-error bound for discrete balanced stochastic truncation. *Int. J. Control*, 54(3):593–612, September 1991.
- [28] J. A. Tekawy, M. G. Safonov, and R. Y. Chiang. Convexity property of the one-sided multi-variable stability margin. *IEEE Trans. Autom. Control*, AC-37(4):496–498, April 1992.
- [29] R. Y. Chiang and M. G. Safonov. H^∞ synthesis using a bilinear pole-shifting transform. *AIAA J. Guidance, Control and Dynamics*, 15(5):1111–1115, September–October 1992.
- [30] W. Wang and M. G. Safonov. Multiplicative-error bound for balanced stochastic truncation. *IEEE Trans. Autom. Control*, AC-37(8):1265–1267, August 1992.
- [31] V. X. Le and M. G. Safonov. Rational matrix GCD's and the design of squaring-down compensators—a state space theory. *IEEE Trans. Autom. Control*, AC-36(3):384–392, March 1992.
- [32] W. Wang and M. G. Safonov. Relative-error H^∞ identification from autocorrelation data — a stochastic realization approach. *IEEE Trans. Autom. Control*, AC-37(7):1000–1004, July 1992.
- [33] J. A. Tekawy, M. G. Safonov, and C. T. Leondes. Robustness measures for one-sided parameter uncertainties. *Systems and Control Letters*, 19(2):131–137, August 1992.
- [34] M. G. Safonov and W. Wang. Singular value properties of LQ regulators. *IEEE Trans. Autom. Control*, AC-37(8):1210–1211, August 1992.
- [35] B. R. Copeland and M. G. Safonov. Zero cancelling compensators for singular control problems and their application to the inner-outer factorization problem. *Int. J. Robust and Non-linear Control*, 2(2):139–164, August 1992.
- [36] G. Hsieh and M. G. Safonov. Conservatism of the gap metric. *IEEE Trans. Autom. Control*, AC-38(4):594–598, April 1993.
- [37] R. Y. Chiang, M. G. Safonov, K. Madden, J. Tekawy, and K.R. Haiges. A fixed H^∞ controller for a supermaneuverable fighter performing the Herbst maneuver. *Automatica*, 29(1):111–127, January 1993.
- [38] A. Holohan and M. G. Safonov. Some counterexamples in robust stability theory. *Systems and Control Letters*, 21(2):95–102, August 1993.
- [39] M. G. Safonov. 1995 AACC Awards. *IEEE Control Systems*, 15(6):82–84, December 1995.

- [40] K. C. Goh, M. G. Safonov, and G. P. Papavassilopoulos. Global optimization for the biaffine matrix inequality problem. *Journal of Global Optimization*, 7:365–380, 1995.
- [41] B. R. Copeland and M. G. Safonov. A zero compensation approach to singular H^2 and H^∞ problems. *Int. J. Robust and Nonlinear Control*, 5(2):71–106, April 1995.
- [42] K. C. Goh, M. G. Safonov, and J. H. Ly. Robust synthesis via bilinear matrix inequalities. *Int. J. Robust and Nonlinear Control*, 6(9/10):1079–1095, November–December 1996.
- [43] M. G. Safonov and M. K. H. Fan. Editorial. *Int. J. Robust and Nonlinear Control*, 7(2):1099–1239, February 1997. Special Issue on Multivariable Stability Margin.
- [44] M. G. Safonov and M. K. H. Fan. Editorial, Special issue on multivariable stability margin. *Int. J. Robust and Nonlinear Control*, 7(2):97–103, February 1997. <http://routh.usc.edu/pub/safonov/safo97d.pdf>
- [45] L. Turan, M. G. Safonov, and C. H. Huang. Synthesis of positive real feedback systems: A simple derivation via Parrott's theorem. *IEEE Trans. Autom. Control*, AC-42(8):1154–1157, August 1997.
- [46] M. G. Safonov and T. C. Tsao. The unfalsified control concept and learning. *IEEE Trans. Autom. Control*, AC-42(6):843–847, June 1997.
- [47] J. H. Ly, R. Y. Chiang, K. C. Goh, and M. G. Safonov. LMI multiplier K_m/μ -analysis of the Cassini spacecraft. *Int. J. Robust and Nonlinear Control*, 8(2):155–168, February 1998. Special Issue on Robust Control Applications.
- [48] C.-H. Huang, P. A. Ioannou, J. Maroulas, and M. G. Safonov. The design of strictly positive real systems using constant output feedback. *IEEE Trans. Autom. Control*, AC-44(3):569–573, March 1999. <http://routh.usc.edu/pub/safonov/safo97c.pdf>
- [49] K. Glover and M. G. Safonov. Editorial, George Zames commemorative special issue. *Int. J. Robust and Nonlinear Control*, 10(11/12):849–851, September–October 2000. <http://routh.usc.edu/pub/safonov/safo001.pdf>
- [50] M. G. Safonov and V. V. Kulkarni. Zames-Falb multipliers for MIMO nonlinearities. *Int. J. Robust and Nonlinear Control*, 10(11/12):1025–1038, September - October 2000. George Zames Commemorative Issue (eds. K. Glover and M. G. Safonov). <http://routh.usc.edu/pub/safonov/safo99f.pdf>
- [51] T. F. Brozenec, T. C. Tsao, and M. G. Safonov. Controller validation. *Int. J. Adaptive Control and Signal Processing*, 15(5):431–444, August 2001. <http://routh.usc.edu/pub/safonov/safo01j.pdf>
- [52] M. G. Safonov. A course robust control theory: A convex approach (by G. E. Dullerud and F. G. Paganini). *IEEE Trans. Autom. Control*, 46(9):1510–1511, September 2001. Invited Book Review. <http://routh.usc.edu/pub/safonov/safo02a.pdf>

- [53] R. L. Kosut and M. G. Safonov. Editorial, adaptive control, with confidence. *Int. J. Adaptive Control and Signal Processing*, 15(5):429, August 2001. <http://routh.usc.edu/pub/safonov/safo01p.pdf>
- [54] M. G. Safonov and F. B. Cabral. Fitting controllers to data. *Systems and Control Letters*, 43(4):299–308, July 23, 2001. <http://routh.usc.edu/pub/safonov/safo98i.pdf>
- [55] M. Jun and M. G. Safonov. IQC robustness analysis for time-delay systems. *Int. J. Robust and Nonlinear Control*, 11(15):1455–1468, December 2001. Special Issue on Robustness Analysis and Design for Systems with Real Parametric Uncertainties (eds. O. D. Crisalle and H. A. Latchman). <http://routh.usc.edu/pub/safonov/safo01f.pdf>
- [56] M. Jun and M. G. Safonov. Multiplier IQC’s for uncertain time-delay systems. *J. Franklin Institute*, 338(2&3):335–351, March 2001. Special Issue on Dynamics and Control of Structural and Mechanical Systems. [http://dx.doi.org/10.1016/S0016-0032\(00\)00079-X](http://dx.doi.org/10.1016/S0016-0032(00)00079-X)
- [57] T. C. Tsao and M. G. Safonov. Unfalsified direct adaptive control of a two-link robot arm. *Int. J. Adaptive Control and Signal Processing*, 15:319–334, May 2001. <http://routh.usc.edu/pub/safonov/safo99g.pdf>
- [58] V. V. Kulkarni and M. G. Safonov. All multipliers for repeated monotone nonlinearities. *IEEE Trans. Autom. Control*, 47(7):1209–1212, July 2002. <http://routh.usc.edu/pub/safonov/safo01e.pdf>
- [59] V. V. Kulkarni and M. G. Safonov. Incremental positivity nonpreservation by stability multipliers. *IEEE Trans. Autom. Control*, 47(1):178–183, January 2002. <http://routh.usc.edu/pub/safonov/safo01m.pdf>
- [60] M. Jun and M. G. Safonov. Rational multiplier IQCs for uncertain time-delays and LMI stability conditions. *IEEE Trans. Autom. Control*, 47(11):1871–1875, November 2002. <http://routh.usc.edu/pub/safonov/safo02d.pdf>
- [61] M. G. Safonov. Comments on “A glance at the February issue of prism: Fitting liberal arts into the engineering curriculum”, Chronicle Review (February 16, 2004). *Chronicle of Higher Education*, Tuesday, February 17 2004. Letter to the Editor.
- [62] P. Brugarolas and M. G. Safonov. Learning about dynamical systems via unfalsification of hypotheses. *Int. J. Robust and Nonlinear Control*, 14(11):933–943, July 25, 2004. Special Issue on Robust control from data: Direct and model based approaches. <http://routh.usc.edu/pub/safonov/safo03l.pdf>
- [63] F. B. Cabral and M. G. Safonov. Unfalsified model reference adaptive control using the ellipsoid algorithm. *Int. J. Adaptive Control and Signal Processing*, 18(8):605–714, October 2004. Special issue on Iterative Modelling and Control.

- [64] Ayanendu Paul, Mehmet Akar, Michael G. Safonov, and Urbashi Mitra. Adaptive distributed power control in cellular communication networks. *IEEE Trans. on Neural Networks*, 16(5):1212–1218, September 2005. Special Issue on Adaptive Learning Systems in Communication Networks.
- [65] Ricardo Mancera and Michael G. Safonov. All stability multipliers for repeated MIMO nonlinearities. *Systems and Control Letters*, 54(4):389–397, April 2005. <http://routh.usc.edu/pub/safonov/safo03j.pdf>
- [66] Mehmet Akar, Ayanendu Paul, Michael G. Safonov, and Urbashi Mitra. Conditions on the stability of a class of second-order switched systems. *IEEE Trans. Autom. Control*, 51(2):338–340, February 2006.
- [67] R. Wang, A. Paul, M. Stefanovic, and M. G. Safonov. Cost-detectability and stability of adaptive control systems. *Int. J. Robust and Nonlinear Control*, 17(5-6):549–561, 25 March - April 2007. Special Issue: Frequency-domain and Matrix Inequalities in Systems and Control Theory. Dedicated to the 80th Birthday of V. A. Yakubovich.
- [68] M. Stefanovic and M. G. Safonov. Safe adaptive switching control: Stability and convergence. *IEEE Trans. Autom. Control*, AC- 53(9):2012–2021, October 2008. <http://dx.doi.org/10.1109/TAC.2008.929395>
- [69] A. Karthikeyan and M. G. Safonov. Simplified matrix pencil all-solutions H_∞ controller formulae. *SICE J. Control, Measurement, and System Integration*, 1(2):137–142, March 2008. <http://routh.usc.edu/pub/safonov/safo08e.pdf>
- [70] V. V. Kulkarni, M. V. Kothare, and M. G. Safonov. Decentralized dynamic nonlinear controllers to minimize transmit power in cellular networks — Part I. *Systems and Control Letters*, 59(5):294–298, May 2010. <http://dx.doi.org/10.1016/j.sysconle.2010.03.003>
- [71] V. V. Kulkarni, K. V. Venkatesh, P. Malakar, L. Y. Pao, M. G. Safonov, and G. Vishwanathan. Stability analysis of the GAL regulatory network in *Saccharomyces cerevisiae* and *Kluyveromyces lactis*. *BMC Bioinformatics*, 11(Suppl 1):S43, January 2010. <http://dx.doi.org/10.1186/1471-2105-11-S1-S43>
- [72] G. Battistelli, E. Mosca, M. G. Safonov, and P. Tesi. Stability of unfalsified adaptive switching control in noisy environments. *IEEE Trans. Autom. Control*, 55(10):2424–2429, Oct. 2010. <http://dx.doi.org/10.1109/TAC.2010.2056473>
- [73] V. V. Kulkarni, L. Y. Pao, and M. G. Safonov. On stability analysis of systems featuring a multiplicative combination of nonlinear and linear time-invariant feedback. *Int. J. Robust and Nonlinear Control*, 21(18):2101–2108, December 2011. <http://dx.doi.org/10.1002/rnc.1684>
- [74] V. V. Kulkarni, L. Y. Pao, and M. G. Safonov. Positivity preservation properties of the rantzer multipliers. *IEEE Trans. Autom. Control*, 1(AC-56):190–194, Jan 2011. <http://dx.doi.org/10.1109/TAC.2010.2089651>

- [75] M. Chang, R. Mancera, and M. G. Safonov. Computation of Zames-Falb multipliers revisited. *IEEE Trans. Autom. Control*, 57(4):1024–1029, April 2012.
- [76] M. G. Safonov. Origins of robust control: Early history and future speculations. *Annual Reviews in Control*, 36(2):173–181, December 2012.
- [77] S. Y. Cheong and M. G. Safonov. Slow-fast controller decomposition bumpless transfer for adaptive switching control. *IEEE Trans. Autom. Control*, 57(3):721–726, March 2012.
- [78] H. Jin and M. G. Safonov. Unfalsified adaptive control: Controller switching algorithms for nonmonotone cost functions. *Int. J. Adaptive Control and Signal Processing*, 26(8):692–704, August 2012. <http://dx.doi.org/10.1002/acs.2265>
- [79] H. Jin, M. W. Chang, and M. G. Safonov. Unfalsifying pole locations using a fading memory cost function. *Asian Journal of Control*, 16(6):1583–1591, November 2014. <http://dx.doi.org/10.1002/asjc.807>

Conference Papers

- [1]
- [2] M. G. Safonov and M. Athans. Gain and phase margin for multiloop LQG regulators. In *Proc. IEEE Conf. on Decision and Control*, pages 361–368, Clearwater Beach, FL., December 1–3, 1976.
- [3] M. G. Safonov and M. Athans. Robustness and computational aspects of nonlinear stochastic estimators and regulators. In *Proc. IEEE Conf. on Decision and Control*, New Orleans, LA, December 7–9, 1977.
- [4] M. G. Safonov and M. Athans. A multiloop generalization of the circle stability criterion. In *Proc. Asilomar Conference on Circuits, Systems and Computers*, pages 417–421, Pacific Grove, CA, November 6–8, 1978.
- [5] M. G. Safonov. Tight bounds on the response of multivariable systems with component uncertainty. In M. B. Pursley and J. B. Cruz, editors, *Proc. Allerton Conference on Communication, Control and Computing*, Monticello, IL, October 4–6, 1978. Coordinated Science Laboratory, University of Illinois, Urbana-Champaign, IL.
- [6] M. G. Safonov. Choice of quadratic cost and noise matrices and the feedback properties of multiloop LQG regulators. In *Proc. Asilomar Conference on Circuits, Systems and Computers*, pages 203–208, Pacific Grove, CA, November 5–7, 1979.
- [7] M. G. Safonov. Frequency domain design of multivariable control systems for insensitivity to large plant modeling errors. In *Proc. IEEE Conf. on Decision and Control*, Fort Lauderdale, FL, December 12–14, 1979.

- [8] M. G. Safonov. Large scale systems research: A perspective. In *Proc. 1978 IEEE Conf. on Decision and Control*, San Diego, CA, January 10–12, 1979. <http://dx.doi.org/10.1109/CDC.1978.267970>
- [9] M. G. Safonov. On robustness. In *Proc. Air Force Office of Scientific Research Conf. on Adaptive Control*, Champaign, IL, May 8-10, 1979.
- [10] M. G. Safonov and M. Athans. On stability theory. In *Proc. 1978 IEEE Conf. on Decision and Control*, pages 301–314, San Diego, CA, January 10–12, 1979. <http://dx.doi.org/10.1109/CDC.1978.267941>
- [11] M. G. Safonov. Singular values, m-matrices, diagonal dominance and the stability margins of multivariable feedback systems. In *Optimization Days*, Montreal, Canada, May 23-25, 1979.
- [12] M. G. Safonov. Input-output stability and response analysis for hierarchical large scale systems. In *Proc. IFAC Symposium on Large Scale Systems: Theory and Applications*, pages 41–47, Toulouse, France, June 24–26, 1980. Pergamon Press, Oxford.
- [13] M. Bettayeb, L. M. Silverman, and M. G. Safonov. Optimal approximation of continuous-time systems. In *Proc. IEEE Conf. on Decision and Control*, pages 195–198, Albuquerque, NM, December 10–12, 1980.
- [14] M. G. Safonov. The sensitivity problem in multivariable control revisited. In *Proc. Asilomar Conference on Circuits, Systems and Computers*, pages 512–515, November 17–19, 1980.
- [15] M. G. Safonov and Karimlou. A separation principle for linear systems with large plant and sensor uncertainty. In *Proc. Asilomar Conference on Circuits, Systems and Computers*, pages 446–449, Pacific Grove, CA, November 9–11, 1981.
- [16] M. G. Safonov. Stability margins of diagonally perturbed multivariable feedback systems. In *Proc. IEEE Conf. on Decision and Control*, pages 1472–1478, San Diego, CA, December 16–18, 1981.
- [17] M. G. Safonov. Stability margins of diagonally perturbed multivariable feedback systems. In *Proc. IEEE Conf. on Decision and Control*, San Diego, CA., December 16-18, 1981.
- [18] E. A. Jonckheere, L. M. Silverman, and M. G. Safonov. Topology induced by Hankel norm in the space of transfer matrices. In *Proc. IEEE Conf. on Decision and Control*, San Diego, CA, December 16–18, 1981.
- [19] M. G. Safonov and B. S. Chen. Multivariable stability margin optimization with decoupling and output regulation. In *Proc. IEEE Conf. on Decision and Control*, pages 616–622, Orlando, FL, December 8–10, 1982.
- [20] M. G. Safonov. Propagation of conic model uncertainty in interconnected systems. In *IFAC Workshop on Singular Perturbations and Robustness*, Ohrid, Yugoslavia, July 1982.

- [21] M. G. Safonov and K. Karimlou. Input-output stability analysis with magnetic hysteresis non-linearity. In *Proc. IEEE Conf. on Decision and Control*, San Antonio, TX, December 14–16, 1983.
- [22] M. G. Safonov. L^∞ optimal sensitivity vs. stability margin. In *Proc. IEEE Conf. on Decision and Control*, San Antonio, TX, December 14–16, 1983.
- [23] M. G. Safonov and M. Verma. Multivariable L^∞ sensitivity optimization and Hankel approximation. In *Proc. American Control Conf.*, San Francisco, CA, June 22–24, 1983.
- [24] M. G. Safonov and J. C. Doyle. Optimal scaling for multivariable stability margin singular value computation. In S. G. Tzafestas and M. H. Hamza, editors, *Methods and Applications of Measurement and Control*, volume 2, pages 466–469, Athens, Greece, August 29–September 3, 1983. Proc. of the 6th Int. IASTED Symp. MECO '83. ACTA Press, Anaheim, CA, 1984.
- [25] M. G. Safonov. Exact calculation of the multivariable structured-singular-value stability margin. In *Proc. IEEE Conf. on Decision and Control*, Las Vegas, NV, December 12–14, 1984.
- [26] M. G. Safonov and K. Karimlou. Input-output stability analysis with magnetic hysteresis nonlinearity—a class of multipliers. In *Proc. American Control Conf.*, San Diego, CA, June 6–8, 1984.
- [27] M. G. Safonov. Stability of interconnected systems having slope-bounded nonlinearities. In *Proc. Sixth International Conference on Analysis and Optimization of Systems*, pages 275–287, Nice, France, June 19–22, 1984. Springer-Verlag, Berlin.
- [28] M. G. Safonov and A. Sideris. Unification of Wiener-Hopf and state space approaches to quadratic optimal control. In *Proc. DIGITECH '84 Conference*, Patras, Greece, July 9–12, 1984.
- [29] A. Sideris and M. G. Safonov. Design of linear control systems for robust stability and performance. In *Proc. IFAC Workshop on Model Error Concepts and Compensation*, pages 97–104, Boston, MA, June 17–18, 1985. Pergamon Press, Oxford, 1986.
- [30] A. Sideris and M. G. Safonov. Infinity-norm optimization with a stable controller. In *Proc. American Control Conf.*, Boston, MA, June 19–21, 1985.
- [31] M. G. Safonov. Optimal diagonal scaling for infinity norm optimization. In *Proc. American Control Conf.*, Boston, MA, June 19–21, 1985.
- [32] M. G. Safonov. Optimization of multipliers for nonlinear input-output stability tests. In *Proc. American Control Conf.*, Boston, MA, June 19–21, 1985.
- [33] M. G. Safonov and R. Chiang. CACSD using the state-space L^∞ theory—a design example. In *Proc. IEEE Conference on CACSD*, Washington, DC, September 24–26, 1986.

- [34] R. R. E. de Gaston and M. G. Safonov. Calculation of the multiloop stability margin. In *Proc. American Control Conf.*, pages 761–770, Seattle, WA, June 18–20, 1986.
- [35] A. Sideris and M. G. Safonov. A design algorithm for the robust synthesis of SISO feedback control systems using conformal maps and H^∞ theory. In *Proc. American Control Conf.*, pages 1710–1715, Seattle, WA, June 18–20, 1986.
- [36] M. G. Safonov. Future directions in L^∞ robust control theory. In *Proc. IEEE Conf. on Decision and Control*, Athens, Greece, December 10–12, 1986.
- [37] M. G. Safonov. Imaginary-axis zeros in multivariable H^∞ optimal control. In *Proc. NATO Workshop on Modeling, Robustness and Sensitivity Reduction in Control Systems*, pages 71–81, Groningen, Netherlands, December 1–5, 1986. Springer-Verlag, Berlin, 1987.
- [38] M. G. Safonov. Optimal H^∞ synthesis of robust controllers for systems with structured uncertainty. In *Proc. IEEE Conf. on Decision and Control*, Athens, Greece, December 10–12, 1986.
- [39] M. G. Safonov and V. X. Le. An alternative solution to the multivariable H^∞ optimization problem. In *Proc. 8th Intl. Symposium on the Mathematical Theory of Networks and Systems*, pages 591–596, Phoenix, AZ, June 15–19, 1987. Published as *Linear, Circuits, Systems and Signal Processing: Theory and Application*, Elsevier, Amsterdam, 1988.
- [40] M. G. Safonov and G. Wyetzner. Computer-aided stability analysis renders Popov criterion obsolete. In *Proc. IEEE Conf. on Decision and Control*, Los Angeles, CA, December 9–11, 1987.
- [41] M. G. Safonov, R. Y. Chiang, and D. J. N. Limebeer. Hankel model reduction without balancing—a descriptor approach. In *Proc. IEEE Conf. on Decision and Control*, Los Angeles, CA, December 9–11, 1987.
- [42] A. Chassiakos, P. Ioannou, M. G. Safonov, M. Nugent, and D. Moore. Adaptive roll control of a dynamic wind tunnel model. In *Proc. AIAA Atmospheric Flight Mechanics Conference*, Minneapolis, MN, August 1988. AIAA-1988-4373.
- [43] D. J. N. Limebeer, E. M. Kasenally, I. Jaimouka, and M. G. Safonov. All solutions to the four block general distance problem. In *Proc. IEEE Conf. on Decision and Control*, Austin, TX, December 7-9, 1988. Also reprinted in *Recent Advances in Robust Control* (P. Dorato and R. K. Yedavalli, eds.), IEEE Press, New York, 1990.
- [44] T. Morphopoulos and M. G. Safonov. Convexity of diagonally-scaled infinity norm optimal control problems the square, one-sided case. In *Proc. IEEE Conf. on Decision and Control*, Austin, TX, December 7-9, 1988.
- [45] M. G. Safonov, R. Y. Chiang, and H. Flashner. H^∞ robust control synthesis for a flexible space structure. In *Proc. American Control Conf.*, pages 2038–2045, Atlanta, GA, June 15-17, 1988.

- [46] M. G. Safonov and R. Y. Chiang. Model reduction for robust control: A Schur relative error method. In *Proc. American Control Conf.*, Atlanta, GA, June 15-17, 1988.
- [47] C. P. Lefkowitz, J. A. Tekawy, P. Pujara, and M. G. Safonov. Robust computer aided synthesis and optimization of linear multivariable control systems with varying plant dynamics via AUTOCON. In *Proc. 2nd NASA/Air Force Symposium on Recent Advances in Multi-Disciplinary Analysis and Optimization*, Hampton, VA, September 28-30, 1988.
- [48] M. G. Safonov and R. Y. Chiang. A Schur method for balanced model reduction. In *Proc. American Control Conf.*, Atlanta, GA, June 15-17, 1988.
- [49] M. G. Safonov and D. J. N. Limebeer. Simplifying the H^∞ theory via loop shifting. In *Proc. IEEE Conf. on Decision and Control*, volume 2, pages 1399–1404, Austin, TX, December 7-9, 1988. Also reprinted in *Recent Advances in Robust Control* (P. Dorato and R. K. Yedavalli, eds.), IEEE Press, New York, 1990.
- [50] J. A. Tekawy, M. G. Safonov, and R. Y. Chiang. Algorithms for computing the structured multivariable stability margin. In *Proc. Conf. on Aerospace and Computational Control*, Oxnard, CA, August 28-30, 1989.
- [51] M. G. Safonov and H. Flashner. Modeling and robustness issues in control design for flexible structures. In *Proc. American Control Conf.*, Pittsburgh, PA, June 21-23, 1989. Also reprinted in *Recent Advances in Robust Control* (P. Dorato and R. K. Yedavalli, eds.), IEEE Press, New York, 1990.
- [52] R. Y. Chiang and M. G. Safonov. Modern CACSD using the robust-control toolbox. In *Proc. Conf. on Aerospace and Computational Control*, Oxnard, CA, August 28-30, 1989.
- [53] A. Holohan and M. G. Safonov. On computing the MIMO real structured stability margin. In *Proc. IEEE Conf. on Decision and Control*, Tampa, FL, December 13-15, 1989.
- [54] G. Papavassilopoulos and M. G. Safonov. Robust control design via game theoretic methods. In *Proc. IEEE Conf. on Decision and Control*, Tampa, FL, December 13-15, 1989.
- [55] B. Copeland and M. G. Safonov. Two-Riccati H^∞ controllers for descriptor systems. In *Proc. American Control Conf.*, Pittsburgh, PA, 1989. Also reprinted in *Recent Advances in Robust Control* (P. Dorato and R. K. Yedavalli, eds.), IEEE Press, New York, 1990.
- [56] A. Holohan and M. G. Safonov. A class of convex optimal km -synthesis problems. In *Proc. American Control Conf.*, San Diego, CA, May 23-25, 1990.
- [57] W. Wang and M. G. Safonov. Comparison between continuous and discrete model truncation. In *Proc. IEEE Conf. on Decision and Control*, Honolulu, HI, December 5-7, 1990.
- [58] J. A. Tekawy, M. G. Safonov, and R. Y. Chiang. Convexity property of the one-sided multivariable stability margin. In *Proc. American Control Conf.*, San Diego, CA, May 23-25, 1990.

- [59] V. X. Le and M. G. Safonov. Feedback system design and structural properties: The role and use of rational matrix GCD's. In *Proc. IFAC World Congress*, Tallinn, Estonia, USSR, August 13-17, 1990. Pergamon Press, Oxford.
- [60] R. Y. Chiang, M. G. Safonov, K. R. Haiges, and J. A. Tekawy. A fixed H^∞ controller for a supermaneuverable fighter performing the Herbst maneuver. In *Proc. IEEE Conf. on Decision and Control*, Honolulu, HI, December 5-7, 1990. Manuscript distributed to attendees at conference; does not appear in proceedings published by IEEE.
- [61] M. G. Safonov. Future directions in H^∞ robust control theory. In *Proc. IFAC World Congress*, Tallinn, Estonia, August 13-17, 1990. Pergamon Press, Oxford.
- [62] R. Y. Chiang, M. G. Safonov, and J. A. Tekawy. H^∞ flight control design with large parametric robustness. In *Proc. American Control Conf.*, San Diego, CA, May 23-25, 1990.
- [63] R. Y. Chiang, M. G. Safonov, and J. A. Tekawy. H^∞ robust control synthesis for an undamped non-colocated spring-mass system. In *Proc. American Control Conf.*, San Diego, CA, May 23-25, 1990.
- [64] W. Wang and M. G. Safonov. A relative error bound for discrete balanced stochastic truncation. In *Proc. American Control Conf.*, San Diego, CA, May 23-25, 1990.
- [65] W. Wang and M. G. Safonov. A tighter relative-error bound for balanced stochastic truncation. In *Proc. American Control Conf.*, San Diego, CA, May 23-25, 1990.
- [66] G. C. Hsieh and M. G. Safonov. Conservatism of the gap metric. In *Proc. IEEE Conf. on Decision and Control*, Brighton, England, December 11-13, 1991.
- [67] R. Y. Chiang and M. G. Safonov. Design of an H^∞ controller for a lightly damped system using a bilinear pole-shifting transform. In *Proc. American Control Conf.*, Boston, MA, June 26-28, 1991.
- [68] B. R. Copeland and M. G. Safonov. A generalized eigenproblem approach to singular control problems—Part I: LQG problems. In *Proc. IEEE Conf. on Decision and Control*, Brighton, England, December 11-13, 1991.
- [69] R. Y. Chiang and M. G. Safonov. A hierarchical data structure and new capabilities of the robust-control toolbox. In *Proc. American Control Conf.*, Boston, MA, June 26-28, 1991. Dr. Safonov received the session 'Best Presentation Award' for this paper.
- [70] W. Wang and M. G. Safonov. Relative-error H^∞ identification. In *Proc. American Control Conf.*, Boston, MA, June 26-28, 1991.
- [71] A. Holohan and M. G. Safonov. Duality relations for the optimal two-disk H^∞ problem. In *Proc. American Control Conf.*, pages 1844–1899, Chicago, IL, June 24-26, 1992.
- [72] K. C. Goh and M. G. Safonov. The extended $j\omega$ -axis eigenstructure of a Hamiltonian matrix pencil. In *Proc. IEEE Conf. on Decision and Control*, Tuscon, AZ, December 16-18, 1992.

- [73] B. R. Copeland and M. G. Safonov. A generalized eigenproblem approach to singular control problems—Part II: H^∞ problems. In *Proc. IEEE Conf. on Decision and Control*, Tuscon, AZ, December 16-18, 1992.
- [74] A. Holohan and M. G. Safonov. Nominal and robust loop shaping. In *Proc. American Control Conf.*, pages 901–905, Chicago, IL, June 24-26, 1992.
- [75] R. Y. Chiang and M. G. Safonov. Real K_m -synthesis via generalized Popov multipliers. In *Proc. American Control Conf.*, pages 2417–2418, Chicago, IL, June 24–26, 1992.
- [76] K. C. Goh and M. G. Safonov. Connection between plant zeros and H^∞ controller order reduction. In *Proc. American Control Conf.*, pages 2175–2179, San Francisco, CA, June 2–4, 1993.
- [77] T.-C. Tsao and M. G. Safonov. Convex set theoretic adaptor control systems. In *Proc. IEEE Conf. on Decision and Control*, pages 582–584, San Antonio, TX, December 15-17, 1993.
- [78] K. C. Goh and M. G. Safonov. Eliminating pole/zero cancellations in MIMO H^∞/H^2 control using interpolation. In *Proc. Allerton Conference on Communication, Control and Computing*, Allerton House, Monticello, IL, September 29 – October 1, 1993. Coordinated Science Laboratory, University of Illinois, Urbana-Champaign, IL.
- [79] K. C. Goh and M. G. Safonov. H^∞ control: Inverse free formula for $D_{11} \neq 0$ and eliminating pole-zero cancellations via interpolation. In *Proc. IEEE Conf. on Decision and Control*, volume 2, pages 1152–1157, San Antonio, TX, December 15-17, 1993.
- [80] M. G. Safonov, J. Ly, and R. Y. Chiang. μ -synthesis robust control: What’s wrong and how to fix it? In *Proc. IEEE Regional Conf. on Aerospace Control Systems*, pages 563–568, Thousand Oaks, CA, May 25–27, 1993.
- [81] M. G. Safonov and P. H. Lee. A multiplier method for computing real multivariable stability margin. In *Proceedings IFAC World Congress*, volume 2, pages 275–278, Sydney, Australia, July 19–23, 1993. Pergamon Press, Oxford.
- [82] M. G. Safonov. Recent progress in μ -Synthesis robust control. In *1993 AFOSR Workshop on Dynamics and Control*, University of Michigan, Ann Arbor, MI, May 23–24, 1993.
- [83] T. C. Tsao and M. G. Safonov. Set theoretic adaptor control systems. In *Proc. American Control Conf.*, pages 3043–3047, San Francisco, CA, June 2–4, 1993.
- [84] K. C. Goh, L. Turan, M. G. Safonov, G. Papavassilopoulos, and J. Ly. Biaffine matrix inequality properties and computation methods. In *Proc. American Control Conf.*, pages 850–855, Baltimore, MD, June 29–July 1, 1994. IEEE Press, New York.
- [85] M. G. Safonov, K. C. Goh, and J. Ly. Control system synthesis via bilinear matrix inequalities. In *Proc. American Control Conf.*, pages 45–49, Baltimore, MD, June 29–July 1, 1994. IEEE Press, New York.

- [86] T. C. Tsao and M. G. Safonov. Data, consistency and feedback: A new approach to robust direct adaptive control. In *Proc. American Control Conf.*, pages 1243–1247, Baltimore, MD, June 29–July 1, 1994. IEEE Press, New York.
- [87] M. G. Safonov and G. Papavassilopoulos. The diameter of an intersection of ellipsoids and BMI robust synthesis. In *Proc. IFAC Symposium on Robust Control Design*, pages 313–317, Rio de Janeiro, Brazil, September 14–16, 1994. IFAC, Laxenberg, Austria. <http://routh.usc.edu/pub/safonov/safo94j.pdf>
- [88] K. C. Goh, M. G. Safonov, and G. P. Papavassilopoulos. A global optimization approach for the BMI problem. In *Proc. IEEE Conf. on Decision and Control*, pages 2009–2014, Lake Buena Vista, FL, December 14–16, 1994.
- [89] M. G. Safonov and T. C. Tsao. Model-free recursive learning in control. In *Proc. 4th Workshop on Adaptive Control, Nonlinear Systems and Robotics*, Cancun, Mexico, December 7–9, 1994.
- [90] K. C. Goh, J. H. Ly, L. Turan, and M. G. Safonov. μ/K_m -Synthesis via bilinear matrix inequalities. In *Proc. IEEE Conf. on Decision and Control*, pages 2032–2037, Lake Buena Vista, FL, December 14–16, 1994.
- [91] J. Ly, M. G. Safonov, and F. Ahmad. Positive real Parrott theorem with application to LMI controller synthesis. In *Proc. American Control Conf.*, pages 50–52, Baltimore, MD, June 29–July 1, 1994. IEEE Press, New York.
- [92] F. C. Lee, H. Flashner, and M. G. Safonov. Positivity embedding for noncolocated and nonsquare flexible structures. In *Proc. American Control Conf.*, pages 267–271, Baltimore, MD, June 29–July 1, 1994. IEEE Press, New York.
- [93] J. Ly, M. G. Safonov, and R. Y. Chiang. Real/complex multivariable stability margin computation via generalized Popov multiplier — LMI approach. In *Proc. American Control Conf.*, pages 425–429, Baltimore, MD, June 29–July 1, 1994. IEEE Press, New York.
- [94] M. G. Safonov. Research summary: robust control methods. In *1994 AFOSR Workshop on Dynamics and Control*, Wright-Patterson Air Force Base, Ohio, June 13–15, 1994.
- [95] M. G. Safonov and T. C. Tsao. The unfalsified control concept and learning. In *Proc. IEEE Conf. on Decision and Control*, pages 2819–2824, Lake Buena Vista, FL, December 14–16, 1994.
- [96] C. H. Huang, L. Turan, and M. G. Safonov. All solutions to the positive real version of the Parrott’s problem. In *Proc. IEEE Conf. on Decision and Control*, pages 3622–3623, New Orleans, LA, December 13–15, 1995.
- [97] M. G. Safonov. Focusing on the knowable: Controller invalidation and learning. In A. S. Morse, editor, *Preprints NSF/ARO Workshop on Control using Logic Based Switching*, Block Island, RI, September 30 – October 1, 1995.

- [98] K. C. Goh, M. G. Safonov, and G. P. Papavassilopoulos. Global optimization for the bi-affine matrix inequality problem. In *Proc. Int. Conference on the State of the Art in Global Optimization*, pages 3102–3107, Princeton, NJ, April 28–30, 1995.
- [99] F. C. Lee, H. Flashner, and M. G. Safonov. An LMI approach to positivity embedding. In *Proc. American Control Conf.*, pages 2081–2085, Seattle, WA, June 21–23, 1995. <http://dx.doi.org/10.1109/ACC.1995.531264>
- [100] M. Mesbahi, G. P. Papavassilopoulos, and M. G. Safonov. Matrix cones, complementary problems and the bilinear matrix inequality. In *Proc. IEEE Conf. on Decision and Control*, pages 3102–3107, New Orleans, LA, December 13–15, 1995.
- [101] J. H. Ly, K. C. Goh, and M. G. Safonov. Multiplier K_m/μ -synthesis — LMI approach. In *Proc. American Control Conf.*, pages 431–346, Seattle, WA, June 21–23, 1995.
- [102] K. C. Goh and M. G. Safonov. Robustness analysis, sectors and quadratic functionals. In *Proc. IEEE Conf. on Decision and Control*, pages 1988–1993, New Orleans, LA, December 13–15, 1995.
- [103] L. Turan, C. H. Huang, and M. G. Safonov. Two-Riccati positive real synthesis: LMI approach. In *Proc. American Control Conf.*, pages 2432–2436, Seattle, WA, June 21–23, 1995.
- [104] M. G. Safonov. Unfalsified control: A direct path from experiment to controller. In *1995 AFOSR Workshop on Dynamics and Control*, Minneapolis, MN, June 5-7, 1995.
- [105] T.-C. Tsao and M. G. Safonov. Adaptive robust manipulator trajectory control — An application of unfalsified control method. In *Proc. Fourth International Conference on Control, Automation, Robotics and Vision*, Singapore, December 3–6, 1996. <http://routh.usc.edu/pub/safonov/safo96h.pdf>
- [106] C.-H. Huang, L. Turan, and M. G. Safonov. Conic sector synthesis: LMI approach. In *Proc. AIAA Guidance, Navigation and Control Conf.*, San Diego, CA, July 29–31, 1996.
- [107] T. F. Brozenec and M. G. Safonov. Controller invalidation. In *Proceedings IFAC World Congress*, San Francisco, CA, USA, July 19–23, 1996.
- [108] F. B. Cabral and M. G. Safonov. A falsification perspective on model reference adaptive control. In *Proc. IEEE Conf. on Decision and Control*, pages 2982–2985, Kobe, Japan, December 11–13, 1996.
- [109] C.-H. Huang, H.-H. Meng, and M. G. Safonov. Positive real problem with unstable weighting matrices. In *Proc. AIAA Guidance, Navigation and Control Conf.*, San Diego, CA, July 29–31, 1996.
- [110] C.-H. Huang and M. G. Safonov. Positive real synthesis: Matrix pencil approach. In *Proc. AIAA Guidance, Navigation and Control Conf.*, San Diego, CA, July 29–31, 1996.

- [111] T. F. Brozenec and M. G. Safonov. Controller identification. In *Proc. American Control Conf.*, pages 2093–2097, Albuquerque, NM, June 4–6, 1997.
- [112] F. B. Cabral and M. G. Safonov. Robustness oriented controller identification. In *Proc. IFAC Symp. on Robust Control Design, ROCOND '97*, pages 113–118, Budapest, Hungary, June 25–27, 1997. Elsevier Science, Oxford, England. <http://routh.usc.edu/pub/safonov/safo97f.pdf>
- [113] F. B. Cabral and M. G. Safonov. Fitting controllers to data. In *Proc. American Control Conf.*, pages 589–593, Philadelphia, PA, June 24–26, 1998.
- [114] M. G. Safonov. Research summary: Robust control, feedback and learning. In *1998 AFOSR Workshop on Dynamics and Control*, Pasadena, CA, May 27–29, 1998.
- [115] P. B. Brugarolas, V. Fromion, and M. G. Safonov. Robust switching missile autopilot. In *Proc. American Control Conf.*, pages 3665–3669, Philadelphia, PA, June 24–26, 1998. <http://routh.usc.edu/pub/safonov/safo98d.pdf>
- [116] V. Kulkarni, S. Bohacek, and M. G. Safonov. Stability issues in hop-by-hop rate-based congestion control. In *Proc. Allerton Conference on Communication, Control and Computing*, Allerton House, Monticello, IL, September 23–25, 1998. Coordinated Science Laboratory, University of Illinois, Urbana-Champaign, IL.
- [117] M. Jun and M. G. Safonov. Automatic PID tuning: An application of unfalsified control. In *Proc. IEEE CCA/CACSD*, pages 328–333, Kohala Coast–Island of Hawaii, HI, August 22–27, 1999. <http://routh.usc.edu/pub/safonov/safo99b.pdf>
- [118] P. B. Brugarolas and M. G. Safonov. A canonical representation for unfalsified control in truncated spaces. In *Proc. IEEE CCA/CACSD*, pages 328–333, Kohala Coast–Island of Hawaii, HI, August 22–27, 1999. <http://routh.usc.edu/pub/safonov/safo99c.pdf>
- [119] M. G. Safonov. Robust control, feedback and learning. In *Proc. AFOSR Workshop on Dynamics and Control*, Dayton, OH, August 4–6, 1999.
- [120] V. Kulkarni, S. K. Bohacek, and M. G. Safonov. Robustness of interconnected systems with controller saturation and bounded delays. In *Proc. American Control Conf.*, pages 3206–3210, San Diego, CA, June 2–4, 1999. <http://routh.usc.edu/pub/safonov/safo99a.pdf>
- [121] T.-C. Tsao and M. G. Safonov. Unfalsified direct adaptive control of a two-link robot arm. In *Proc. IEEE CCA/CACSD*, Kohala Coast–Island of Hawaii, HI, August 22–27, 1999. <http://routh.usc.edu/pub/safonov/safo99d.pdf>
- [122] M. G. Safonov. Recent advances in robust control, feedback and learning. In *Proc. Workshop on Robust Control*, Newcastle, Australia, December 5–7, 2000. <http://routh.usc.edu/pub/safonov/safo00j.pdf>
- [123] M. G. Safonov. Robust control, feedback and learning. In *Proc. AFOSR Workshop on Dynamic Systems and Control*, Pasadena, CA, August 21–23, 2000.

- [124] M. Jun and M. G. Safonov. Stability analysis of a system with time-delayed states. In *Proc. American Control Conf.*, pages 949–952, Chicago, IL, June 28–30, 2000. <http://routh.usc.edu/pub/safonov/safo00c.pdf>
- [125] M. G. Safonov and V. V. Kulkarni. Zames-Falb multipliers for MIMO nonlinearities. In *Proc. American Control Conf.*, pages 4144–4148, Chicago, IL, June 28–30, 2000. <http://routh.usc.edu/pub/safonov/safo00a.pdf>
- [126] V. V. Kulkarni and M. G. Safonov. Incremental positivity non-preservation properties of stability multipliers. In *Proc. IEEE Conf. on Decision and Control*, pages 33–38, Orlando, FL, December 4–7, 2001. <http://routh.usc.edu/pub/safonov/safo011.pdf>
- [127] S. E. Lyshevski and M. G. Safonov. Intelligent motion control for electromechanical servos using evolutionary learning and adaptation mechanisms. In *Proc. American Control Conf.*, pages 2840–2845, Arlington, VA, June 27–29, 2001. <http://routh.usc.edu/pub/safonov/safo01n.pdf>
- [128] M. Jun and M. G. Safonov. Multiplier IQCs for uncertain time-delays. In *Proc. American Control Conf.*, pages 3992–3997, Arlington, VA, June 27–29, 2001. <http://routh.usc.edu/pub/safonov/safo01d.pdf>
- [129] V. V. Kulkarni and M. G. Safonov. Multipliers for repeated MIMO nonlinearities. In *Proc. American Control Conf.*, Arlington, VA, June 27–29, 2001. <http://routh.usc.edu/pub/safonov/safo01b.pdf>
- [130] M. Jun and M. G. Safonov. Rational multiplier IQC's for uncertain time-delays and LMI stability conditions. In *Proc. IEEE Conf. on Decision and Control*, pages 3196–3201, Orlando, FL, December 4–7, 2001. <http://routh.usc.edu/pub/safonov/safo01q.pdf>
- [131] M. G. Safonov. Unfalsified control: A behavioral approach to learning and adaptation. In *Proc. IEEE Conf. on Decision and Control*, pages 2682–2685, Orlando, FL, December 4–7, 2001. <http://routh.usc.edu/pub/safonov/safo01s.pdf>
- [132] R. Mancera and M. G. Safonov. An algorithm to compute multipliers for repeated monotone nonlinearities. In *Proc. IEEE Conf. on Decision and Control*, pages 4162–4165, Las Vegas, NV, December 10–13, 2002. <http://routh.usc.edu/pub/safonov/safo02f.pdf>
- [133] M. Jun and M. G. Safonov. Controller parameter adaptation algorithm using unfalsified control theory and gradient method. In *Proc. IFAC World Congress*, Barcelona, Spain, July 21–26, 2002. Pergamon Press, Oxford. <http://routh.usc.edu/pub/safonov/safo02b.pdf>
- [134] P. Brugarolas and M. G. Safonov. A data driven approach to learning dynamical systems. In *Proc. IEEE Conf. on Decision and Control*, pages 4670–4675, Las Vegas, NV, December 10–13, 2002. <http://routh.usc.edu/pub/safonov/safo02g.pdf>

- [135] M. G. Safonov. Data-driven robust control design: Unfalsified control. In *Proc. NATO Lecture Series 236, Robust Integrated Control Systems Design Methods for 21st Century Military Applications*, pages 4.1–4.18, NATO Research and Technology Office, BP 25, F-92201 Nueilly-sur-Seine Cedex, France, April 2003. NATO Serial No. RTO-AC/323(SCI-142)TP/10. <http://routh.usc.edu/pub/safonov/safo03i.pdf>
- [136] A. Paul and M. G. Safonov. Model reference adaptive control using multiple controllers & switching. In *Proc. IEEE Conf. on Decision and Control*, volume 4, pages 3256 – 3261, Maui, HI, December 9-12, 2003. <http://routh.usc.edu/pub/safonov/safo03d.pdf>
- [137] R. Mancera and M. G. Safonov. Multipliers for monotone or incrementally positive nonlinearities. In *Proc. American Control Conf.*, Denver, CO, June 4-6, 2003. <http://routh.usc.edu/pub/safonov/safo03b.pdf>
- [138] V. Fromion, M. G. Safonov, and G. Scorletti. Necessary and sufficient conditions for lur’e system incremental stability. In *Proc. European Control Conf.*, Cambridge, England, September 1–4, 2003. <http://routh.usc.edu/pub/safonov/safo03k.pdf>
- [139] M. G. Safonov. Recent advances in robust control. In *Proc. AIAA Guidance, Navigation and Control Conf.*, pages AIAA–2003–5831, 10 pages, Austin, TX, August 11–14, 2003. <http://routh.usc.edu/pub/safonov/safo03h.pdf>
- [140] T.-C. Tsao, T. Brozenec, and M. G. Safonov. Unfalsified adaptive spacecraft attitude control. In *Proc. AIAA Guidance, Navigation and Control Conf.*, pages AIAA–2003–5828, 9 pages, Austin, TX, August 11–14, 2003. <http://routh.usc.edu/pub/safonov/safo03g.pdf>
- [141] F. B. Cabral and M. G. Safonov. Unfalsified model reference adaptive control using the ellipsoid algorithm. In *Proc. IEEE Conf. on Decision and Control*, Maui, HI, December 9-12, 2003. <http://routh.usc.edu/pub/safonov/safo03e.pdf>
- [142] F. B. Cabral and M. G. Safonov. Fitting controllers to data: The MIMO case. In *Proc. American Control Conf.*, Boston, MA, June 30 – July 2, 2004. <http://routh.usc.edu/pub/safonov/safo04d.pdf>
- [143] A. Paul, M. Akar, M. G. Safonov, and U. Mitra. Necessary and sufficient conditions for stability of a class of second order switched systems. In *Proc. American Control Conf.*, Boston, MA, June 30 – July 2, 2004. <http://routh.usc.edu/pub/safonov/safo04e.pdf>
- [144] G. J. Balas, M. G. Safonov, A. K. Packard, and R. Y. Chiang. Next generation of tools for robust control. In *Proc. American Control Conf.*, Boston, MA, June 30 – July 2, 2004. <http://routh.usc.edu/pub/safonov/safo04f.pdf>
- [145] Vincent Fromion and Michael G. Safonov. Popov-Zames-Falb multipliers and continuity of the input/output map. In *Proc. IFAC Symposium on Nonlinear Control Systems (NOLCOS 2004)*, Stuttgart, Germany, September 1–3, 2004. <http://routh.usc.edu/pub/safonov/safo04l.pdf>

- [146] A. Paul, M. Akar, and M. G. Safonov. Power control for wireless networks using multiple controllers and switching. In *Proc. American Control Conf.*, Boston, MA, June 30 – July 2, 2004. <http://routh.usc.edu/pub/safonov/safo04c.pdf>
- [147] M. G. Safonov. Robust control, feedback and learning: Data-driven methods. In *Proc. AFOSR Workshop on Dynamic Systems and Control*, Pasadena, CA, August 9–11, 2004.
- [148] M. Stefanovic, R. Wang, and M. G. Safonov. Stability and convergence in adaptive systems. In *Proc. American Control Conf.*, pages 1923–1928, Boston, MA, June 30 – July 2, 2004. <http://routh.usc.edu/pub/safonov/safo04b.pdf>
- [149] A. Paul, M. Akar, U. Mitra, and M. G. Safonov. A switched system model for stability analysis of distributed power control algorithms for cellular communications. In *Proc. American Control Conf.*, Boston, MA, June 30 – July 2, 2004. <http://routh.usc.edu/pub/safonov/safo04a.pdf>
- [150] R. Wang, M. Stefanovic, and M. G. Safonov. Unfalsified direct adaptive control using multiple controllers. In *Proc. AIAA Guidance, Navigation and Control Conf. and Exhibit*, pages AIAA–2004–5223, 7 pages, Providence, RI, August 16–19, 2004.
- [151] R. Wang, A. Paul, M. Stefanovic, and M. G. Safonov. Cost-detectability and stability of adaptive control systems. In *Proc. IEEE Conf. on Decision and Control*, pages 3584–3589, Seville, Spain, December 12–15, 2005. <http://dx.doi.org/10.1109/CDC.2005.1582718>
- [152] A. Paul, M. Stefanovic, M. Akar, and M. G. Safonov. Multi-controller adaptive control (MCAC) for a tracking problem using an unfalsification approach. In *Proc. IEEE Conf. on Decision and Control*, pages 4815–4820, Seville, Spain, December 12–15, 2005. <http://routh.usc.edu/pub/safonov/safo05f.pdf>
- [153] M. G. Safonov. Recent advances in robust control. In *Proc. Irish Signals and Systems Conference*, Dublin, Ireland, September 1–2, 2005. <http://routh.usc.edu/pub/safonov/safo05h.pdf>
- [154] Margareta Stefanovic, Ayanendu Paul, and Michael G. Safonov. Safe adaptive switching through an infinite controller set: Stability and convergence. In *Proc. IFAC World Congress*, Prague, Czech Republic, July 4–8, 2005. Pergamon Press, Oxford.
- [155] R. Wang and M. G. Safonov. Stability of unfalsified adaptive control using multiple controllers. In *Proc. American Control Conf.*, Portland, OR, June 8–10, 2005.
- [156] M. Stefanovic and M. G. Safonov. Guaranteeing safety of switching adaptive control systems. In *Proc. IEEE Conf. on Decision and Control*, pages 2813–2818, San Diego, CA, December 13–16, 2006.
- [157] S. Y. Cheong and M. G. Safonov. Unfalsified control for slowly varying plants using fading memory and windowing. In *Proc. AIAA Guidance, Navigation and Control Conf. and Exhibit*, Keystone, CO, August 21–24, 2006. <http://routh.usc.edu/pub/safonov/safo06e.pdf>

- [158] M. G. Safonov. The origins of robust control in the 1970's. In *Proc. ATHANS 70*, page 6 pages, Clearwater Beach, FL, November 16-18, 2007. <http://routh.usc.edu/pub/safonov/safo07a.pdf>
- [159] C. Manuelli, S. G. Cheong, E. Mosca, and M. G. Safonov. Stability of unfalsified adaptive control with non SCLI controllers and related performance under different prior knowledge. In *Proc. European Control Conf.*, pages 702–708, Kos, Greece, July 2–5, 2007. <http://routh.usc.edu/pub/safonov/safo06g.pdf>
- [160] S. Y. Cheong and M. G. Safonov. Bumpless transfer for adaptive switching controls. In *Proc. IFAC World Congress*, Seoul, Korea, July 6–11, 2008.
- [161] M. G. Safonov. Control and transportation systems. In *Tsinghua-USC Workshop on Emerging Information Technologies*, Los Angeles, CA, April 30 - May 2, 2008. 23 pages.
- [162] M. G. Safonov. Model-mismatch instability in adaptive control systems. In *Third IEEE International Conference on Industrial and Information Systems (ICIIS 2008)*, Kharagpur, India, December 8-10, 2008. 2 pages.
- [163] M. G. Safonov. Robust adaptation and learning: Unfalsified control and cost-detectability. In *Proc. Texas-Wisconsin-California Control Consortium Workshop*, University of Southern California, Los Angeles, CA, September 22–23, 2008.
- [164] A. Karthikeyan and M. G. Safonov. Simplified matrix pencil all-solutions H_∞ controller formulae. In *Proc. AIAA Guidance, Navigation and Control Conf. and Exhibit*, Honolulu, HI, Aug 18–21, 2008. AIAA-2008-7314.
- [165] V. Kulkarni, M. Kothare, and M. Safonov. Stabilizing anti-windup controllers for power allocation in cellular networks. In *Proc. American Control Conf.*, pages 2304–2309, Seattle, Washington, June 11 - 13, 2008. <http://dx.doi.org/10.1109/ACC.2008.4586835>
- [166] M. W. Chang and M. G. Safonov. Unfalsified adaptive control: The benefit of bandpass filters. In *Proc. AIAA Guidance, Navigation and Control Conf. and Exhibit*, Honolulu, HI, Aug 18–21, 2008. Paper No. AIAA 2008-6783.
- [167] G. Battistelli, E. Mosca, M. G. Safonov, and P. Tesi. Unfalsified virtual reference adaptive switching control of plants with persistent disturbances. In *Proc. IFAC World Congress*, pages 8925–8930, Seoul, Korea, July 6–11, 2008. <http://www.nt.ntnu.no/users/skoge/prost/proceedings/ifac2008/data/papers/1491.pdf>
- [168] S. Y. Cheong and M. Safonov. Improved bumpless transfer with slow-fast controller decomposition. In *Proc. American Control Conf.*, pages 4346 – 4350, St. Louis, MO, June 10 - 12, 2009. <http://dx.doi.org/10.1109/ACC.2009.5160436>
- [169] V.V. Kulkarni, V. Fromion, T. Alpcan, and M. G. Safonov. Loss of continuity in cellular networks under stabilizing transmit power control. In *The Proceedings of the 47th Annual Allerton Conference on Communication, Control, and Computing*, pages 940–946, Monticello, IL, September 2009. <http://dx.doi.org/10.1109/ALLERTON.2009.5394894>

- [170] A. Karthikeyan and M. G. Safonov. LQ feedback formulation for discrete-time H_∞ output feedback. In *Proc. IEEE Conf. on Decision and Control*, pages 6656–6661, Shanghai, China, December 16-18, 2009. <http://dx.doi.org/10.1109/CDC.2009.5399820>
- [171] A. Karthikeyan and M. G. Safonov. On the LQ feedback formulation of H_∞ output feedback control. In *Proc. AIAA Guidance, Navigation and Control Conf. and Exhibit*, Chicago, IL, Aug 10–13, 2009. AIAA-2009-5993.
- [172] M. Chang, M. G. Safonov, and R. Mancera. Computation of Zames-Falb multipliers revisited. In *Proc. IEEE Conf. on Decision and Control*, pages 2438–2443, Atlanta, GA, December 15-17, 2010.
- [173] A. Karthikeyan and M. G. Safonov. LQ approach to an “all-solutions” formula for H -infinity output feedback control. In *Proc. IEEE Conf. on Decision and Control*, pages 3156–3161, Atlanta, GA, December 15-17, 2010.
- [174] V. V. Kulkarni, L. Y. Pao, and M. G. Safonov. On stability analysis of systems featuring a multiplicative combination of nonlinear and linear time-invariant feedback. In *Proc. IEEE Conf. on Decision and Control*, Atlanta, GA, December 15-17, 2010.
- [175] V. V. Kulkarni, K. V. Venkatesh, P. Malakar, L. Y. Pao, M. G. Safonov, and G. Vishwanathan. Stability analysis of the GAL regulatory network in *Saccharomyces cerevisiae* and *Kluyveromyces lactis*. In *The Eighth Asia Pacific Bioinformatics Conference*, Bangalore, India, January 2010.
- [176] Huiyu Jin, Michael Chang, and M. G. Safonov. A fading memory data-driven algorithm for controller switching. In *Proc. IEEE Conf. on Decision and Control and European Control Conference*, pages 6097–6103, Orlando, FL, December 12-15, 2011.
- [177] M. Alhajri and M. G. Safonov. Setting the hysteresis constant to zero in adaptive switching control. In *Proc. American Control Conf.*, pages 3542–3546, San Francisco, CA, June 29 - July 1, 2011. http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=5990785
- [178] Huiyu Jin, Michael Chang, M. G. Safonov, Jin Zhu, and Zhi Wang. Unfalsified adaptive control: Inter-falsification and self-falsification. In *Proc. 9th World Congress on Intelligent Control and Automation (WCICA)*, pages 700–705, Taipei, Taiwan, June 21–25, 2011.
- [179] Huiyu Jin, Michael Chang, and M. G. Safonov. Unfalsifying dominant pole locations using a fading memory cost function. In *Proc. IFAC World Congress*, volume 18, Part 1, pages 1291–1295, Milan, Italy, August 28 – September 2, 2011.
- [180] H. B. Siahann, H. Jin, and M. G. Safonov. An adaptive PID switching controller for pressure regulation in drilling. In *Proc. IFAC Workshop on Automatic Control in Offshore Oil and Gas Production (ACOOG 2012)*, pages 90–94, Trondheim, Norway, May 31 - June 1, 2012.
- [181] M. G. Safonov. Origins of robust control: Early history and future speculations. In *Proc. 7th IFAC Symposium on Robust Control Design (ROCOND 12)*, pages 1–8, Aalborg, Denmark, June 20-22, 2012.

- [182] A. Karthikeyan and M. G. Safonov. A simple unified formula for discrete and continuous-time h-infinity "all-solutions" controllers. In *Proc. 7th IFAC Symposium on Robust Control Design (ROCOND 12)*, pages 448–453, Aalborg, Denmark, June 20-22, 2012.
- [183] M. G. Safonov. Adaptive control: Fooled by false assumptions? In *Sixteenth Yale Workshop on Adaptive and Learning Systems*, pages 16–21, New Haven, CT, June 5-7, 2013. <http://routh.usc.edu/pub/safonov/safo13c.pdf>
- [184] Huiyu Jin, Hardy B. Siahhaan, Michael G. Safonov, and Lan-Feng Yuan. Data-driven switched control for pressure regulation in managed pressure drilling. In *Proc. Chinese Control Conference*, pages 7906–7911, Xian, China, July 26-28, 2013.
- [185] Huiyu Jin, Hardy B. Siahhaan, and M. G. Safonov. Detecting oscillation with unfalsified adaptive control and its application in managed pressure drilling for oil. In *Proc. IEEE Conf. on Decision and Control*, Los Angeles, CA, December 15-17, 2014.
- [186] Huiyu Jin, Hardy B. Siahhaan, and Michael G. Safonov. Detecting oscillation with unfalsified adaptive control and its application in managed pressure drilling for oil. In *Proc. IEEE Conf. on Decision and Control*, pages 1271–1276, Los Angeles, CA, December 15-17, 2014.
- [187] Huiyu Jin, Hardy B. Siahhaan, Michael W. Chang, and Michael G. Safonov. Improving the transient performance of unfalsified adaptive control with modified hysteresis algorithms. In *Proc. IFAC World Congress*, pages 1489–1494, Cape Town, South Africa, August 24-29, 2014.
- [188] K. Sajjanshetty and M. G. Safonov. Unfalsified adaptive control: Multi-objective cost-detectable cost functions. In *Proc. IEEE Conf. on Decision and Control*, Los Angeles, CA, December 15-17, 2014.
- [189] Kiran S. Sajjanshetty and Michael G. Safonov. Unfalsified adaptive control: Multi-objective cost-detectable cost functions. In *Proc. IEEE Conf. on Decision and Control*, pages 1283–1288, Los Angeles, CA, December 15-17, 2014.
- [190] Sagar Patil, Yu chen Sung, and M. G. Safonov. Unfalsified adaptive control with reset and bumpless transfer. In *Proc. IEEE Conf. on Decision and Control*, pages 1264–1270, Los Angeles, CA, December 15-17, 2014.

Other Publications (Unrefereed)

- [1] M. G. Safonov. *Describing Function Analysis of Nonlinear Periodic Systems*. MS thesis, Dept. Elec. Eng., MIT, June 1971. Supervised by Jan C. Willems. <http://routh.usc.edu/pub/safonov/safo71.pdf>
- [2] M. G. Safonov and J. Broussard. Design of generalized discrete proportional-integral controllers by linear optimal control theory. Technical Report TIM-804, The Analytic Sciences Corp., Reading, MA, October 1976.

- [3] M. G. Safonov and M. Athans. Gain and phase margin for multiloop LQG regulators. Technical Report ESL-P-654, Electronic Systems Laboratory, MIT, Cambridge, MA, March 1976. <http://routh.usc.edu/pub/safonov/safo76d.pdf>
- [4] M. G. Safonov. On the sensitivity of LQ feedback systems—a brief survey. Technical Report ESL-TM-649, Electronic Systems Laboratory, MIT, Cambridge, MA, January 1976.
- [5] M. G. Safonov. *Robustness and Stability Aspects of Stochastic Multivariable Feedback System Design*. PhD thesis, Dept. Elec. Eng., MIT, 1977. Supervised by M. Athans.
- [6] M. G. Safonov and M. Athans. On stability theory. Technical Report ESL-P-816, Electronic Systems Laboratory, MIT, Cambridge, MA, February 1978. <http://routh.usc.edu/pub/safonov/safo78e.pdf>
- [7] M. G. Safonov. Choice of LQG cost and noise matrices to meet frequency domain robustness and sensitivity specifications. Technical report, Honeywell Systems and Research Center, Minneapolis, MN, August 1979.
- [8] M. G. Safonov. Choice of LQG cost and noise matrices to meet frequency-domain robustness specifications. Technical report, Honeywell Systems and Research Center, Minneapolis, MN, August 2, 1979.
- [9] M. G. Safonov. Generalization of multiloop circle criterion for unstable perturbations. Technical report, Honeywell Systems and Research Center, Minneapolis, MN, July 1979.
- [10] M. G. Safonov. Modern digital flight control systems for VTOL aircraft. Technical Report 159019, The Analytic Sciences Corp., Reading, MA, March 1979. NASA Contractor Report. Co-author with J. Broussard of Appendix B Discrete-Time Proportional Integral Control Laws.
- [11] M. G. Safonov. Relation of noise and cost matrices to LQG sensitivity and stability margins. Technical report, Honeywell Systems and Research Center, Minneapolis, MN, May 1979.
- [12] M. G. Safonov. Stability results using Lyapunov functions defined on invariant sets. Technical Report EX-76-C-01-2076, Systems and Control, Inc., Palo Alto, CA, June 1979. Final report.
- [13] M. G. Safonov. Fractional representation approach to robust feedback synthesis. Technical report, Honeywell Systems and Research Center, Minneapolis, MN, July 15, 1980.
- [14] M. G. Safonov. Generation of sector bounds from scatter plot data for uncertain matrices. Technical Report MR12587, Honeywell Systems and Research Center, Minneapolis, MN, July 17, 1980.
- [15] M. G. Safonov. Stability margins of diagonally perturbed multivariable feedback-systems. Technical Report MR12588, Honeywell Systems and Research Center, Minneapolis, MN, August 1, 1980.

- [16] M. G. Safonov and J. C. Doyle. First and second derivatives of eigenvalues and singular values. Technical report, Honeywell Systems and Research Center, Minneapolis, MN, August 16, 1982.
- [17] M. G. Safonov. Singular value response shaping and H^∞ optimization: The MIMO case. Technical report, Honeywell Systems and Research Center, Minneapolis, MN, August 20, 1982.
- [18] M. G. Safonov. Improved stability margin estimates for systems with multiple nonlinearities. Technical report, Honeywell Systems and Research Center, Minneapolis, MN, July 29, 1983.
- [19] M. G. Safonov. Incorporating singular values in AUTOCON. Technical report, Northrop Technical Center, Hawthorne, CA, September 5, 1986.
- [20] R. Y. Chiang and M. G. Safonov. The LINF computer program for L^∞ controller design. Technical Report EECG-0785-1, Dept. of EE-Systems, Univ. of Southern Calif., Los Angeles, CA, July 1986.
- [21] M. G. Safonov and C. P. Lefkowitz. Robust multivariable stability margin specifications relating military specifications to singular-value frequency responses. Technical report, Northrop Technical Center, Hawthorne, CA, November 11, 1988.
- [22] M. G. Safonov. Conditions for robust performance with feedforward. Technical report, Northrop Technical Center, Hawthorne, CA, October 3, 1989.
- [23] K. R. Haiges, R. Y. Chiang, K. P. Madden, A. Emami-Naeini, and M. G. Safonov. Robust control law development for modern aerospace vehicles. Technical Report WL-TR-91-3105, Flight Dynamics Laboratory, Wright Laboratory, Air Force Systems Command, Wright-Patterson AFB, OH 45433-6533, 1991. Final Report under contract no. F33615-87-C-3606, Sep. 1987 – Aug. 1991.
- [24] M. G. Safonov. Hexapod control design. Technical report, Hughes Aircraft, Electro-Optical Systems Division, El Segundo, CA, December 13, 1992.
- [25] M. G. Safonov. H^∞ controller design for 2-gimbal telescope. Technical report, Hughes Aircraft, Electro-Optical Systems Division, El Segundo, CA, October 2, 1992.
- [26] C. H. Huang, L. Turan, and M. G. Safonov. Conic sector synthesis: LMI approach. Technical report, USC, Los Angeles, CA 90089-2563, June 1994.
- [27] T. C. Tsao and M. G. Safonov. Adaptive robust manipulator trajectory control: An application of unfalsified control. Technical report, EE Systems Dept., Univ. of Southern Calif., August 1997. <http://routh.usc.edu/pub/safonov/safo97g.pdf>
- [28] V. Kulkarni and M. G. Safonov. Power control in PCS. Technical report, EE Systems Dept., Univ. of Southern Calif., August 1997.

- [29] T. F. Brozenec and M. G. Safonov. Controller validation. Technical report, EE Systems Dept., Univ. of Southern Calif., August 1998. <http://routh.usc.edu/pub/safonov/safo95k.pdf>
- [30] V. V. Kulkarni and M. G. Safonov. Incremental positivity preservation properties of Zames-Falb multipliers. Technical report, EE Systems Dept., Univ. of Southern Calif., September 15, 2000. <http://routh.usc.edu/pub/safonov/safo01c.pdf>
- [31] M. Jun and M. G. Safonov. Multiplier IQCs for uncertain time delays. Technical report, EE Systems Dept., Univ. of Southern Calif., March 2000. <http://routh.usc.edu/pub/safonov/safo00b.pdf>
- [32] R. Wang and M. G. Safonov. The comparison of unfalsified control and iterative feedback tuning. Technical report, EE Systems Dept., Univ. of Southern Calif., September 15, 2002. <http://routh.usc.edu/pub/safonov/safo03c.pdf>
- [33] F. B. Cabral and M. G. Safonov. Deterministic estimation, control and the ellipsoid algorithm. Technical report, EE Systems Dept., Univ. of Southern Calif., September 15, 2002. <http://routh.usc.edu/pub/safonov/safo03a.pdf>
- [34] Vincent Fromion and Michael G. Safonov. Popov-Zames-Falb multipliers and continuity of the input/output map. Technical report, EE Systems Dept., Univ. of Southern Calif., September 15, 2002. <http://routh.usc.edu/pub/safonov/safo03m.pdf>
- [35] F. B. Cabral and M. G. Safonov. Fitting controllers to data: The MIMO case. Technical report, EE Systems Dept., Univ. of Southern Calif., March 1, 2003. <http://routh.usc.edu/pub/safonov/safo03f.pdf>
- [36] Vincent Fromion, Michael G. Safonov, and Gerard Scorletti. Incremental stability analysis: The Lur'e system case. Technical report, EE Systems Dept., Univ. of Southern Calif., November, 2004.
- [37] A. Paul, M. Stefanovic, M. Akar, and M. G. Safonov. Multiple controller adaptive control (MCAC) for a tracking problem using an unfalsification approach. Technical report, EE Systems Dept., Univ. of Southern Calif., January, 2005.
- [38] M. G. Safonov and S.-Y. Cheong. Unfalsified control: Theory and applications. Technical report, EE Systems Dept., Univ. of Southern Calif., February, 2006.
- [39] M. W. Chang and M. G. Safonov. Calculating zames-falb multipliers with a generalized basis set. Technical report, EE Systems Dept., Univ. of Southern Calif., September 2011.
- [40] M. Chang and M. G. Safonov. Calculating zames-falb multipliers with a generalized basis set. Technical report, EE Systems Dept., Univ. of Southern Calif., September 2011.
- [41] M. Alhajri and M. G. Safonov. Continuous adaptive supervisory control with zero hysteresis and no chatter. Technical report, EE Systems Dept., Univ. of Southern Calif., September 2011.

- [42] M. Alhajri and M. G. Safonov. Relaxing convergence constraints in local priority hysteresis switching logic. Technical report, EE Systems Dept., Univ. of Southern Calif., September 2011.
- [43] M. W. Chang and M. G. Safonov. Calculating zames-falb multipliers with a generalized spanning set. Technical report, 2013.

Invited Talks

- [1] Talk.
- [2] M. G. Safonov. The frequency-domain analysis of feedback system robustness. Talk, Honeywell Systems and Research Center, Minneapolis, MN, July 27, 1978.
- [3] M. G. Safonov. Frequency-domain analysis of feedback system robustness. Talk, Aerospace Corp., El Segundo, CA, April 19, 1979. Keynote talk at regular meeting of Los Angeles Chapter of IEEE Control Systems Society.
- [4] M. G. Safonov. Frequency-domain analysis of multivariable feedback system robustness. Talk, Office of Naval Research Conference on Recent Developments in the Robustness Theory of Multivariable Systems, MIT, Cambridge, MA, April 25-27, 1979.
- [5] M. G. Safonov. Robustness and decentralized hierarchical control of large systems. Talk, Laboratory for Information and Decision Systems, MIT, Cambridge, MA, April 2, 1979.
- [6] M. G. Safonov. Robustness and decentralized, hierarchical control of large systems. Talk, University of Southern California, Los Angeles, CA, October 15, 1979.
- [7] M. G. Safonov. Feedback properties of multivariable systems: The role and use of the return difference matrix. Talk, Control and Management Systems Div., Engineering Dept., Cambridge University, Cambridge, England, June 12, 1980.
- [8] M. G. Safonov. Feedback properties of multivariable systems: The role and use of the return difference matrix. Talk, Department of Aerospace Engineering and Mechanics, University of Minnesota, Minneapolis, MN, August 6, 1980.
- [9] M. G. Safonov. Feedback properties of multivariable systems: The role and use of the return difference matrix. Talk, Dept. of Electrical Engineering, University of New Brunswick, Canada, October 17, 1980.
- [10] M. G. Safonov. Feedback properties of multivariable systems: The role and use of the return difference matrix. Talk, University of Southern California, Los Angeles, CA, October 13, 1980.
- [11] M. G. Safonov. Feedback properties of multivariable systems: The role and use of the return difference matrix. Talk, Department of Aerospace and Mechanical Engineering, Princeton University, New Jersey, November 3, 1980.

- [12] M. G. Safonov. Robustness in feedback systems. Talk, National Science Foundation sponsored CAS Conf. on Nonlinear Circuits and Systems, Rice University, Houston, TX, January 4-5, 1980.
- [13] M. G. Safonov. Stability margins of multivariable systems with diagonal perturbation matrices. Talk, Honeywell Systems and Research Center, Minneapolis, MN, August 8, 1980.
- [14] M. G. Safonov. Feedback properties of multivariable systems: The role and use of the return difference matrix. Talk, Department of Electrical Engineering, SUNY, Stony Brook, NY, December 23, 1981.
- [15] M. G. Safonov. Fractional representation approach to robust feedback synthesis. Talk, Honeywell Systems and Research Center, Minneapolis, MN, July 15 and 16, 1981.
- [16] M. G. Safonov. Propagation of conic model uncertainty in interconnected systems. Talk, Engineering Department, Oxford University, Oxford, England, July 22, 1982.
- [17] M. G. Safonov. Singular value response shaping and H^∞ optimization: The MIMO case. Talk, Honeywell Systems and Research Center, Minneapolis, MN, August 20, 1982.
- [18] M. G. Safonov. Improved stability margin estimates for systems with multiple nonlinearities. Talk, Honeywell Systems and Research Center, Minneapolis, MN, July 29, 1983.
- [19] M. G. Safonov. Optimal scaling for multivariable stability margin analysis. Talk, Imperial College of Science and Technology, London, England, November 10, 1983.
- [20] M. G. Safonov. Robust feedback control of multivariable systems. Talk, USC Industrial Associates, Los Angeles, May 12, 1983.
- [21] M. G. Safonov. Robust multivariable feedback design: The state of the art. Talk, Bristol Polytechnic, Bristol, England, November 17, 1983.
- [22] M. G. Safonov. Robustness issues in multivariable feedback design. Talk, University of Strathclyde, Glasgow, Scotland, October 14, 1983.
- [23] M. G. Safonov. All solutions ‘homotopy’ methods for feedback performance analysis and optimization. Talk, ONR/Honeywell Conf. on Advances in Multivariable Control, Minneapolis, MN, October 8-10, 1984.
- [24] M. G. Safonov. L^∞ sensitivity vs. stability margin. Talk, Oxford University Engineering Dept., Oxford, England, January 23, 1984.
- [25] M. G. Safonov. L^∞ singular value optimization techniques and robust multiloop control design. Talk, Aerospace Corp., El Segundo, CA, July 1984.
- [26] M. G. Safonov. Optimal scaling for multivariable stability margins. Talk, Warwick University, Coventry, England, February 1, 1984.

- [27] M. G. Safonov. Optimal scaling for multivariable stability margins. Talk, University of Reading, Reading, England, April 11, 1984.
- [28] M. G. Safonov. Robust multivariable control. Talk, Scottish-American Symp. on New Developments in Control Engineering, Glasgow, Scotland, June 26-27, 1984.
- [29] M. G. Safonov. L^∞ optimal robust control methods. Talk, United Technologies Research Center, East Hartford, CT, August 8, 1986.
- [30] M. G. Safonov. L^∞ robust control methods. Talk, Scientific Systems, Inc., Cambridge, MA, August 7, 1986.
- [31] M. G. Safonov. Robust control. Talk, USC, Los Angeles, CA, May 5, 1986.
- [32] M. G. Safonov. Robust control. Talk, Industrial Assoc. Research Review, University of Southern California, Los Angeles, CA, May 6, 1986.
- [33] M. G. Safonov. Robust control methods. Talk, Lawrence Livermore National Laboratory, Livermore, CA, March 25, 1986. With E. A. Jonckheere.
- [34] M. G. Safonov. Robust feedback synthesis via diagonally scaled L^∞ optimal control. Talk, Cambridge University, Cambridge, England, August 21, 1986.
- [35] M. G. Safonov. The role and use of singular values in multiloop feedback design. Talk, Northrop Technical Center, Hawthorne, CA, November 7, 1986.
- [36] M. G. Safonov. The role and use of singular values in multiloop feedback design. Talk, Northrop Technical Center, Hawthorne, CA, November 14, 1986.
- [37] M. G. Safonov. H^∞ robust multivariable control design. Talk, UCLA, Los Angeles, CA, May 18, 1987.
- [38] M. G. Safonov. Issues in H^∞ design. Talk, Imperial College, London, England, August 7, 1987.
- [39] M. G. Safonov. JOSE structure control design. Talk, TRW Space and Technology Group, Redondo Beach, CA, April 23, 1987.
- [40] M. G. Safonov. Optimal H^∞ synthesis of robust controllers for systems with structured uncertainty. Talk, Caltech, Pasadena, CA, April 28, 1987.
- [41] M. G. Safonov. Robust identification: Basis free Hankel and balanced model reduction. Talk, Symp. on Robust and Adaptive Control, Oaxaca, Mexico, December 2-4, 1987.
- [42] M. G. Safonov. Nonconservative calculation of the multiloop stability margin. Talk, International Conf. on Identification and Control, Turin, Italy, June 10-12, 1988.
- [43] M. G. Safonov. Modeling and robustness issues in control design for flexible structures. Talk, Caltech Jet Propulsion Laboratory, Pasadena, CA, July 11, 1989.

- [44] M. G. Safonov. Modelling and robustness issues in control design for flexible structures. Talk, Honeywell Systems and Research Center, Minneapolis, MN, September 28, 1989.
- [45] M. G. Safonov. The role and use of singular values in robust multiloop control design. Talk, Northrop Aircraft, Hawthorne, CA, September 19 and September 26, 1989.
- [46] M. G. Safonov. H^∞ control design for a flexible space structure. Talk, Dept. of Electrical Engineering, Imperial College, London, England, August 7, 1990.
- [47] M. G. Safonov. H^∞ control design for a flexible space structure. Talk, Leicester University, Leicester, England, August 10, 1990.
- [48] M. G. Safonov. Model reduction for robust control. Talk, Caltech, Pasadena, CA, November 26, 1990.
- [49] M. G. Safonov. Relative-error model reduction via balanced stochastic truncation and error bounds. Talk, Cambridge University Engineering Department, Cambridge, England, August 2, 1990.
- [50] M. G. Safonov. Relative error model reduction via balanced stochastic truncation and error bounds. Talk, Dept. of Electrical Engineering, Imperial College, London, England, August 6, 1990.
- [51] M. G. Safonov. Robust control. Talk, First Annual Rockwell Advanced Control Systems Conference, Anaheim, CA, January 10, 1990.
- [52] M. G. Safonov and V. X. Le. Constant compensators for squaring down and output feedback stabilization: A matrix factorization viewpoint. Talk, SIAM Conf. on Applied Multivariable Linear Algebra, Minneapolis, MN, September 11-14, 1991.
- [53] M. G. Safonov. Quantifying the modeling accuracy needed for control design. Talk, International Workshop on Robust Control, San Antonio, TX, March 13-15, 1991.
- [54] M. G. Safonov. Quantifying the modeling accuracy needed for control system design. Talk, Third Rockwell Advanced Control Systems/Neural Network/Signal Processing Conference, Anaheim, CA, January 22, 1991.
- [55] M. G. Safonov. Robust control: The theory and its application to a flexible space structure. Talk, University of California, Berkeley, CA, February 22, 1991.
- [56] M. G. Safonov. Pencil system matrices for reliable computation. Talk, Fourth Rockwell International Control/Signal Processing Conference, Anaheim, CA, January 21-22, 1992.
- [57] M. G. Safonov. Real/complex K_m -synthesis without curve fitting. Talk, Rockwell International Science Center, Anaheim, CA, November 5, 1992.
- [58] M. G. Safonov. μ -Synthesis robust control: What's wrong and how to fix it? Talk, Advanced Control Applications Workshop, Hughes Aircraft, El Segundo, CA, February 3, 1993. Plenary talk.

- [59] M. G. Safonov. μ -Synthesis robust control: What's wrong and how to fix it? Talk, Department of Aerospace and Mechanical Engineering, University of California, Irvine, CA, February 25, 1993.
- [60] M. G. Safonov. Recent progress in μ -Synthesis robust control. Talk, Matlab Conference, Cambridge, MA, October 18–20, 1993.
- [61] P. Gahinet and A. Nemirovskii. LMI lab a package for manipulating and solving LMI's. Talk, IFAC Symposium on Robust Control Design, Rio de Janeiro, Brazil, September 14–16, 1994. M. G. Safonov presented paper on behalf of authors.
- [62] M. G. Safonov. Robust control methods: From experiments to control systems. Talk, Sixth Rockwell International Control/Signal Processing Conference, Anaheim, CA, March 1–2, 1994.
- [63] M. G. Safonov. The unfalsified control concept: A direct path from experiment to controller. Talk, Hughes Aircraft, El Segundo, CA, November 9, 1994.
- [64] M. G. Safonov. Focusing on the knowable: Controller invalidation and learning. Talk, MIT Lab for Information and Decision Systems, Cambridge, MA, October 4, 1995.
- [65] M. G. Safonov. Robust control research. Talk, USC, Los Angeles, CA, May 22, 1995.
- [66] M. G. Safonov. Unfalsified control and learning. Talk, Seventh Rockwell International Control/Signal Processing Conference, Thousand Oaks, CA, May 25–25, 1995.
- [67] M. G. Safonov. Focusing on the knowable: Controller invalidation and learning. Talk, Georgia Institute of Technology, Atlanta, GA, April 11, 1996. Distinguished Lecture Series in Systems and Controls.
- [68] M. G. Safonov. Focusing on the knowable: Controller invalidation and learning. Talk, Advanced Research Seminar on Systems Theory, Econometrics and Probability, Sophia Antipolis, Nice, France, June 2–4, 1997. Invited talk at high-level international research workshop organized by R. E. Kalman of ETH, Zurich.
- [69] M. G. Safonov. Focusing on the knowable: Controller invalidation and learning. Talk, Imperial College, London, England, June 23, 1997.
- [70] M. G. Safonov. Multivariable stability margin analysis. Talk, Hughes Aircraft, El Segundo, CA, May 27, 1997.
- [71] M. G. Safonov. Robust control, feedback and learning. Talk, Workshop for Michael Athans, Tampa, FL, December 19, 1998, 1998. 60th birthday celebration honoring M. Athans.
- [72] M. G. Safonov. Synthesis of positive real feedback systems: A simple derivation. Talk, UCSB, Santa, Barbara, CA, October 16, 1998.

- [73] M. G. Safonov. CACSD design process. Talk, Panel Discussion on Perspectives on Computer Aided Control Systems Design, IEEE Symp. on Computer Aided Control System Design, Kohala Coast–Island of Hawaii, HI, August 22, 1999. Plenary session.
- [74] M. G. Safonov. Robust control, feedback and learning. Talk, IFAC Intl. Workshop on Control of Uncertain Systems, Hong Kong, Univ. of Science & Technology, June 30 – July 2, 1999.
- [75] M. G. Safonov. Robust control, feedback and learning. Talk, Poster Presentation, AFOSR Workshop on Dynamics and Control, Dayton, OH, August 4–6, 1999. <http://routh.usc.edu/pub/safonov/safo99h.ppt>
- [76] M. G. Safonov. Multiplier IQC's for uncertain time delays. Talk, Tokyo University, Tokyo, Japan, May 22, 2000.
- [77] M. G. Safonov. Robust control, feedback and learning. Talk, SICE Conference, Kariya, Japan, May 24, 2000. Invited plenary talk.
- [78] M. G. Safonov. Robust control, feedback and learning. Talk, University of California, Santa Barbara, CA, October 13, 2000, 2000.
- [79] M. G. Safonov. Robust control, feedback and learning. Talk, Caltech, Pasadena, CA, October 16, 2000, 2000.
- [80] M. G. Safonov. Robust control tutorial. Talk, Tokyo University, Tokyo, Japan, May 31, 2000.
- [81] M. G. Safonov. Unfalsified direct adaptive control of a two-link robot arm. Talk, Titech, Tokyo, Japan, June 13, 2000.
- [82] M. G. Safonov. Zames-Falb multipliers for MIMO nonlinearities. Talk, Kyoto University, Kyoto, Japan, June 2, 2000.
- [83] M. G. Safonov. Zames-Falb multipliers for MIMO nonlinearities. Talk, Osaka University, Osaka, Japan, June 6, 2000.
- [84] M. G. Safonov. Zames-Falb multipliers for MIMO nonlinearities. Talk, AFOSR Workshop on Dynamics and Control, Dayton, OH, August 21–23, 2000.
- [85] M. G. Safonov. Zames-Falb multipliers for MIMO nonlinearities. Talk, University of California, Santa Barbara, CA, November 17, 2000.
- [86] M. G. Safonov. Data-driven behavioral formulation of the adaptive feedback control problem. Talk, AFOSR Workshop on Dynamics and Control, Dayton, OH, July 30 –August 02, 2001. <http://routh.usc.edu/pub/safonov/safo01o.pps>
- [87] M. G. Safonov. Robust control, feedback and learning. Talk, IEEE Control Society, San Diego Chapter, La Jolla, CA, January 18, 2001.
- [88] M. G. Safonov. Robust control, feedback and learning. Talk, Univ. of California, Riverside, CA, November 16, 2001.

- [89] M. G. Safonov. Zames-Falb multipliers for MIMO nonlinearities. Talk, University of California San Diego, La Jolla, CA, January 18, 2001.
- [90] M. G. Safonov. Zames-Falb multipliers for MIMO nonlinearities. Talk, Workshop in honor of Boyd Pearson, Rice University, Houston, TX, March 9–10, 2001.
- [91] M. G. Safonov. Data driven methods for robust control and learning. Talk, MIT, Cambridge, MA, March 14, 2002. <http://routh.usc.edu/pub/safonov/safo02c.pps>
- [92] M. G. Safonov. Data driven methods for robust control and learning. Talk, Aerospace and Mechanical Engineering Seminar, USC, Los Angeles, CA, September 25, 2002. <http://routh.usc.edu/pub/safonov/safo02c.pps>
- [93] M. G. Safonov. Myopic unfalsified control: A gradient approach to adaptation. Talk, AFOSR Dynamics and Control Workshop, Pasadena, CA, August 12 –August 14, 2002. <http://routh.usc.edu/pub/safonov/safo02e.pps>
- [94] M. G. Safonov. Data-driven robust control design: Unfalsified control. Talk, University of Bologna, Forli, Italy, May 8-10, 2003. NATO Lecture Series SCI-142.
- [95] M. G. Safonov. Data-driven robust control design: Unfalsified control. Talk, Escola Superior de Tecnologia, Setubal, Portugal, May 15-16, 2003. NATO Lecture Series SCI-142.
- [96] M. G. Safonov. Data-driven robust control design: Unfalsified control. Talk, USC, Los Angeles, CA, May 29-30, 2003. NATO Lecture Series SCI-142.
- [97] M. G. Safonov. Robust control, feedback and learning: Data-driven methods. Talk, AFOSR Workshop and Contractors' Meeting: Dynamics and Control, Destin, Florida, September 8–12, 2003.
- [98] M. G. Safonov. Adaptive control: Whats wrong and how to fix it? Talk, AFOSR Workshop and Contractors' Meeting: Dynamics and Control, Pasadena, CA, August 9–11, 2004.
- [99] M. G. Safonov. All stability multipliers for repeated mimo nonlinearities. Talk, Cambridge University Engineering Dept., Cambridge, England, September 9, 2004.
- [100] M. G. Safonov. Recent advances in robust control theory. Talk, University of Washington, Seattle, WA, June 3, 2004.
- [101] M. G. Safonov. Data-driven robust control design: Unfalsified control. Talk, University Politehnica, Bucharest, Romania, May 19-20, 2005. NATO Lecture Series SCI-166.
- [102] M. G. Safonov. Data-driven robust control design: Unfalsified control. Talk, KTH University, Stockholm, Sweden, May 12-13, 2005. NATO Lecture Series SCI-166.
- [103] M. G. Safonov. Data-driven robust control design: Unfalsified control. Talk, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland, May 23-24, 2005. NATO Lecture Series SCI-166.

- [104] M. G. Safonov. Recent advances in robust control. Talk, Irish Signals and Systems Conference, Dublin, Ireland, September 2, 2005. Invited plenary talk.
- [105] M. G. Safonov. Adaptation and learning without assumptions. Talk, California Institute of Technology, Pasadena, CA, March 22–23, 2006. Conference on Learning and Information in Games and Control. <http://routh.usc.edu/pub/safonov/safo06c.pdf>
- [106] M. G. Safonov. Robust adaptation and learning: Unfalsified control and cost-detectability. Talk, UCLA, Los Angeles, CA, October 28, 2006.
- [107] M. G. Safonov. The origins of robust control in the 1970's. Talk, ATHANS 70 Workshop, Clearwater Beach, FL, November 18, 2007. <http://routh.usc.edu/pub/safonov/safo07b.ppt>
- [108] M. G. Safonov. The origins of robust control in the 1970's. Talk, Institute for Systems and Robotics, Instituto Superior Tecnico, Lisbon, Portugal, March 20, 2008.
- [109] M. G. Safonov. The origins of robust control in the 1970's. Talk, Department of Electrical Engineering, Indian Institute of Technology, Kharagpur, India, December 11, 2008.
- [110] M. G. Safonov. Robust adaptation and learning: Unfalsified control and cost detectability. Talk, Institute for Systems and Robotics, Instituto Superior Tecnico, Lisbon, Portugal, March 18, 2008.
- [111] M. G. Safonov. Robust adaptation and learning: Unfalsified control and cost-detectability. Talk, Texas-Wisconsin-California and Control Consortium Workshop, Los Angeles, CA, September 28, 2008.
- [112] M. G. Safonov. Recent advances in robust control. Talk, UCLA, Los Angeles, CA, October 14, 2009.
- [113] M. G. Safonov. Recent advances in robust control. Talk, Northrop-Grumman, El Segundo CA, October 15, 2010.
- [114] M. G. Safonov. Recent advances in robust control. Talk, Northrop-Grumman, Rancho Bernardo, CA, January 21, 2011.
- [115] M. G. Safonov. Origins of robust control: Early history and future speculations. Talk, Plenary Talk: IFAC Symposium on Robust Control Design (ROCOND 12), Aalborg, Denmark, June 20, 2012.
- [116] M. G. Safonov. Adaptive control: Fooled by false assumptions? Talk, Sixteenth Yale Workshop on Adaptive and Learning Systems, New Haven, CT, June 5-7, 2013.
- [117] M. G. Safonov. Origins of robust control: Early history and future speculations. Talk, UCLA, Los Angeles, CA, April 9, 2014.
- [118] M. G. Safonov. Shifting paradigms for robust control then and now. Talk, UCSB, Santa Barbara, CA, January 17, 2014.

Short Courses Taught

- [1] M. G. Safonov. Robustness in control systems. Short Course, Linkoping University, Linkoping, Sweden, August 26-30, 1984. 5 four-hour lectures.
- [2] M. G. Safonov. Frequency response methods for multivariable control. Short Course, AIAA, Los Angeles, CA, April 9, 16, 23 30, and, May 7 and 14, 1985. 6 two-hour lectures.
- [3] M. G. Safonov. Frequency response methods for multivariate control. Short Course, University of Southern California, Los Angeles, CA, May 19-23, 1986. 10 three-hour lectures.
- [4] M. G. Safonov. Robust control. Short Course, AIAA, Los Angeles, CA, April 23, 30 and May 7, 14, 21, 1991. 5 two-hour lectures.
- [5] K. Poolla, M. G. Safonov, and R. Smith. Robust identification and control. Short Course, IEEE Regional Conf. on Aerospace Control Systems, Westlake, CA, May 28, 1993. Safonov delivered a two hour introductory tutorial on robust control which was followed by 5 hours of additional material presented by Poolla and Smith.
- [6] E. A. Jonckheere and M. G. Safonov. Modern robust control and analysis. Short Course, Sponsored by National Chiao Tung University, National Cheng Kung University, National Administration of Education, IEEE Taipei Section, and IEEE Control Society Taipei Chapter, Tainan and Hsinchu, Taiwan, August 15-21, 1994. Ten two-and-one-half hour lectures on current topics in robust control.

Ph.D. Theses Supervised

1. B. S. Chen, "Inverse Problem of LQG Control via Frequency Dependent Cost/Noise Matrices," USC, May 1982.
2. K. Karimlou, "Input Output Stability Analysis with Hysteresis Nonlinearity," USC, May 1984.
3. A. Sideris, "Robust Feedback Synthesis via Conformal Mappings and H^∞ Optimization," USC, July 1985.
4. R. R. E. de Gaston, "Nonconservative Calculation of Multiloop Stability Margin," USC, December 1985.
5. R. Y. Chiang, "Modern Robust Control Theory," USC, December 1988.
6. V. X. Le, "Rational Matrix GCD's and Squaring-Down Compensators," USC, September 1989.
7. W. Wang, "Relative-Error Model Reduction, Identification and Control," USC, September 1990.
8. B. Copeland, "Cheap and Singular H^2 and H^∞ Control Problems: A Generalized Eigenproblem Approach," USC, December 1990.
9. A. Holohan, "Robust Controller Design," USC, June 1992.
10. T. Tsao, "Set Theoretic Adaptor Systems," USC, May 1994. Spectrum Astro, Manhattan Beach, CA. <http://routh.usc.edu/pub/safonov/tsao94.pdf>
11. J. H. Q. Ly, "A Multiplier Approach to Robust Analysis and Synthesis," USC, August 1995.
12. K. C. Goh, "Robust Control Synthesis via Bilinear Matrix Inequalities," USC, May 1995.
13. C.-H. Huang, "Unstably-Weighted Robust Control Synthesis via Linear matrix Inequalities and Matrix Pencils", USC, August 1996.
14. T. Brozenec, "Controller Invalidation, Identification & Learning", USC, November 1996.
15. F. B. Cabral, "Data Based Control", USC, December 1996.
16. V. Kulkarni, "Multipliers for Memoryless Incrementally Positive MIMO Nonlinearities", USC, May 2001.
17. M. Jun, "Robustness Analysis of Uncertain Time-Delay Systems", USC, October 2001.
18. P. Brugarolas, "Data Driven Control and Identification: An Unfalsification Approach", USC, May 2002.

19. H.-H. Meng, “Stability Analysis and Robust Control Synthesis with Generalized Multipliers”, USC, June 2002. <http://routh.usc.edu/pub/safonov/meng02.pdf>
20. R. Mancera, “Multipliers for MIMO Nonlinearities: Theory and Algorithms”, USC, December 2002.
21. A. Paul, “Multi Controller Adaptive Control (MCAC): Cost Detectability, Stability and Some Applications”, USC, August 2005. <http://routh.usc.edu/pub/safonov/paul05.pdf>
22. M. Stefanovic, “Safe Switching Adaptive Control: Stability and Convergence”, USC, August 2005. <http://routh.usc.edu/pub/safonov/stef05.pdf>
23. R. Wang, “Cost Detectability and Safe MCAC”, USC, December 2005. <http://routh.usc.edu/pub/safonov/wang05.pdf>
24. S. Y. Cheong, “Bumpless Transfer and Fading Memory for Adaptive Switching Control”, USC, December 2009. <http://routh.usc.edu/pub/safonov/cheo09.pdf>
25. M. Alharashani, “Relaxing Convergence Assumptions for Continuous Adaptive Control”, USC, June 2010. <http://routh.usc.edu/pub/safonov/alha10.pdf>
26. M. Chang, “A Revised Computational Procedure for Calculating Zames-Falb Multipliers”, USC, December 2010. <http://routh.usc.edu/pub/safonov/chan10.pdf>
27. A. Karthikeyan, “LQ Feedback Formulation for H_∞ Output Feedback Control”, USC, May 2013. <http://routh.usc.edu/pub/safonov/kart13.pdf>