

PUBLICATIONS

Theses

1. A.A. Julius, *On interconnection and equivalence of continuous and discrete systems: a behavioral perspective*, Doctoral dissertation, Dept. Applied Mathematics, University of Twente, The Netherlands, 2005.
2. A.A. Julius, *Evolution of the modal densities of a class of stochastic hybrid systems*, Master thesis, Dept. Applied Mathematics, University of Twente, The Netherlands, 2001.

Journal papers and book chapters

1. G. Richard, C. Belta, A.A. Julius, S. Amar, *Controlling the outcome of the Toll-like signaling pathways*, *PLoS ONE*, Vol. 7(2), e31341, 2012.
2. D.H. Kim, P.S. Kim, A.A. Julius, M.J. Kim, *Three-dimensional control of Tetrahymena pyriformis using artificial magnetotaxis*, *Applied Physics Letters*, Vol. 100, 053702, 2012.
3. T.J. Zhang, J.T. Wen, A.A. Julius, Y. Peles, M.K. Jensen, *Stability analysis and maldistribution control of two-phase flow in parallel evaporating channels*, *International Journal of Heat and Mass Transfer*, Vol. 54, pp. 5298-5305, 2011.
4. M.S. Sakar, E.B. Steager, D.H. Kim, A.A. Julius, M.J. Kim, V. Kumar, G.J. Pappas, *Modeling, control and experimental characterization of microbiorobots*, *International Journal of Robotics Research*, Vol. 30(6), pp. 647-658, 2011.
5. M.M. Zavlanos, A.A. Julius, S.P. Boyd and G.J. Pappas, *Inferring stable genetic networks from steady-state data*, *Automatica*, vol. 47(6), pp. 1113-1122, Special Issue on Systems Biology, 2011.
6. A.A. Julius, M.M. Zavlanos, S.P. Boyd, G.J. Pappas, *Genetic network identification using convex programming*, *IET Systems Biology*, vol. 5(3), pp. 155-166, 2009.
7. A.A. Julius, G.J. Pappas, *Approximate abstraction of stochastic hybrid systems*, *IEEE Trans. Automatic Control*, vol.54(6), pp. 1193-1203, 2009.
8. A.A. Julius, G.J. Pappas, *Trajectory based verification using local finite-time invariance*, in *Hybrid Systems: Computation and Control*, Lecture Notes in Computer Science vol. 5469, pp. 223-236, Springer Verlag, 2009.
9. A.A. Julius, A. D’Innocenzo, M.D. DiBenedetto, G.J. Pappas, *Approximate equivalence and synchronization of metric transition systems*, *Systems and Control Letters*, vol.58(2), pp. 94-101, 2009.
10. P. Tabuada, A.D. Ames, A.A. Julius, G.J. Pappas, *Approximate reduction of dynamical systems*, in *Systems and Control Letters*, vol.57(7), pp. 538-545, July 2008
11. A.A. Julius, A. Halasz, M.S. Sakar, H. Rubin, V. Kumar, G.J. Pappas, *Stochastic modeling and control of biological systems: the lactose regulation system of Escherichia coli*, *IEEE Trans. Automatic Control*, 53(1), pp. 51-65, joint special issue with *IEEE Trans. Circuits and Systems*, 2008.
12. A.A. Julius, J.W. Polderman, A.J. van der Schaft, *Parametrization of the regular equivalences of the canonical controller*, *IEEE Trans. Automatic Control*, vol.53(4), pp. 1032 - 1036, 2008.
13. A. Girard, A.A. Julius, G.J. Pappas, *Approximate simulation relations for hybrid systems*, in *Int. J. Discrete Event Dynamic Systems*, vol.18(2), pp. 163-179, June 2008.
14. A.A. Julius, G. Fainekos, M. Anand, I. Lee, G.J. Pappas, *Model-based Robust Test Generation and Coverage for Hybrid Systems*, in *Hybrid Systems: Computation and Control*, Lecture Notes in Computer Science vol. 4416, pp. 329-342, Springer Verlag, 2007.
15. A.A. Julius, *Approximate abstraction of stochastic hybrid automata*, in *Hybrid Systems: Computation and Control*, Lecture Notes in Computer Science vol. 3927, pp. 318-332, Springer Verlag, 2006.
16. A.A. Julius, J.C. Willems, M.N. Belur, H.L. Trentelman, *The canonical controllers and regular interconnection*, in *Systems and Control Letters*, 8(54), pp 787-797, August 2005.

Edited Volume

1. M.J. Kim, A.A. Julius, E.A. Steager (eds), *Microbiorobotics*, Elsevier, 2012.

Conference abstract and poster

1. A.A. Julius, C. Belta, Genetic regulatory network identification using monotone functions, at the *5th Q-bio Conference*, Santa Fe, USA, 2011.

2. A.A. Julius, The motile behavior of flagellated bacteria and its utilization in microscale actuation, at the SIAM Life Science Meeting, Pittsburgh, USA, 2010.
3. A.A. Julius, M. Zavlanos, S. Boyd, G.J. Pappas, Genetic network identification using convex programming, at the *8th International Conference on Systems Biology*, Long Beach, USA, 2007.
4. M.S. Sakar, E. Steager, A.A. Julius, V. Kumar, M.J. Kim, G.J. Pappas, Microfabricated structures powered by flagellated bacteria, at the *8th International Conference on Systems Biology*, Long Beach, USA, 2007.
5. A.A. Julius, A. Halasz, V. Kumar, G.J. Pappas, A finite model for the random behavior in the lactose regulation system of *Escherichia coli*, at the *7th International Conference on Systems Biology*, Yokohama, Japan, 2006.

Peer reviewed conference papers

1. Y. Ou, D.H. Kim, P.S. Kim, M.J. Kim, A.A. Julius, **Motion control of *Tetrahymena pyriformis* cells with artificial magnetotaxis: Model Predictive Control (MPC) approach**, in the *Proc. IEEE Intl. Conf. Robotics and Automation*, pp. 2492 - 2497, St. Paul, USA, 2012.
2. D.H. Kim, P.S. Kim, A.A. Julius, M.J. Kim, **Three-dimensional control of engineered motile cellular microrobots**, in the *Proc. IEEE Intl. Conf. Robotics and Automation*, pp. 721 - 726, St. Paul, USA, 2012.
3. G. Richard, H.J. Chang, I. Cizelj, C. Belta, A.A. Julius, S. Amar, **Integration of large-scale metabolic, signaling, and gene regulatory networks with application to infection responses**, in the *Proc. IEEE Conf. Decision and Control*, pp. 2227 - 2232, Orlando, USA, 2011.
4. N.G. Cooper, C. Belta, A.A. Julius, **Genetic regulatory network identification using multivariate monotone functions**, in the *Proc. IEEE Conf. Decision and Control*, pp. 2208 - 2213, Orlando, USA, 2011.
5. A.A. Julius, C. Belta, Genetic regulatory network identification using monotone functions decomposition, in the *Proc. IFAC World Congress*, Milan, Italy, 2011.
6. H. Chang, G. Richard, A.A. Julius, C. Belta, S. Amar, **An application of monotone functions decomposition for reconstruction of gene regulatory network**, in the *Proc. 33rd Annual IEEE Engineering in Medicine and Biology Conf. (EMBC)*, pp. 2430 - 2433, Boston, USA, 2011.
7. N.G. Cooper, A.A. Julius, **Bacterial persistence: mathematical modeling and optimal treatment strategy**, in the *Proc. American Control Conference*, pp. 3502 - 3507, San Francisco, USA, 2011.
8. M.M. Zavlanos, A.A. Julius, **Robust flux balance analysis of metabolic networks**, in the *Proc. American Control Conference*, pp. 2915 - 2920, San Francisco, USA, 2011.
9. J.X. Zhang, J.T. Wen, A.A. Julius, **Modeling of drosophila circadian system based on locomotor activity**, in the *Proc. American Control Conference*, pp. 3496 - 3501, San Francisco, USA, 2011.
10. D.H. Kim, S. Brigandi, A.A. Julius, M.J. Kim, **Real-time feedback control using artificial magnetotaxis with rapidly-exploring random tree (RRT) for *Tetrahymena pyriformis* as a microbiorobot**, in the *Proc. IEEE Intl. Conf. Robotics and Automation*, pp. 3183 - 3188, Shanghai, China, 2011.
11. A.A. Julius, S. Afshari, **Using computer games for hybrid systems controller synthesis**, in the *Proc. IEEE Conf. Decision and Control*, pp. 5887-5892, Atlanta, USA, 2010.
12. J.X. Zhang, A. Bierman, J.T. Wen, A.A. Julius, M. Figueiro, **Circadian system modeling and phase control**, in the *Proc. IEEE Conf. Decision and Control*, pp. 6058 - 6063, Atlanta, USA, 2010.
13. T.J. Zhang, J.T. Wen, A.A. Julius, **Extremum seeking Micro-Thermal-Fluid control for active two-phase microelectronics cooling**, in the *Proc. IEEE Conf. Decision and Control*, pp. 1899 - 1904, Atlanta, USA, 2010.
14. A.A. Julius, **Trajectory-based controller design for hybrid systems with affine continuous dynamics**, in the *Proc. 6th IEEE Conf. Automation Science and Engineering*, pp. 1007 - 1012, Toronto, Canada, 2010.
15. A.A. Julius, S. Sawyer, **Control systems challenges in energy efficient portable UV-based water sterilizer**, in the *Proc. American Control Conference*, pp. 3617 - 3622, Baltimore, USA, 2010.
16. T.J. Zhang, J.T. Wen, A.A. Julius, H. Bai, Y. Peles, M.K. Jensen, **Parallel-channel flow instabilities and active control schemes in two-phase microchannel heat exchanger systems**, in the *Proc. American Control Conference*, pp. 3753 - 3758, Baltimore, USA, 2010.

17. M.S. Sakar, E. Steager, A.A. Julius, M.J. Kim, V. Kumar, G.J. Pappas, **Biosensing and actuation for microbiorobots**, *Proc. IEEE Intl. Conf. Robotics and Automation*, pp. 3141-3146, Anchorage, Alaska, 2010.
18. A.A. Julius, M.S. Sakar, E. Steager, M.J. Kim, V. Kumar, G.J. Pappas, **Harnessing bacterial power for micromanipulation and transport**, in the *Proc. IEEE Intl. Conf. Robotics and Automation*, pp. 1004 - 1009, Kobe, Japan, 2009.
19. A.A. Julius, G.J. Pappas, **Probabilistic testing for stochastic hybrid systems**, in the *Proc. IEEE Conf. Decision and Control*, pp. 4030 - 4035, Cancun, Mexico, 2008.
20. A.A. Julius, M. Imielinski, G.J. Pappas, **Analysis of metabolic networks using convex programming**, in the *Proc. IEEE Conf. Decision and Control*, pp. 762 - 767, Cancun, Mexico, 2008.
21. M.M. Zavlanos, A.A. Julius, S.P. Boyd and G.J. Pappas, **Identification of stable genetic networks using convex programming**, in the *Proc. American Control Conference*, pp. 2755 - 2760, Seattle, USA, 2008.
22. A.A. Julius, M.S. Sakar, A. Bemporad, G.J. Pappas, **Hybrid model predictive control of induction of *Escherichia coli***, in the *Proc. IEEE Conf. Decision and Control*, pp. 3913 - 3918, New Orleans, USA, 2007.
23. A. D’Innocenzo, A.A. Julius, G.J. Pappas, M.D. Di Benedetto, S. Di Gennaro, **Verification of temporal properties on hybrid automata by simulation relations**, in the *Proc. IEEE Conf. Decision and Control*, pp. 4039 - 4044, New Orleans, USA, 2007.
24. A. D’Innocenzo, A.A. Julius, M.D. Di Benedetto, G.J. Pappas, **Approximate timed abstractions of hybrid automata**, in the *Proc. IEEE Conf. Decision and Control*, pp. 4045-4050, New Orleans, USA, 2007.
25. A.A. Julius, A. Halasz, V. Kumar, G.J. Pappas, **Controlling biological systems: the lactose regulation system of *Escherichia coli***, in the *Proc. American Control Conference*, pp. 1305 - 1310, New York, USA, 2007.
26. A.A. Julius, A. Halasz, V. Kumar, G.J. Pappas, **Finite state abstraction of a stochastic model of the lactose regulation system of *Escherichia coli***, in the *Proc. IEEE Conf. Decision and Control*, pp. 19 - 24, San Diego, USA, 2006.
27. A.A. Julius, G.J. Pappas, **Approximate equivalence and approximate synchronization of metric transition systems**, in the *Proc. IEEE Conf. Decision and Control*, San Diego, USA, 2006.
28. P. Tabuada, A. Ames, A.A. Julius, G.J. Pappas, **Approximate reduction of dynamical systems**, in the *Proc. IEEE Conf. Decision and Control*, San Diego, USA, 2006.
29. A. Girard, A.A. Julius, G.J. Pappas, **Approximate simulation relations for hybrid systems**, in the *Proc. IFAC Conf. Analysis and Design of Hybrid Systems*, Alghero, Italy, 2006.
30. A.A. Julius, A. Girard, G.J. Pappas, **Approximate bisimulation for a class of stochastic hybrid systems**, in the *Proc. American Control Conference*, Minneapolis, USA, 2006.
31. S.Strubbe, A.J. van der Schaft, A.A. Julius, **Value passing for communicating piecewise deterministic Markov processes**, in the *Proc. American Control Conference*, Minneapolis, USA, 2006.
32. A.A. Julius, M.N. Belur, **Behavioral control in the presence of disturbances**, in the *Proc. IEEE Conf. Decision and Control*, pp. 155 - 160, Seville, Spain, 2005.
33. A.A. Julius, A.J. van der Schaft, **Bisimulation as congruence in the behavioral setting**, in the *Proc. IEEE Conf. Decision and Control*, pp. 814 - 819, Seville, Spain, 2005.
34. A.A. Julius, J.W. Polderman, A.J. van der Schaft, **Controller with minimal interaction**, in the *Proc. IFAC World Congress*, Prague, Czech Republic, 2005.
35. A.A. Julius, A.J. van der Schaft, **State maps of general behaviors, their lattice structure and bisimulations**, in the *Proc. Conference on Mathematical Theory of Networks and Systems*, Leuven, Belgium, 2004.
36. A.A. Julius, A.J. van der Schaft, **A behavioral framework for compositionality: linear systems, discrete event systems and hybrid systems**, in the *Proc. Conference on Mathematical Theory of Networks and Systems*, Leuven, Belgium, 2004.
37. J.C. Willems, M.N. Belur, A.A. Julius, H.L. Trentelman, **The canonical controller and its regularity**, in the *Proc. 42nd IEEE Conf. Decision and Control*, pp 1639-1644, Hawaii, USA, 2003.

38. A.A. Julius, A.J. van der Schaft, Compatibility of behavioral interconnections, in the *Proc. European Control Conf.*, Cambridge, UK, 2003.
39. S.N. Strubbe, A.A. Julius, A.J. van der Schaft, Communicating Piecewise Deterministic Markov Processes, in the *Proc. IFAC Conf. Analysis and Design of Hybrid Systems*, pp 349-354, St. Malo, France, 2003.
40. A.A. Julius, S.N. Strubbe, A.J. van der Schaft, Control of hybrid behavioral automata by interconnection, in the *Proc. IFAC Conf. Analysis and Design of Hybrid Systems*, pp 135-140, St. Malo, France, 2003.
41. A.J. van der Schaft, A.A. Julius, **Achievable behavior by composition**, in the *Proc. IEEE Conf. Decision and Control*, pp 7-12, Las Vegas, USA, 2002.
42. A.A. Julius, A.J. van der Schaft, **The maximal controlled invariant sets of switched linear systems**, in the *Proc. IEEE Conf. Decision and Control*, pp 3174-3179, Las Vegas, USA, 2002.
43. O.E. Kaiser, A.A. Julius, S. Pietrzko, M. Morari, Uncontrollable modes in double wall panels, in the *Proc. 17th Int. Congress on Acoustics*, Paper no. 7P.09., Rome, Italy, 2001.

Technical reports

1. A.A. Julius, M. Zavlanos, S. Boyd, G.J. Pappas, Genetic network identification using convex programming, Technical Report MS-CIS-07-20, Department of Computer and Information Science, University of Pennsylvania, 2007.
2. A.A. Julius, O.E. Kaiser, S. Pietrzko, M. Morari, *Modeling, optimisation, and analysis of noise transmission through a double panes system*, Technical report AUT00-17, Automatic Control Lab, Dept. Electrical Engineering, ETH Zurich, 2000.

Technical workshop speaker

1. (May 2011) IM-CPS: International Symposium on Interdisciplinary Modeling of Cyber Physical Systems, University of Manchester, UK. Organizer: Manuela Bujorianu.
2. (May 2009) DIMACS Workshop on Control Theory and Dynamics in Systems Biology, Rutgers University, USA. Organizers: Eduardo Sontag and Patrick De Leenheer.
3. (April 2009) HSCB 2009: Hybrid Systems Approaches to Computational Biology, at the 2009 CPS Week, San Francisco, USA. Organizer: Calin Belta.
4. (April 2009) Second International Workshop on Numerical Software Verification, at the 2009 CPS Week, San Francisco, USA. Organizers: Georgios Fainekos and Sriram Sankaranarayanan.
5. (December 2008) Stochastic Hybrid Systems Workshop, at the IEEE 47th Conf. Decision and Control, Cancun, Mexico. Organizer: Alessandro Abate.