

## Books

M. Mesbahi and M. Egerstedt, [Graph-theoretic Methods in Multiagent Networks](#), Princeton University Press, 2010.

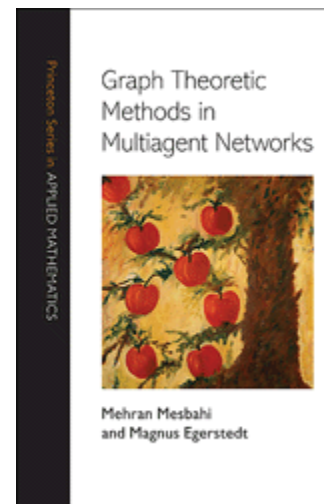
## Book Chapters

A. Chapman and M. Mesbahi, UAV Swarms: Models and Effective Interfaces, in Handbook of Unmanned Aerial Vehicles, Springer (to appear).

D. Zelazo and M. Mesbahi, Graph-theoretic methods for networked dynamic systems: Heterogeneity and H2 Performance, in Efficient Modeling and Control of Large-Scale Systems (J. Mohammadpour and K.M. Grigoriadis, eds.), Springer, 2010.

M. Mesbahi, M. G. Safonov, and G. P. Papavassilopoulos, Bilinearity and complementarity in robust control, in Advances in Linear Matrix Inequality Methods in Control, SIAM, 2000.

M. Mesbahi and G. P. Papavassilopoulos, Least elements and minimal rank matrices, in Recent Advances in Complementarity Theory - State of the Art. SIAM, 1997.



## Journal Papers

A. Chapman, M. Nabi-Abdolyousefi, and M. Mesbahi, Controllability and observability of network-of-networks via Cartesian products (submitted).

U. Lee and M. Mesbahi, Feedback control for spacecraft reorientation in presence of attitude constraints via convex potentials, IEEE Transactions on Aerospace and Electronic Systems (to appear).

R. Dai and M. Mesbahi, Optimal power generation and load management for off-grid hybrid power systems with renewable sources via mixed-integer programming, Energy Conversion and Management, 73: 234-244, 2013.

M. Nabi-Abdolyousefi and M. Mesbahi, On the controllability of circulant networks, IEEE Transactions on Automatic Control, 58 (12) : 3179-3184, 2013.

R. Dai, J. Maximoff, and M. Mesbahi, Optimal path planning for establishing connectivity in proximity networks, IEEE Transactions on Aerospace and Electronic Systems, 49 (3): 1968-1981, 2013.

A. Chapman and M. Mesbahi, Semi-autonomous consensus: network measures and adaptive trees, IEEE Transactions on Automatic Control, 58 (1): 19-31, 2013.

M. Nabi-Abdolyousefi and M. Mesbahi, Network identification via node knock-outs, IEEE Transactions on Automatic Control, 57 (12): 3214-3219, 2012.

M. Nabi-Abdolyousefi and M. Mesbahi, A sieve method for consensus-type network tomography, IET Control Theory and Applications, (6) 12: 1926-1932, 2012.

- P. Panyakeow and M. Mesbahi, Deconfliction algorithms for a pair of constant speed unmanned aerial vehicles, *IEEE Transactions on Aerospace and Electronic Systems* (to appear).
- I. Rajapakse, M. Groudine, and M. Mesbahi, What can systems theory of networks offer to biology? *PLoS Computational Biology*, 8 (6): e1002543. doi:10.1371/journal.pcbi.1002543; link <http://www.ploscompbiol.org/article/.../pcbi.1002543>
- A. Chapman and M. Mesbahi, System theoretic aspects of influenced consensus: single input case, *IEEE Transactions on Automatic Control*, 57 (6): 1505-1511, 2012.
- D. Zelazo, R. Dai, and M. Mesbahi. An energy management system for off-grid power systems, *Energy Systems* 3 (2): 153-179, 2012.
- Z. Wu and M. Mesbahi, Symplectic transformation based approach for linear quadratic control with terminal constraints, *SIAM Journal of Control and Optimization*, 50 (2): 652-671, 2012.
- I. Rajapakse, M. Groudine, and M. Mesbahi, Dynamics and control of state-dependent networks for probing genomic organization, *Proceedings of the National Academy of Sciences*, doi: 10.1073/pnas.1113249108, 2011.
- D. Zelazo and M. Mesbahi, Graph-theoretic analysis and synthesis of relative sensing networks, *IEEE Transactions on Automatic control*, 56 (5): 971-982, 2011.
- D. Zelazo and M. Mesbahi, Edge agreement: graph-theoretic performance bounds and passivity analysis, *IEEE Transactions on Automatic Control*, 6 (3): 554-555, 2011.
- A. Das, Y. Hatano, and M. Mesbahi. Agreement over noisy networks, *IET Control Theory and Applications*, 4 (11): 2416-2426, 2010.
- Y. Kim, M. Mesbahi, G. Singh, and F. Y. Hadaegh. On the constrained attitude control problem, *IEEE Transactions on Aerospace and Electronic Systems*, May 2010.
- A. Das and M. Mesbahi. Distributed parameter estimation over sensor networks, *IEEE Transactions on Aerospace and Electronic Systems*, 45 (4): 1293-1306, 2009.
- J. Sandhu, M. Mesbahi, and T. Tsukamaki. On the control and estimation over relative sensing networks, *IEEE Transactions on Automatic Control*, 54 (12): 2859 - 2863, 2009.
- A. Rahmani, M. Ji, M. Mesbahi, and M. Egerstedt. Controllability of multi-agent systems from a graph theoretic perspective, *SIAM Journal on Control and Optimization*, 48 (1): 162-186, 2009.
- A. Rahmani, M. Mesbahi, and F. Y. Hadaegh, On the optimal balanced-energy formation flying maneuvers, *AIAA Journal of Guidance, Control, and Dynamics*, (29) 6: 1395-1403, 2006.
- Y. Kim and M. Mesbahi. On maximizing the second smallest eigenvalue of a state-dependent graph Laplacian, *IEEE Transactions on Automatic Control*, (51) 1: 116-120, 2006. [Errata/code](#)
- Y. Hatano and M. Mesbahi. Agreement over random networks, *IEEE Transactions on Automatic Control*, (50) 11: 1867-1872, 2005.

- M. Mesbahi. On state-dependent dynamic graphs and their controllability properties, *IEEE Transactions on Automatic Control* (50) 3: 387- 392, 2005.
- Y. Kim and M. Mesbahi. [Quadratically constrained attitude control via semidefinite programming](#), *IEEE Transactions on Automatic Control* (49) 5: 731-735, 2004.
- Y. Kim, M. Mesbahi, and F. Y. Hadaegh. Multiple-spacecraft reconfigurations through collision avoidance, bouncing, and stalemates, *Journal of Optimization Theory and its Applications*, (122) 2: 323-343, 2004.
- Y. Kim, M. Mesbahi, and F. Y. Hadaegh. Dual-spacecraft formation flying: optimal collision-free reconfigurations, *AIAA Journal of Guidance, Control, and Dynamics*, (26): 2, 375-379, 2003.
- M. Mesbahi and F. Y. Hadaegh. Mode and logic-based switching for the formation flying control of multiple spacecraft, *Journal of Astronautical Sciences* , 49 (3): 443-468, 2001.
- M. Mesbahi and F. Y. Hadaegh. Formation flying of multiple spacecraft via graphs, matrix inequalities, and switching , *AIAA Journal of Guidance, Control, and Dynamics*, (24) 2: 369-377, 2001.
- M. Mesbahi. Robustness analysis via the running time of the interior point methods , *Systems and Control Letters*, 44 (5): 355-361, 2001.
- M. Mesbahi and G. P. Papavassilopoulos. On the communication complexity of Lipschitzian optimization for the coordinated model of computation . *Journal of Complexity*, 16 (2): 459-473, 2000.
- M. Mesbahi, G. P. Papavassilopoulos, and V. K. Prasanna. On the parallel and VLSI implementation of the interior point methods, *International Journal of Modeling and Simulations*, 19 (4): 405-409, 1999.
- M. Mesbahi. Solving a class of rank minimization problems as semi-definite programs with applications to fixed order output feedback synthesis, *Systems and Control Letters*, 33 (1): 31-36, 1998.
- M. Mesbahi and G. P. Papavassilopoulos. On the rank minimization problem over a positive semi-definite linear matrix inequality, *IEEE Transactions on Automatic Control*, 42 (2): 239-243, 1997.
- M. Mesbahi and G. P. Papavassilopoulos, A cone programming approach to the bilinear matrix inequality problem and its geometry, *Mathematical Programming (B)*, 77 (2): 247-272, 1997.

## Conference Papers

- A. Chapman and M. Mesbahi. "Strong structural controllability of networked dynamics," *American Control Conference*, 2013.
- U. Lee and M. Mesbahi. "Dual quaternions, rigid body mechanics, and powered-descent guidance," *IEEE Conference on Decision and Control*, 2012.
- M. Nabi-Abdolyousefi, M. Fazel, and M. Mesbahi. "Graph identification via transfer matrices, similarity transformations, and matrix approximations," *IEEE Conference on Decision and Control*, 2012.

- R. Dai, U. Lee, S. Hosseini, and M. Mesbahi. "Optimal sun path planning for solar-powered UAVs based on unit quaternions," *IEEE Conference on Decision and Control*, 2012.
- A. Chapman, M. Nabi-Abdolyousefi, and M. Mesbahi. "Controllability and observability of Cartesian product networks," *IEEE Conference on Decision and Control*, 2012.
- A. Chapman, E. Schoof, and M. Mesbahi. "Advection on networks with an application to decentralized load balancing," *IEEE International Conference on Intelligent Robots and Systems*, 2012.
- R. Dai, J. Maximoff, and M. Mesbahi. "Formation of connected networks for fractionated spacecraft," *AIAA Guidance, Navigation and Control Conference*, 2012.
- A. Chapman and M. Mesbahi. "Cartesian products of Z-Matrix networks: factorization and interval analysis," *Symposium on Mathematical Theory of Networks and Systems*, 2012.
- U. Lee and M. Mesbahi. "Spacecraft attitude synchronization in presence of constrained zones," *American Control Conference*, 2012.
- R. Dai, J. Maximoff, and M. Mesbahi. "Establishment of proximity networks," *American Control Conference*, 2012.
- A. Chapman and M. Mesbahi. "Stability analysis of nonlinear networks via M-matrix theory: Beyond linear consensus," *American Control Conference*, 2012.
- M. Nabi-Abdolyousefi and M. Mesbahi. "System theory over random networks: controllability and optimality properties," *IEEE Conference on Decision and Control*, 2011.
- A. Chapman and M. Mesbahi. "Advection on graphs," *IEEE Conference on Decision and Control*, 2011.
- U. Lee and M. Mesbahi. "Constrained consensus via Log barrier function," *IEEE Conference on Decision and Control*, 2011.
- R. Dai and M. Mesbahi. "Optimal topology design for dynamic networks," *IEEE Conference on Decision and Control*, 2011.
- A. Chapman, R. Dai and M. Mesbahi. "Network topology design for UAV flocking with wind gusts," *AIAA Guidance, Navigation and Control Conference*, 2011.
- R. Dai, U. Lee and M. Mesbahi. "Distributed orbit determination via estimation consensus," *AAS/AIAA Flight Mechanics Conference*, 2011.
- M. Nabi-Abdolyousefi and M. Mesbahi. "Coordinated decentralized estimation over random networks," *American Control Conference*, 2011 (Best session presentation award).
- U. Lee and M. Mesbahi. "Spacecraft reorientation in presence of attitude constraints via logarithmic barrier potentials," *American Control Conference*, 2011.
- A. Chapman and M. Mesbahi. "UAV flocking with wind gusts: adaptive topology and model reduction," *American Control Conference*, 2011 (Best session presentation award).

- M. Nabi-Abdolyousefi and M. Mesbahi. "Network identification via node knock-out," IEEE Conference on Decision and Control, 2010. A. Chapman and M. Mesbahi, "Semi-Autonomous networks: network resilience and adaptive trees," IEEE Conference on Decision and Control, 2010.
- A. Chapman and M. Mesbahi. "Semi-autonomous robotics networks: theory and agent local protocols," ICRA 2010.
- A. Chapman and M. Mesbahi. "Adaptive trees," American Control Conference, 2010.
- A. Chapman, M. Nabi-Abdolyousefi, and M. Mesbahi. "Identification and infiltration in consensus-type networks," IFAC Workshop on Estimation and Control of Networked Systems, 2009 (Finalist for the best student paper award).
- D. Zelazo and M. Mesbahi, "H2 Performance of agreement protocol with noise: an edge approach," IEEE Conference on Decision and Control, 2009.
- A. Chakraborty and M. Mesbahi, "Performance oriented high gain redesigns for FACTS-controlled SMIB power systems," IEEE Conference on Decision and Control, 2009.
- D. Zelazo and M. Mesbahi, "H2 performance of relative sensing networks" (finalist for the Best Student Paper Award), AIAA Infotech, Seattle, 2009.
- D. Zelazo and M. Mesbahi, "Analysis and synthesis of networked dynamic systems with H2 performance," American Control Conference, 2009.
- D. Zelazo and M. Mesbahi, "On the observability properties of homogenous and heterogenous network dynamic systems," IEEE Conference on Decision and Control, Cancun, December 2008.
- A. Rahmani, M. Mesbahi, N. Fathpour, F. Y. Hadaegh, "Observability and estimation of distributed space systems via local Information-exchange networks," AIAA Guidance, Navigation, and Control Conference, Hawaii, August 2008.
- A. Rahmani, K. Kosuge, T. Tsukamaki, M. Mesbahi, "UAV deconfliction via navigation functions," AIAA Guidance, Navigation, and Control Conference, Hawaii, August 2008.
- M. Nabi, M. Mesbahi, N. Fathpour, F. Y. Hadaegh, "Local estimators for multiple spacecraft formation flying," AIAA/AAS Astrodynamics Specialist Conference, Hawaii, August 2008.
- M. Mesbahi, "On the agreement dynamics over graph products: decomposition and observability," Mediterranean Control Conference, June 2008.
- D. Zelazo, A. Rahmani, J. Sandhu, and M. Mesbahi, "Decentralized formation control via the edge Laplacian," American Control Conference, June 2008.
- A. Nyguen and M. Mesbahi, "A factorization lemma for the agreement dynamics," IEEE Conference on Decision and Control, Dec. 2007.
- D. Zelazo, A. Rahmani, and M. Mesbahi. "Agreement via the Edge Laplacian," IEEE Conference on Decision and Control, Dec. 2007.

- A. Rahmani and M. Mesbahi. "Controlled agreement over networks: anchoring, controllability, and graph automorphisms," American Control Conference, 2007.
- A. Das and M. Mesbahi. "Distributed linear parameter estimation in sensor networks," IEEE Conference on Sensor, Mesh, and Ad Hoc Communications and Networks, 2006.
- A. Rahmani and M. Mesbahi. "On the controlled agreement problem," American Control Conference, 2006.
- Y. Hatano, A. Das, and M. Mesbahi. "Agreement in presence of noise: pseudogradients on random geometric networks," IEEE Conference on Decision and Control, 2005.
- J. Sandhu, M. Mesbahi, and T. Tsukamaki. "Relative sensing networks: observability, estimation, and the control structure," IEEE Conference on Decision and Control, 2005.
- J. Sandhu, M. Mesbahi, and T. Tsukamaki. "Cuts and flows in relative sensing and control of spatially distributed systems," American Control Conference, 2005.
- A. Rahmani and M. Mesbahi. "Optimized balanced-energy formation flying maneuvers," AIAA Guidance, Navigation, and Control, 2005.
- Y. Kim and M. Mesbahi. "On maximizing the second smallest eigenvalue of a state-dependent Laplacian," American Control Conference, 2005.
- A. K. Das, M. Mesbahi, and Y. Kim. "On K-node survivable power efficient topologies in wireless networks with sectored antennas," IEEE INFOCOM, 2005.
- Y. Hatano and M. Mesbahi. "Agreement over random networks," IEEE Conference on Decision and Control, 2004.
- M. Mesbahi. "On state-dependent dynamic graphs and their controllability properties," IEEE Conference on Decision and Control, 2004.
- Y. Kim, M. Mesbahi, G. Singh, and F. Y. Hadaegh. "On the constrained attitude control problem," AIAA Guidance, Navigation, and Control, 2004.
- Y. Kim and M. Mesbahi. "On the rank minimization problem," American Control Conference (best session presentation), June 2004.
- M. Mesbahi. "State-dependent graphs," IEEE Conference on Decision and Control, 2003.
- Y. Kim and M. Mesbahi. "Quadratically constrained attitude control via semidefinite programming," IEEE Conference on Decision and Control, 2003.
- Y. Shao, M. Mesbahi, and G. Balas. "Planing, switching, and supercavitating flight control," AIAA Guidance, Navigation, and Control, 2003.
- M. Mesbahi. [On a dynamic extension of the theory of graphs](#), American Control Conference, 2002.

- M. Mesbahi and F. Y. Hadaegh. "Mode and logic-based switching for the formation flying of multiple spacecraft," *American Control Conference*, 2001.
- M. Mesbahi. "Towards an algorithmic theory of robustness," *American Control Conference*, 2001.
- M. Mesbahi and F. Y. Hadaegh. "Switching control strategies for the uv-plane coverage," *AAS Guidance and Control Conference*, 2000.
- M. Mesbahi. "A semi-Definite programming approach for the solution of the least order dynamic output feedback and related problems. *IEEE Conference on Decision and Control*, 1999.
- M. Mesbahi and F. Y. Hadaegh. "Formation flying control of multiple spacecraft: graph theoretic properties and switching schemes," *AIAA Guidance, Navigation, and Control*, 1999.
- M. Mesbahi and F. Y. Hadaegh, "A robust control approach for the formation flying of multiple spacecraft." *European Control Conference, Karlsruhe, Germany, Sept. 1999.*
- M. Mesbahi and F. Y. Hadaegh. "Formation flying control of multiple spacecraft via graphs, matrix inequalities, and switching." *IEEE Conference on Control Applications, Kona, Hawaii, Aug. 1999.*
- M. Mesbahi and F. Y. Hadaegh. "Reconfigurable control for the formation flying of multiple spacecraft." *International Multi-Conference on Circuits, Systems, and Control, Athens, Greece, Jul. 1999.*
- M. Mesbahi. "Least order dynamic output feedback synthesis is polynomial-time solvable." *American Control Conference, June 1999.*
- M. Mesbahi and F. Y. Hadaegh. "A switching mechanism for the formation flying control." *American Control Conference, June 1999.*
- L. Gurvits and M. Mesbahi. "A polynomial-time algorithm for solving certain classes of rank minimization problem" . *American Control Conference, June 1999.*
- M. Mesbahi. "On robustness measures and the feasible set of the LMIs arising in stability analysis." *American Control Conference, Philadelphia, Pennsylvania, June 1998.*
- M. Mesbahi. "A complexity theoretic perspective on robustness analysis." *AIAA Guidance, Navigation, and Control Conference, New Orleans, Louisiana, August 1997.*
- M. Mesbahi and G. P. Papavassilopoulos. "On the fixed order output feedback synthesis." *American Control Conference, Albuquerque, New Mexico, June 1997.*
- M. Mesbahi and G. P. Papavassilopoulos. "LMIs, interior point methods, complexity theory, and robustness analysis." *IEEE Conference on Decision and Control, Kobe, Japan, Dec. 1996.*
- M. Mesbahi, G. P. Papavassilopoulos, and M. G. Safonov, ``Matrix cones, complementarity problems, and the bilinear matrix inequality,' ' *IEEE Conference on Decision and Control, New Orleans, Louisiana, Dec. 1995.*

M. Mesbahi and G. P. Papavassilopoulos. "Some recent matrix problems in control theory - linear, bilinear, and complementarity problems." International Conference on Complementarity Problems, John Hopkins University, Baltimore, Maryland, Nov. 1995.

M. Mesbahi and G. P. Papavassilopoulos. "On the geometry of the bilinear matrix inequalities." American Mathematical Society Summer Seminar on Mathematics of Numerical Analysis, Park City, Utah, Aug. 1995.

M. Mesbahi, G. P. Papavassilopoulos, and V. K. Prasanna. "On the parallel and VLSI implementation of the interior point methods for linear programming," International Conference on Parallel and Distributed Computing and Systems, Washington, D. C., Oct. 1994.

## Technical Reports

A. Ahmed, J. Alexander, D. Boussalis, W. Breckenridge, G. Macala, M. Mesbahi, M. San Martin, G. Singh, and E. Wong. Cassini Control Analysis Book, Jet Propulsion Laboratory, 1997.

Mesbahi. "On the optimal fuel/time maneuvers for ST3," Technical Memorandum, Jet Propulsion Laboratory, Oct. 1999.

M. Mesbahi. "On the effect of delays in the formation flying control performance in DS-3," Technical Memorandum, Jet Propulsion Laboratory, Oct. 1998.

M. Mesbahi. "Reconfigurable control strategies for formation flying." Technical Memorandum, Jet Propulsion Laboratory, Dec. 1997.

M. Mesbahi, "Control and estimation algorithms for spacecraft moving in formation," Technical Memorandum, Jet Propulsion Laboratory, Nov. 1996.

M. Mesbahi, "Studies on catastrophe theory and chaos," Technical Report, University of Southern California, May 1991.

M. Mesbahi, "Studies on traffic dynamics," Technical Report, University of Southern California, Aug. 1991.

## Thesis/Dissertation

M. Mesbahi. Matrix Inequalities, Stability Theory, Interior Point Methods, and Distributed Computation. Ph.D. Thesis. Department of Electrical Engineering - Systems, University of Southern California, June 1996.

M. Mesbahi. Complementarity Problems in Systems and Control. Master's Thesis, Department of Mathematics, University of Southern California, May 1995.