Peter J. Seiler

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Education

Jan 97 – Dec 01	**Doctor of Philosophy in Mechanical Engineering**
	University of California, Berkeley
	Thesis: "Coordinated Control of Unmanned Aerial Vehicles"
	Advisors: Karl Hedrick and Raja Sengupta
Aug 92 – May 96	**Bachelor of Science in Mechanical Engineering**
	Bachelor of Science in Mathematics
	University of Illinois at Urbana-Champaign

Professional Experience

Mar 19 – Present	**Associate Professor, Russell J. Penrose Faculty Fellow**
Aug 16 – Feb 19	**Associate Professor**
Aug 11 – Aug 16	**Assistant Professor**
Nov 08 – Aug 11	**Senior Research Associate**
	Aerospace Engineering and Mechanics
	University of Minnesota, Twin Cities, MN
Aug 01 - Present	**Consultant - Control Design Software**
Aug 15 – Present	The Mathworks, Natick, MA
Aug 01 – Aug 15	MUSYN, Inc., Minneapolis, MN
Aug 04 – Nov 08	**Principal Scientist R&D**
	Honeywell Labs, Aerospace Electronic Systems, Minneapolis, MN
Dec 02 – Aug 04	**Assistant Professor**
	Department of Mechanical and Industrial Engineering
	University of Illinois, Urbana-Champaign, IL
Jan 02 – Nov 02	**Visiting Postdoctoral Scholar**
	Department of Mechanical Engineering
	University of California, Berkeley, CA

Jan 97 – Dec 01	**Graduate Research Assistant**
	Vehicle Dynamics and Control Lab
	University of California, Berkeley, CA

Awards

2019	Russel J. Penrose Faculty Fellowship
2018	Prize for the Development of the Hungarian Aeronautical Science, Hungarian Scientific Association for Transport
2016	Energy Systems Best Paper Award at the ASME Dynamic Systems and Control Conference
2014	Univ. of Minn. Postdoctoral Assoc. Outstanding Postdoctoral Mentor, Honorable Mention
2013	NSF Faculty Early Career Development (CAREER) Award
2004	Honeywell Bravo Silver Award for work on the 787 Flight Control Electronics
2003	O. Hugo Schuck Award for best paper at the American Control Conference
2001	Outstanding Graduate Student Instructor, University of California, Berkeley
1996	Bronze Tablet, Awarded to the top 3% of graduating class, University of Illinois
1996	B.T. Chao Award, Awarded to the outstanding senior in Mechanical Engineering
1996	Thiokol Award, Awarded for excellence in engineering design, University of Illinois

Teaching

Automatic Control Systems (AEM4321/EE4231), Robust Multivariable Control Systems (AEM8421/EE5235), Convex Optimization Methods in Control (AEM8423), Statics (AEM2011), Mechanics of Flight (AEM 2301), Flight Dynamics and Control (AEM 4303).

Current Graduate Students

Jyot Buch	Fall 2018 -	Robustness analysis of time-varying systems
Sanjana Vijayshankar	Spring 2017 -	Active power control for wind farms
Harish Venkataraman	Spring 2017 -	Enhancing robustness in reinforcement learning
Jordan Hoyt	Fall 2016 -	Control of wind turbines
Parul Singh	Spring 2015 -	Coordinated control of turbines in a wind farm
Abhineet Gupta	Fall 2014 -	Structural modeling for flexible aircraft

Graduated Ph.D. Students

Raghu Venkataraman	Aerospace Engineering and Mechanics
	(Awarded Doctoral Dissertation Fellowship)
	Ph.D. Thesis: *Fault-Tolerant Flight Control Using One Aerodynamic Control Surface*, June 2018.
	M.S. Thesis: *Reliability Assessment of Actuator Architectures for Unmanned Aircraft*, May 2015.

Aditya Kotikalpudi	Aerospace Engineering and Mechanics
	Robust Flutter Analysis for Aeroservoelastic Systems, April 2017.
	Co-advised with Gary Balas

Masanori Honda	Aerospace Engineering and Mechanics *Temperature Dependent Robust Control of Hard Disk Drives Using Parameter Varying Techniques*, October 2016.
Shu Wang	Mechanical Engineering *Robust LPV Control for Wind Turbines*, July 2016.
Bin Hu	Aerospace Engineering and Mechanics *A Robust Control Perspective on Optimization of Strongly-Convex Functions*, July 2016.
Jen Annoni	Aerospace Engineering and Mechanics **(Awarded Doctoral Dissertation Fellowship)** Ph.D. Thesis: *Modeling and Control of Wind Farms*, May 2016. M.S. Thesis: *Modeling for Wind Farm Control*, May 2014.
David Escobar Sanabria	Aerospace Engineering and Mechanics *Modeling, Robust Control, and Experimetnal Validation of a Supercavitating Vehicle,* May 2015. Co-advised with Gary Balas and Roger Arndt.
Dongwon Lim	Mechanical Engineering *Development of Self-Powered Wireless Structural Health Monitoring (SHM) for Wind Turbine Blade,* January 2015. Co-advised with Sue Mantell.
Paul Freeman	Aerospace Engineering and Mechanics Ph. D. Thesis: *Reliability Assessment for Low-cost Unmanned Aerial Vehicles,* November 2014. M.S. Thesis: *Robust, model-based fault detection for commercial transport air data probes,* November 2011. Co-advised with Gary Balas.
Andrei Dorobantu	Aerospace Engineering and Mechanics Ph.D. Thesis: *Test Platforms for Model-Based Flight Research,* September 2013. M.S. Thesis: *Time Delay Margin Analysis for Adaptive Flight Control Laws,* December 2010. Co-advised with Gary Balas.

Arda Ozdemir   Aerospace Engineering and Mechanics
                      Ph.D. Thesis: *Preview control for wind turbines,* January 2013.
                      M.S. Thesis: *Effects of Disturbance Augmented Control Design for Wind
                      Turbines*, November 2010.
                      Co-advised with Gary Balas.

Abhijit Chakraborty   Aerospace Engineering and Mechanics
                      *Nonlinear Robustness Analysis Tools for Flight Control Law Validation &
                      Verification,* September 2012.
                      Co-advised with Gary Balas.

Tim Wheeler   Mechanical Engineering, University of California, Berkeley
                      Probabilistic Performance Analysis of Fault Diagnosis Schemes, December 2011.
                      Co-advised with Andrew Packard.

Graduated Masters Students

Sally Ann Keyes   Aerospace Engineering and Mechanics
                      *A Newtonian Development of the Mean-Axis Dynamics with Example and
                      Simulation*, May 2017.

Inchara Lakshminarayan   Aerospace Engineering and Mechanics
                      Model-based Fault Detection for Low-cost UAV Actuators, September 2016.

Adria Serra Moral   Aerospace Engineering and Mechanics
                      *Flutter Suppression of a Flexible Flying-Wing UAV Using the Leading Edge
                      Stagnation Point Sensor,* September 2016.

Daniel Showers   Aerospace Engineering and Mechanics
                      System Identification for the Clipper Liberty C96 Wind Turbine, June 2014.

Janos Polgar   Aerospace Engineering and Mechanics
                      Confidence metrics analysis of a fixed-wing UAV, December 2013.
                      Co-advised with Gary Balas.

Will Thorson   Electrical and Computer Engineering
                      *Design and Implementation of a Control System for the Mesabi V27 Wind
                      Turbine*, May 2013.

Visitors and Postdoctoral Researchers

Shu Wang   Jan 2017 – Sep 2017
Daniel Ossmann   Aug 2015 – Jan 2017

Marcio Lacerda	Aug 2016 – July 2016
Harald Pfifer	Apr 2013 – May 2016
Julian Theis	June 2015 – May 2016
Ann-Kathrin Schug	Feb 2016 – Apr 2016
Bela Takarics	Dec 2013 – Aug 2015
Tamas Peni	Mar 2014 – Aug 2014

Undergraduate Students

Apurva Badithela	Spring 2015 - Summer 2018	Modeling of UAV servo actuators (UROP)
Joseph Habeck	Fall 2015 – Spring 2017	Experimental Moment of Inertia Estimation (UROP)
Katherine Wilson	Fall 2016 – Spring 2017	Control of a Quadrotor (EE Honors Thesis)
Lindsay Taylor	Fall 2015 – Spring 2017	Design of small wind turbine for wind tunnel tests (REU)
Katherine Glasheen	Spring 2015 – Spring 2016	Design of small wind turbine for wind tunnel tests (REU)
Thomas Georgiou	Spring 2014- Fall 2014	Control of multiple turbines (UROP)
Erik Bergquist	Summer 2014	Build and flight tests of reliable UAV
Kieran McCabe	Summer 2013 - Spring 2014	UAV Bus Architectures
Brian Comiskey	Spring 2013	Dynamometer for testing of small actuators
Ryan Carlson	Fall 2012-Spring 2013	Actuator modeling for small UAVs (UROP)
Caleb Carlson	Spring 2012-Spring 2013	Yaw control for wind turbines (UROP)

Journal Publications

1. R. Venkataraman and P. Seiler, "System Identification for a Small, Rudderless, Fixed-Wing Unmanned Aircraft," accepted to the AIAA Journal of Aircraft, 2019.
2. A. Iannelli, P. Seiler, and A. Marcos, "Worst-case disturbances for Time-Varying systems with application to flexible aircraft," accepted to the AIAA Journal of Guidance, Control, and Dynamics, 2019.
3. R. Venkataraman and P. Seiler, "Fault-Tolerant Flight Control Using One Aerodynamic Control Surface," accepted to the AIAA Journal of Guidance, Control, and Dynamics, 2019.
4. J. Carrasco and P. Seiler, "Conditions for the equivalence between IQC and graph separation stability results," accepted to the International Journal of Control, 2019.
5. R. Venkataraman, P. Bauer, P. Seiler, and B. Vanek, "Comparison of Fault Detection and Isolation Methods for a Small Unmanned Aircraft," Control Engineering Practice, vol. 84, p. 365-376, 2019.
6. P. Seiler, R. Moore, C. Meissen, M. Arcak, and A.K. Packard, "Finite Horizon Robustness Analysis of LTV Systems Using Integral Quadratic Constraints", Automatica, vol. 100, p. 135-143, 2019.
7. S.A. Keyes, P. Seiler, and D.K. Schmidt, "Newtonian Development of the Mean-Axis Reference Frame for Flexible Aircraft", AIAA Journal of Aircraft, Vol. 56, No. 1, p. 392-397, 2019.
8. S. Bhaban, S. Talukdar, M. Li, T. Hays, P. Seiler, and M. Salapaka, "Single Molecule Studies Enabled by Model Based Robust Control Design," IEEE/ASME Transactions on Mechatronics, vol. 23, no. 4, p.1532-1542, 2018.
9. S. Wang and P. Seiler, "Gridded-based LPV control of a Clipper Liberty Wind Turbine," Wind Energy, vol. 21, no. 11, p. 1106-1120, 2018.

10. S. Sivaranjani, J.R. Forbes, P. Seiler, and V. Gupta "Conic-Sector-Based Analysis and Control Synthesis for Linear Parameter Varying Systems," IEEE Control Systems Letters, vol. 2, no. 2, p. 224-229, 2018.

11. H. Choi, P. Seiler, and S. Dhople, "Propagating Uncertainty in Power Flow With the Alternating Direction Method of Multipliers," IEEE Transactions on Power Systems, vol. 33, no. 4, p. 4124 - 4133, 2018.

12. R. Venkataraman and P. Seiler, "Convex LPV synthesis of estimators and feedforwards using integral quadratic constraints," International Journal of Robust and Nonlinear Control, vol. 28, p. 953-975, 2018.

13. J. Theis, P. Seiler, and H. Werner, "LPV Model Order Reduction by Parameter-Varying Oblique Projection", IEEE Transactions on Control Systems Technology, vol. 26, no. 3, p.773-784, 2018.

14. T.J. Leung, J.H. Rife, P. Seiler, and R. Venkataraman, "Evaluation of Alternative Fault-Tree Models for Fault Detection, Isolation, and Recovery Algorithms," AIAA Journal of Aerospace Information Systems, vol. 14, no. 9, p. 517-522, 2017.

15. D. Ossmann, J. Theis, and P. Seiler, "Load Reduction on a Clipper Liberty Wind Turbine with Linear Parameter-Varying Individual Blade-Pitch Control," Wind Energy, vol. 20, p.1771-1786, 2017.

16. M. Lacerda and P. Seiler, "Stability of uncertain systems using Lyapunov functions with non-monotonic terms", Automatica, vol. 82, p. 187-193, 2017.

17. J. Fry, M. Farhood, and P. Seiler, "IQC-Based Robustness Analysis of Discrete-Time Linear Time-Varying Systems," International Journal of Robust and Nonlinear Control, vol. 27, no. 16, p. 3135-3157, 2017.

18. H. Choi, P. Seiler, and S. Dhople, "Propagating Uncertainty in Power-system DAE Models with Semidefinite Programming," IEEE Transactions on Power Systems, vol. 32, no. 4, p.3146-3156, 2017.

19. A.K. Schug, P. Seiler, and H. Pfifer, "Robustness Margins for Linear Parameter Varying Systems," Aerospace Lab Journal, issue 13, paper number AL13-06, 2017.

20. B. Hu, M.J. Lacerda, and P. Seiler, "Robustness Analysis of Uncertain Discrete-Time Systems with Dissipation Inequalities and Integral Quadratic Constraints," International Journal of Robust and Nonlinear Control, vol. 27, p. 1940-1962, 2017.

21. R. Venkataraman, P. Seiler, M. Lukátsi, B. Vanek, "Reliability Assessment of Actuator Architectures for Unmanned Aircraft," AIAA Journal of Aircraft, vol. 54, no. 3, p.955-966, 2017.

22. H. Pfifer, R. Venkataraman, and P. Seiler, "Quantifying Loss of Control Envelopes via Robust Tracking Analysis," accepted to the AIAA Journal of Guidance, Control, and Dynamics: Special Issue on Aircraft Loss of Control Technologies with Application to Resilient Autonomous & Semi-Autonomous Systems for Safety-Critical Applications, vol. 40, no. 4, p.1042-1050,2017.

23. J. Annoni and P. Seiler, "A Method to Construct Reduced-Order Parameter-varying Models," International Journal of Robust and Nonlinear Control, vol. 27, no.4, p.582-597, 2017.

24. D. Lim, S.C. Mantell, and P. Seiler, "Wireless monitoring algorithm for wind turbine blades using Piezo-electric energy harvesters," Wind Energy, vol. 20, no. 3, p.551- 565, 2017.

25. I. Lakshminarayan, R. Venkataraman, D. Ossman, P. Seiler, and D. Gebre-Egziabher, "Designing Reliability Into Small UAS Avioinics: Part 2", Inside GNSS, p.54-57, August/September 2016.

26. I. Lakshminarayan, R. Venkataraman, D. Ossman, P. Seiler, and D. Gebre-Egziabher, "Designing Reliability Into Small UAS Avioinics: Part 1", Inside GNSS, p.62-65, June/July 2016.

27. T. Peni and P. Seiler, "Computation of lower bounds for the induced L2 norm of LPV systems," International Journal of Robust and Nonlinear Control, vol. 26, no. 4, p. 646-661, 2016.

28. B. Hu and P. Seiler, "Exponential Decay Rate Conditions for Uncertain Linear Systems Using Integral Quadratic Constraints," IEEE Transactions on Automatic Control, vol. 61, no. 11, p.3561-3567, 2016.

29. H. Pfifer and P. Seiler, "Less Conservative Robustness Analysis of Linear Parameter Varying Systems Using Integral Quadratic Constraints," International Journal of Robust and Nonlinear Control, vol. 26, no. 16, p.3580-3594, 2015.
30. S. Wang, H. Pfifer, and P. Seiler, "Robust Synthesis for Linear Parameter Varying Systems Using Integral Quadratic Constraints," Automatica, vol. 68, p.111-118, 2016.
31. J. Annoni, K. Howard, P. Seiler, and M. Guala, "An experimental investigation on the effect of individual turbine control on wind farm dynamics", Wind Energy, vol. 19, p.1453-1467, 2015.
32. H. Pfifer and P. Seiler, "Robustness Analysis of Linear Parameter Varying Systems Using Integral Quadratic Constraints," International Journal of Robust and Nonlinear Control, vol. 25, p. 2843-2864, 2015.
33. P. Seiler, "Stability Analysis with Dissipation Inequalities and Integral Quadratic Constraints," IEEE Transactions on Automatic Control, vol. 60, no. 6, p.1704-1709, 2015.
34. B. Hu and P. Seiler, "Pivotal decomposition for reliability analysis of fault tolerant control systems on unmanned aerial vehicles," Reliability Engineering & System Safety, vol. 140, p.130-141, 2015.
35. H. Pfifer and P. Seiler, "Integral Quadratic Constraints for Delayed Nonlinear and Parameter-Varying Systems," Automatica, vol. 56, p.36-43, 2015.
36. B. Hu and P. Seiler, "A Probabilistic Method for Certification of Analytically Redundant Systems," International Journal of Applied Mathematics and Computer Science, vol. 25, no. 1, p.103-116, 2015.
37. F.A. Lie, H. Mokhtarzadeh, P. Freeman, J. Larson, T. Layh, B. Hu , B. Taylor, D. Gebre-Egziabher, P. Seiler, and G. Balas, "An Airborne Experimental Test Platform Part 2", Inside GNSS, p.40-47, May/June 2014.
38. F.A. Lie, A. Dorobantu, B. Taylor, D. Gebre-Egziabher, P. Seiler, and G. Balas, "An Airborne Experimental Test Platform Part 1", Inside GNSS, p.44-58, March/April 2014.
39. C. Moreno, P. Seiler, and G. Balas, "Model Reduction for Aeroservoelastic Systems", Journal of Aircraft, vol. 51, no. 1, p.280-290, 2014.
40. P. Freeman, P. Seiler, and G.J. Balas, "Air data system fault modeling and detection," Control Engineering Practice, vol. 21, no. 10, p.1290-1301, 2013.
41. A. Ozdemir, P. Seiler, and G.J. Balas, "Design Trade-offs of Wind Turbine Preview Control," IEEE Control Systems Technology, vol. 21, no. 4, p.1143-1154, 2013.
42. E. Summers, A. Chakraborty, W. Tan, U. Topcu, P. Seiler, G. Balas, and A. Packard, "Quantitative local analysis for nonlinear systems," International Journal of Robust and Nonlinear Control, vol. 23, no. 10, p.1115-1135, 2013.
43. A. Dorobantu, P. Seiler and G. Balas, "Time Delay Margin Analysis for an Adaptive Controller," AIAA Journal of Guidance, Dynamics and Control, vol. 35, no. 5, p.1418-1425, September/October 2012.
44. A. Ozdemir, P. Seiler, and G.J. Balas, "Performance of Disturbance Augmented Control Design in Turbulent Wind Conditions," Mechatronics, Special Issue on ''Past, present and future modeling and control of wind turbines", vol. 21, no. 4, p.634-644, June 2011.
45. A. Chakraborty, P. Seiler and G.J. Balas, "Nonlinear region of attraction analysis for flight control verification and validation," Control Engineering Practice, vol. 19, no. 4, p.335-345, April 2011.
46. B. Vanek, P. Seiler, G.J. Balas, and Jozsef Bokor, "Robust Model Matching for Geometric Fault Detection Filters: A Commercial Aircraft," Automatic Control in Aerospace, http://www.aerospace.unibo.it/, March 2011.
47. A. Chakraborty, P. Seiler and G.J. Balas, "Susceptibility of F/A-18 Flight Controllers to the Falling Leaf Mode: Linear Analysis," AIAA Journal of Guidance, Dynamics and Control, vol. 34, no. 1, p.57-72, January 2011.

48. A. Chakraborty, P. Seiler and G.J. Balas, "Susceptibility of F/A-18 Flight Controllers to the Falling Leaf Mode: Nonlinear Analysis," AIAA Journal of Guidance, Dynamics and Control, vol. 34, no. 1, p.73-85, January 2011.

49. U. Topcu, A. Packard, P. Seiler, and G. Balas, "Ask the experts: Help on SOS," IEEE Control Systems Magazine, vol. 30, no. 4, p.18-23, August 2010.

50. P. Seiler, A. Packard, and G. Balas, "A gain-based lower bound algorithm for real and mixed mu problems," Automatica, vol. 46, no. 3, p.493-500, March 2010.

51. U. Topcu, A. Packard, P. Seiler, and G. Balas, "Robust Region-of-Attraction Estimation," IEEE Transactions on Automatic Control, vol. 55, no.1, p.137-142, January 2010.

52. P. Seiler, U. Topcu, A. Packard, and G. Balas, "Parameter-Dependent Lyapunov Functions for Linear Systems With Constant Uncertainties," IEEE Transactions on Automatic Control, vol. 54, no.10, p.2410-2416, October 2009.

53. U. Topcu, A. Packard, and P. Seiler, "Local Stability Analysis Using Simulations and Sum-of-Squares Programming," Automatica, vol. 44, no. 10, p.2669-2675, 2008.

54. P. Seiler, M. Frenklach, A. Packard, and R. Feeley, "Numerical approaches for collaborative data processing," Optimization and Engineering, vol. 7, no. 4, p.459-479, 2006.

55. G. Smith, M. Frenklach, R. Feeley, A. Packard, and P. Seiler, "A System Analysis Approach to Atmospheric Observations and Models: the Mesospheric HOx Dilemma," Journal of Geophysical Research (Atmospheres), vol. 111, Paper No. D23301, 2006.

56. P. Seiler and R. Sengupta, "An H_∞ Approach to Networked Control," IEEE Transactions on Automatic Control, vol. 50, no.3, p.356-364, 2005.

57. M. Frenklach, A. Packard, P. Seiler, and R. Feeley, "Collaborative Data Processing in Developing Predictive Models of Complex Reaction Systems," International Journal of Chemical Kinetics, vol. 36, no. 1, p.57-66, 2004.

58. R. Feeley, A. Packard, P. Seiler, and M. Frenklach, "Consistency of a Reaction Dataset," Journal of Physical Chemistry A, vol. 108, p.9573-9583, 2004.

59. P. Seiler, A. Pant, and J.K. Hedrick, "String Instabilities in Formation Flight: Limitations Due to Integral Constraints," ASME Journal of Dynamic Systems, Measurement and Control, vol. 126, no. 4, p.873-879, 2004.

60. P. Seiler, A. Pant, and K. Hedrick, "Disturbance propagation in vehicle strings," IEEE Transactions on Automatic Control, vol. 49, no. 10, p.1835-1841, October 2004.

61. P. Seiler, A. Pant, and J. K. Hedrick, "A Systems Interpretation for Observations of Bird V-formations," Journal of Theoretical Biology, vol. 221, no. 2, p.279-287, 2003.

62. P. Seiler and R. Sengupta, "A Bounded Real Lemma for Jump Systems," IEEE Transactions on Automatic Control, vol. 48, no.9, p.1651-1654, 2003.

63. C. Smith and P. Seiler, "Estimation with Lossy Measurements: Jump Estimators for Jump Systems," IEEE Transactions on Automatic Control, vol. 48, no.12, p.2163-2171, 2003.

64. P. Seiler and A. Alleyne, "Dissipative Adaptive Control for Strict Feedback Form Systems," European Journal of Control, vol. 8, no. 5, p.435-444, 2002.

65. A. Pant, P. Seiler, and K. Hedrick, "Mesh stability of look-ahead interconnected systems," IEEE Transactions on Automatic Control, vol. 47, no. 2, p.403-407, 2002.

66. P. Seiler, B. Song, and J. K. Hedrick, "Development of a Collision Avoidance System," Automotive Engineering International, vol. 106, no. 9, p.24-28, 1998.

Conference Papers

1. L. Lessard and P. Seiler, "Direct Synthesis of Iterative Algorithms with Bounds on Achievable Worst-Case Convergence Rate," submitted to the IEEE Conference on Decision and Control, 2019.
2. H.K. Venkataraman and P. Seiler, "Recovering Robustness in Model-Free Reinforcement Learning," accepted to the American Control Conference, 2019.
3. A. Badithela and P. Seiler, "Analysis of the Heavy-ball algorithm using Integral Quadratic Constraints," accepted to the American Control Conference, 2019.
4. P. Singh and P. Seiler, "Controlling the Meandering Wake Using Measurement Feedback," accepted to the American Control Conference, 2019.
5. H. Ye, A.K. Packard, M. Arcak and P. Seiler, "Finite Horizon Backward Reachability Analysis and Control Synthesis for Uncertain Nonlinear Systems," accepted to the American Control Conference, 2019.
6. S. Vijayshankar, V. Purba, P. Seiler, and S. Dhople, "Reduced-order Aggregate Dynamical Model for Wind Farms," accepted to the American Control Conference, 2019.
7. B. Patartics, P. Seiler, and B. Vanek, "Structured Robust Synthesis with Parameter-Dependent D-Scales," accepted to the American Control Conference, 2019.
8. P. Seiler, "IQC Analysis of Uncertain LTV Systems with Rational Dependence on Time," IEEE Conference on Decision and Control, p. 7213-7218, 2018.
9. A. Iannelli, P. Seiler, and A. Marcos, "Estimating the Region of Attraction of Uncertain Systems with Integral Quadratic Constraints," IEEE Conference on Decision and Control, p. 3922-3927, 2018.
10. A. Iannelli, P. Seiler, and A. Marcos, "An Equilibrium-Independent Region of Attraction Formulation for Systems with Uncertainty-Dependent Equilibria," IEEE Conference on Decision and Control, p. 725-730, 2018.
11. T. Luspay, T. Peni, P. Seiler, and B. Vanek, "A Model Decomposition Framework for LPV Systems," IEEE Conference on Decision and Control, p. 5898-5903, 2018.
12. P. Seiler, "An Iterative Algorithm to Estimate Invariant Sets for Uncertain Systems," American Control Conference, p. 4249-4254, 2018.
13. S. Vijayshankar and P. Seiler, "Time-Varying Robustness Margins for Wind Turbines," American Control Conference, p.1503-1508, 2018.
14. S. Wang, P. Seiler, and Z. Sun, "Individual Pitch Control of A Clipper Wind Turbine for Blade In-plane Load Reduction," American Control Conference, p. 1491-1496, 2018.
15. B. Takarics, B. Vanek, A. Kotikalpudi, and P. Seiler, "Flight Control Oriented Bottom-up Nonlinear Modeling of Aeroelastic Vehicles," accepted to the IEEE Aerospace Conference, 2018.
16. P. Bauer, R. Venkataraman, B. Vanek, P. Seiler, and J. Bokor, "Fault Detection and Basic In-Flight Reconfiguration of a Small UAV Equipped with Elevons," 10th IFAC Symposium on Fault Detection, Supervision and Safety for Technical Processes (Safeprocess), p.600-607, 2018.
17. T. Truong, P. Seiler, and L. Linderman, "Jump Estimators for Lossy Wireless Structural Control", 7th World Conference on Structural Control and Monitoring, 2018.
18. T. Truong, P. Seiler, and L. Linderman, "Seismic Fragility of Controlled Structures: on the Effect of Signal Loss", 11th US National Conference on Earthquake Engineering, 2018.
19. B. Hu, P. Seiler, and A. Rantzer, "A Unified Analysis of Stochastic Optimization Methods Using Jump System Theory and Quadratic Constraints," Proceedings of Machine Learning Research: Conference On Learning Theory (COLT), vol. 65, p. 1157-1189, 2017.
20. P. Singh and P. Seiler, "Controlling a Meandering Wake: Insights from Full-Information Control," American Control Conference, p. 697-702, 2017.

21. A. Gupta, W. Zhao, C. Regan, P. Seiler, and R.K. Kapania, "Identification of Symmetrical Structures with Fabrication and Damage Induced Asymmetry," International Conference on Experimental Vibration Analysis for Civil Engineering Structures, p. 683-693, 2017.

22. W. Zhao, N. Muthirevula, R.K. Kapania, A. Gupta, C.D. Regan, and P. Seiler, "A Subcomponent-based Finite Element Model Updating for a Composite Flying Wing Aircraft," AIAA Science and Technology Forum and Exposition, AIAA 2017-1393, 2017.

23. S.A. Keyes, P. Seiler, and D. Schmidt, "A Newtonian Development of the Mean-Axis Equations of Motion for Flexible Aircraft," AIAA Science and Technology Forum and Exposition, AIAA 2017-1395, 2017.

24. Z. Szabo, P. Seiler, J. Bokor, "Internal stability and loop-transformations: an overview on LFTs, Möbius transforms and chain scattering," IFAC World Congress, p. 7547-7553, 2017.

25. J. Annoni, P. Seiler, and M. Jovanovic, "Sparsity-Promoting Dynamic Mode Decomposition for Systems with Inputs," IEEE Conference on Decision and Control, p.6506-6511, 2016.

26. H. Choi, P. Seiler, and S. Dhople, "A Convex Optimization Method to Propagate Uncertainty in Power Flow," IEEE Global Conference on Signal and Information Processing, p. 846-850, 2016.

27. D. Ossmann, J. Theis, and P. Seiler, "Robust Control Design for Load Reduction on A Liberty Wind Turbine," ASME Dynamic Systems and Control Conference, 2016. **(Energy Systems Best Paper Award)**

28. M. Lacerda and P. Seiler, "LPV Filter Design for Discrete-Time Systems with Time-Domain IQCs," IEEE Conference on Computer Aided Control System Design (CACSD), p. 1042-1047, 2016.

29. J. Annoni, P.M.O. Gebraad, and P. Seiler, "Wind farm flow modeling using an input-output reduced-order model," American Control Conference, p.506-512, 2016.

30. J. Theis, P. Seiler, and H. Werner, "Model Order Reduction by Parameter-Varying Oblique Projection," American Control Conference, p. 4586-4591, 2016.

31. R. Venkataraman and P. Seiler, "Robust LPV Estimator Synthesis Using Integral Quadratic Constraints," American Control Conference, p. 4611-4616, 2016.

32. J. Theis, H. Pfifer, and P. Seiler, "Robust Control Design for Active Flutter Suppression," AIAA Science and Technology Forum and Exposition, AIAA 2016-1751, 2016.

33. A. Kotikalpudi, H. Pfifer, and P. Seiler, "Sensitivity of Robust Flutter Boundary to Model Uncertainties in Aeroservoelastic Systems," AIAA Science and Technology Forum and Exposition, AIAA 2016-1752, 2016.

34. A. Gupta, P. Seiler, and B. Danowsky, "Ground Vibration Tests on a Flexible Wing Aircraft," AIAA Science and Technology Forum and Exposition, AIAA 2016-1753, 2016.

35. R. Venkataraman and P. Seiler, "Safe Flight Using One Aerodynamic Control Surface," AIAA Science and Technology Forum and Exposition, AIAA 2016-0634, 2016.

36. J. Annoni, J. Nichols, and P. Seiler, "Wind Farm Modeling and Control Using Dynamic Mode Decomposition," AIAA Science and Technology Forum and Exposition, AIAA 2016-2201, 2016.

37. H. Choi, P. Seiler, and S. Dhople, "Uncertainty Propagation with Semidefinite Programming," IEEE Conference on Decision and Control, p.5966-5971, 2015.

38. H. Choi, P. Seiler, and S. Dhople, "Robust power systems stability assessment with sum of squares optimization," IEEE Power Energy Society General Meeting, p.1-5, 2015.

39. S. Sivaranjani, V. Gupta, and P. Seiler, "Passivity of linear parameter varying systems with intermittent non-passive behavior," IEEE Conference on Decision and Control, p. 753-758, 2015.

40. J. Carrasco and P. Seiler, "Integral Quadratic Constraint Theorem: A topological separation approach," IEEE Conference on Decision and Control, p.5701-5706, 2015.

41. H. Pfifer, C. P. Moreno, J. Theis, A. Kotikapuldi, A. Gupta, B. Takarics, and P. Seiler, "Linear Parameter Varying Techniques Applied to Aeroservoelastic Aircraft: In Memory of Gary Balas," 1st IFAC Workshop on Linear Parameter Varying Systems (LPVS), p. 103-108, 2015.

42. A. Hjartarson, P. Seiler, and A. Packard, "LPVTools: A Toolbox for Modeling, Analysis, and Synthesis of Parameter Varying Control Systems," 1st IFAC Workshop on Linear Parameter Varying Systems (LPVS), p. 139-145, 2015.

43. A. Soumelidis, Z. Szabó, P. Seiler, A. Gupta, and J. Bokor, "Identification of flexible wing aircraft models using hyperbolic metrics," Mediterranean Conference on Control and Automation, p.827-832, 2015.

44. R. Venkataraman, M. Lukátsi, B. Vanek, and P. Seiler, "Reliability Assessment of Actuator Architectures for Unmanned Aircraft," 9th IFAC Symposium on Fault Detection, Supervision and Safety of Technical Processes (SafeProcess), p.398-403, 2015.

45. J. Annoni and P. Seiler, "A low-order model for wind farm control", American Control Conference, p. 1721-1727, 2015.

46. B. Takarics and P. Seiler, "Gain Scheduling for Nonlinear Systems via Integral Quadratic Constraints," American Control Conference, p. 811-816, 2015.

47. T. Peni and P. Seiler, "Computation of a lower bound for the induced L2 norm of LPV systems," American Control Conference, p. 114-118, 2015.

48. H. Pfifer and P. Seiler, "Robustness Analysis with Parameter-Varying Integral Quadratic Constraints," American Control Conference, p. 138-143, 2015.

49. J. Annoni, K. Howard, P. Seiler, and M. Guala, "System Identification of a Wind Turbine Array," AIAA Science and Technology Forum: 33rd Wind Energy Symposium, AIAA 2015-0221, 2015.

50. S. Wang and P. Seiler, "LPV Active Power Control and Robust Analysis for Wind Turbines," AIAA Science and Technology Forum: 33rd Wind Energy Symposium, AIAA 2015-1210, 2015.

51. R. Venkataraman and P. Seiler, "Model-Based Detection and Isolation of Rudder Faults for a Small UAS," AIAA Science and Technology Forum: Guidance, Navigation and Control Conference, AIAA 2015-0857, 2015.

52. A. Knoblach, H. Pfifer, and P. Seiler, "Worst Case Analysis of a Saturated Gust Loads Alleviation System," AIAA Science and Technology Forum: Guidance, Navigation and Control Conference, AIAA 2015-0858, 2015.

53. S. Wang, H. Pfifer and P. Seiler, "Robust Synthesis for Linear Parameter Varying Systems Using Integral Quadratic Constraints," IEEE Conference on Decision and Control, p.4789-4794, 2014.

54. M. Honda and P. Seiler, "Uncertainty Modeling for Hard Disk Drives," American Control Conference, p. 3341-3347, 2014.

55. H. Pfifer and P. Seiler, "Robustness Analysis of Linear Parameter Varying Systems Using Integral Quadratic Constraints," American Control Conference, p. 4476-4481, 2014.

56. J. Annoni, P. Seiler, K. Johnson, P. Fleming, and P. Gebraad, "Evaluating Wake Models for Wind Farm Control," American Control Conference, p.2517-2523, 2014.

57. B. Hu and P. Seiler, "Worst-Case False Alarm Analysis of Aerospace Fault Detection Systems," American Control Conference, p.654-659, 2014.

58. A. Hjartarson, P. Seiler, and G. Balas, "LPV Robustness Analysis of Gain Scheduled Flight Control for a Aeroelastic Aircraft," American Control Conference, p. 3778-3783, 2014.

59. X. Yang, J. Annoni, P. Seiler and F. Sotiropoulos, "Modeling the effect of control on the wake of a utility-scale turbine via large-eddy simulation," The Science of Making Torque from Wind, 2014.

60. B. Hu and P. Seiler, "Certification Analysis for a Model-Based UAV Fault Detection System," AIAA Guidance, Navigation and Control Conference, AIAA 2014-0610, 2014.

61. D. Lim, S. Mantell, and P. Seiler, "Wireless Structural Health Monitoring of Wind Turbine Blades Using an Energy Harvester as a Sensor," AIAA Atmospheric Flight Mechanics Conference, AIAA 2014-1395, 2014.

62. S. Wang and P. Seiler, "Gain Scheduled Active Power Control for Wind Turbines," AIAA Atmospheric Flight Mechanics Conference, AIAA 2014-1220, 2014.

63. R. Louca, P. Seiler, and E. Bitar, "A Rank Minimization Algorithm to Enhance Semidefinite Relaxations of Optimal Power Flow," Allerton Conference on Communication, Control, and Computing, p. 1010-1020, 2013.

64. B. Hu and P. Seiler, "Probability Bounds for False Alarm Analysis of Fault Detection Systems," Allerton Conference on Communication, Control, and Computing, p.989-995, 2013.

65. B. Hu and P. Seiler, "A Probabilistic Method for Certification of Analytically Redundant Systems," IEEE Conference on Control and Fault-Tolerant Systems (SysTol'13), p. 13-18, 2013.

66. A. Dorobantu, P. Seiler, and G.J. Balas, "Validating Uncertain Aircraft Simulation Models Using Flight Test Data," AIAA Atmospheric Flight Mechanics Conference, AIAA 2013-4984, 2013.

67. R. Carlson, A. Dorobantu, B.Taylor, and P. Seiler, "Analysis of Modeling Techniques for Low-Cost Actuators," AIAA Atmospheric Flight Mechanics Conference, AIAA 2013-4846, 2013.

68. A. Hjartarson, P. Seiler, and G.J. Balas, "LPV Aeroservoelastic Control using the LPVTools Toolbox," AIAA Atmospheric Flight Mechanics Conference, AIAA 2013-4742, 2013.

69. E. Bitar and P. Seiler, "Coordinated Control of a Wind Turbine Array for Power Maximization," American Control Conference, p.2904-2913, 2013.

70. P. Seiler and A. Ozdemir, "An Optimal Time-Invariant Approximation for Wind Turbine Dynamics Using the Multi-Blade Coordinate Transformation," American Control Conference, p.1444-1449, 2013.

71. D. Lim, S.C. Mantell, P. Seiler, and R. Yang, "Wind Turbine Blades as a Strain Energy Source for Energy Harvesting," 51st AIAA Aerospace Sciences Meeting, AIAA 2013-0457, 2013.

72. A. Ozdemir, P. Seiler, and G. Balas, "Benefits of Preview Wind Information for Region 2 Wind Turbine Control," 51st AIAA Aerospace Sciences Meeting, AIAA 2013-0317, 2013.

73. C.P. Moreno, P. Seiler, and G.J. Balas, "Linear Parameter Varying Model Reduction for Aeroservoelastic Systems," AIAA Atmospheric Flight Mechanics Conference, AIAA 2012-4859, 2012.

74. G.J. Balas, C.P. Moreno, and P. Seiler, "Robust Aeroservoelastic Control Utilizing Physics-Based Aerodynamic Sensing," AIAA Guidance, Navigation and Control Conference, AIAA 2012-4897, 2012.

75. G.J. Balas, P. Seiler, and A.K. Packard "Analysis of an UAV Flight Control System Using Probabilistic mu," AIAA Guidance, Navigation and Control Conference, AIAA 2012-4989, 2012.

76. P. Seiler, A. Ozdemir, and G. Balas, "Performance Limits With Preview Information and Actuator Rate Constraints," American Control Conference, p. 5532-5537, 2012.

77. A. Dorobantu, L.G. Crespo, and P. Seiler, "Robustness Analysis and Optimally Robust Control Design via Sum-of-Squares," 53rd AIAA Structures, Structural Dynamics and Materials Conference, AIAA 2012-1431, 2012.

78. A. Ozdemir, P. Seiler, and G. Balas, "Fundamental Limitations of Preview for Wind Turbine Control," 50th AIAA Aerospace Sciences Meeting, AIAA 2012-1023, 2012.

79. A. Chakraborty, P. Seiler and G.J. Balas, "Local Performance Analysis of Uncertain Polynomial Systems with Applications to Actuator Saturation," 50th IEEE Conference on Decision and Control, p.8176-8181, 2011.

80. T. Wheeler, P. Seiler, A.K. Packard and G.J. Balas, "Performance Analysis of LTV Fault Detection Schemes with Additive Faults," 50th IEEE Conference on Decision and Control, p.3038-3043, 2011.

81. J. Sofrony, C. Moreno, P. Seiler, and G.J. Balas, "Closed-Loop Stabilization of a Flexible Wing Aircraft," IEEE IX Latin American and IEEE Colombian Conference on Automatic Control and Industry Applications, 2011.
82. A. Dorobantu, P. Seiler and G. Balas, "Time Delay Margin Analysis Applied to Model Reference Adaptive Control," AIAA Guidance, Navigation, and Control Conference, AIAA-2011-6437, 2011.
83. P. Seiler, G. Balas, and A. Packard, "Linear Parameter Varying Control for the X-53 Active Aeroelastic Wing," AIAA Guidance, Navigation, and Control Conference, AIAA-2011-6290, 2011.
84. P. Freeman, P. Seiler, and G.J. Balas, "Robust Fault Detection for Commercial Transport Air Data Probes," 18th IFAC World Congress, p. 13723-13728, 2011.
85. A. Ozdemir, P. Seiler, and G.J. Balas, "Wind Turbine Fault Detection Using Counter-Based Residual Thresholding," 18th IFAC World Congress, p. 8289-8294, 2011.
86. B. Vanek, P. Seiler, J. Bokor and G.J. Balas, "Robust Model Matching for Geometric Fault Detection Filters: A Commercial Aircraft Example," 18th IFAC World Congress, p. 7256-7261, 2011.
87. C. Moreno, P. Seiler, G.J. Balas, and J. Sofrony, "Model Reduction of Flexible Aircraft for Flutter Suppression Using Smart Sensors," 6th International Workshop on Advanced Smart Materials and Smart Structures Technology, ANCRiSST2011, 2011.
88. T. Wheeler, P. Seiler, A.K. Packard and G.J. Balas, "Performance Analysis of Fault Detection Systems Based on Analytically Redundant Linear Time-Invariant Dynamics," American Control Conference, p.214-219, 2011.
89. P. Seiler, J. Bokor, B. Vanek, and G. Balas, "Robust Model Matching for Geometric Fault Detection Filters," American Control Conference, p. 226-231, 2011.
90. P. Seiler, B. Vanek, J. Bokor, and G. Balas, "Robust H-infinity Filter Design Using Frequency Gridding," American Control Conference, p. 1801-1806, 2011.
91. B. Vanek, P. Seiler, G.J. Balas, and Jozsef Bokor, "Robust Fault Detection Filter Design for Commercial Aircraft," 1st European Aerospace GNC Conference, 2011.
92. P. Seiler, and G. Balas, "Quasiconvex Sum-of-Squares Programming," IEEE Conference on Decision and Control, p.3337-3342, 2010.
93. P. Seiler, A. Packard, and G. Balas, "A Dissipation Inequality Formulation for Stability Analysis with Integral Quadratic Constraints," IEEE Conference on Decision and Control, p.2304-2309, 2010.
94. J. Bokor, P. Seiler, B. Vanek and G. Balas, "Robust Model Matching for Geometric Fault Detection Filters: A Commercial Aircraft Example," 8th European Workshop on Advanced Control and Diagnosis, p.223-228, 2010.
95. A. Dorobantu, P. Seiler and G. Balas, "Nonlinear Analysis of Adaptive Flight Control Laws," AIAA Guidance, Navigation, and Control Conference, AIAA-2010-8043, 2010.
96. P. Seiler, A. Dorobantu, and G. Balas, "Robustness Analysis of an L1 Adaptive Controller," AIAA Guidance, Navigation, and Control Conference, AIAA-2010-8407, 2010.
97. A. Chakraborty, P. Seiler and G. Balas, "Applications of Linear and Nonlinear Robustness Analysis Techniques to the F/A-18 Flight Control Laws," AIAA Guidance, Navigation, and Control Conference, AIAA-2009-5675, 2009.
98. R. Pandita, A. Chakraborty, P. Seiler and G. Balas, "Reachability and Region of Attraction Analysis Applied to GTM Dynamic Flight Envelope Assessment," AIAA Guidance, Navigation, and Control Conference, AIAA-2009-6258, 2009.
99. U. Topcu, A. Packard, P. Seiler, and G. Balas, "Stability region estimation for systems with unmodeled dynamics," European Control Conference, 2009.
100. P. Seiler, G. Balas, A. Packard, and U. Topcu, "Analytical Validation Tools for Safety Critical Systems," AIAA InfoTech, AIAA-2009-1991, 2009.

101. U. Topcu, A. Packard, P. Seiler, and G. Balas, "Local Stability Analysis For Uncertain Nonlinear Systems Using A Branch-and-Bound Algorithm," American Control Conference, p.3428-3433, 2008.

102. W. Tan, U. Topcu, P. Seiler, G. Balas, and A. Packard, "Simulation-aided Reachability and Local Gain Analysis for Nonlinear Dynamical Systems," IEEE Conference on Decision and Control, p.4097-4102, 2008.

103. K. Krishnaswamy, S. Susca, R. McCroskey, P. Seiler, J. Lukas, O. Kotaba, V. Bageshwar, and S. Ganguli, "Sensor fusion for GNSS denied navigation," ION Position, Location and Navigation Symposium, p.541-551, 2008.

104. A.L. Strahan, G.R. Loe, and P. Seiler, "Orion Entry Flight Control Stability and Performance," Proceedings of the AIAA Guidance, Navigation, and Control Conference, AIAA-2007-6429, 2007.

105. U. Topcu, A. Packard, P. Seiler, and T. Wheeler, "Stability Region Analysis Using Simulations and Sum-of-Squares Programming," American Control Conference, p.6009-6014, 2007.

106. P. Seiler, G. Balas and A. Packard, "A Gain-Based Lower Bound Algorithm for Real and Mixed Mu Problems," IEEE Conference on Decision and Control, p.3548-3553, 2006.

107. S. Prajna, A. Papachristodoulou, P. Seiler, and P. Parrilo, "New Developments in Sum of Squares Optimization and SOSTOOLS," American Control Conference, p.5606-5611, 2004.

108. S. Prajna, A. Papachristodoulou, P. Seiler, and P. Parrilo, "SOSTOOLS: Control Applications and New Developments," IEEE International Symposium on Computer Aided Control Systems Design, p.315-320, 2004.

109. B.M. Taub, D. Bernhardt, and P. Seiler, "Cladistic Asset Pricing," 14th Annual Utah Winter Finance Conference, 2004.

110. P. Seiler, "Stability Region Estimates for SDRE Controlled Systems using Sum of Squares Optimization," American Control Conference, p.1867-1872, 2003.

111. P. Seiler, A. Pant, and J.K. Hedrick, "Disturbance Propagation in Large Interconnected Systems," American Control Conference, p.1062-1067, 2002. **(O. Hugo Schuck Award for best paper)**

112. M. Frenklach, A. Packard, and P. Seiler, "Prediction Uncertainty from Models and Data," American Control Conference, p.4135-4140, 2002.

113. C. Smith and P. Seiler, "Optimal pseudo-steady-state estimators for systems with Markovian intermittent measurements," American Control Conference, p.3021-3027, 2002.

114. P. Seiler, A. Pant, and J.K. Hedrick, "Analysis of bird formations," IEEE Conference on Decision and Control, p.118-123, 2002.

115. P. Seiler and R. Sengupta, "Analysis of Communication Losses in Vehicle Control Problems," American Control Conference, p.1491-1496, 2001.

116. A. Pant, P. Seiler, and K. Hedrick, "Mesh stability of unmanned aerial vehicle clusters," American Control Conference, p.62-68, 2001.

117. P. Seiler and A. Packard, "Worst-Case Performance Analysis with Constrained Uncertainty," IEEE Conference on Decision and Control, p.1107-1112, 2001.

118. A. Pant, P. Seiler, and K. Hedrick, "Mesh stability of look-ahead interconnected systems," IEEE Conference on Decision and Control, p.3009-3013, 2001.

119. J.K. Hedrick, A. Pant, and P. Seiler, "Mesh stability of helicopters," 11th Yale Workshop on Adaptive and Learning Systems, 2001.

120. A. Alleyne and P. Seiler, "Adaptive passivity-based nonlinear control for strict feedback form systems," ASME International Mechanical Engineering Congress & Exposition, 2000.

121. P. Seiler, A. Pant, and J.K. Hedrick, "Preliminary investigation of mesh stability for linear systems," ASME International Mechanical Engineering Congress & Exposition, Paper No. DSC-7B-1, 1999.

122. P. Seiler, B. Song, and J. K. Hedrick, "Application of nonlinear control to a collision avoidance system," 5th ITS World Congress, Paper No. 1020, 1998.

123. P. Seiler, B. Song, and J. K. Hedrick, "Development of a Collision Avoidance System," SAE Conference, Paper No. 980853, 1998.

Book Chapters

1. P. Seiler, G.J. Balas, and A. Packard, "Chapter 19: Linear Parameter-Varying Control for the X-53 Active Aeroelastic Wing," Control of Linear Parameter Varying Systems With Applications, J. Mohammadpour and C.W. Scherer (Eds.), Springer, vol. 416, p. 483-512, 2012.
2. P. Seiler, G. Balas and A. Packard, "Chapter 19: Assessment of Aircraft Flight Controllers Using Nonlinear Robustness Analysis Techniques," Optimization Based Clearance of Flight Control Laws: A Civilian Application, A. Varga, A. Hansson, and G. Puyou (Eds.), Lecture Notes in Control and Information Sciences, Vol. 416, Springer, p. 369-397, 2012.
3. G. Balas, A. Packard, and P. Seiler, "Uncertain Model Set Calculation from Frequency Domain Data," Model-Based Control: Bridging Rigorous Theory and Advanced Technology, P.M.J. Van den Hof, C. Scherer, P.S.C. Heuberger (Eds.), Springer, p.89-105, 2009.

Other Publications

1. H.K. Venkataraman and P. Seiler, "Recovering Robustness in Model-Free Reinforcement Learning," arXiv:1810.09337v2, 2018.
2. S. Vijayshankar, V. Purba, P.J. Seiler, and S.V. Dhople, "Reduced-order Aggregate Dynamical Model for Wind Farms," arXiv:1810.11601, 2018.
3. R. Venkataraman, P. Seiler, and B. Taylor. "Fault-tolerant aircraft flight control using a subset of aerodynamic control surfaces," United States Patent Application # 2017034926, 2017.
4. B. Hu, P. Seiler, and L. Lessard, "Analysis of Approximate Stochastic Gradient Using Quadratic Constraints and Sequential Semidefinite Programs," arXiv:1711.07248v1, 2017.
5. B. Hu, P. Seiler, and A. Rantzer, "A unified analysis of stochastic optimization methods using jump system theory and quadratic constraints," arXiv:1706.08141, 2017.
6. P. Seiler, R.M. Moore, C. Meissen, M. Arcak, and A. Packard, "Finite Horizon Robustness Analysis of LTV Systems Using Integral Quadratic Constraints," arXiv:1711.07248v1, 2017.
7. J. Annoni, P. Gebraad, and P. Seiler, "Reduced-order Modeling for Wind Farm Control," Technical Report, 2016.
8. H. Pfifer and P. Seiler, "An Overview of Integral Quadratic Constraints for Delayed Nonlinear and Parameter-Varying Systems," arXiv:1504.02502, 2015.
9. T. Peni and P. Seiler, "Computation of lower bounds for the induced L2 norm of LPV systems," arXiv:1408.6809, 2014.
10. J. Annoni, K. Johnson, and P. Seiler, "Optimizing Power Output of Wind Turbine Arrays," Poster presented at the NAWEA Conference, 2013.
11. P. Seiler, Q. Zheng, and G.J. Balas, "Simplification Methods for Sum-of-Squares Programs," arXiv:1303.0714v2, 2013.
12. M. Ibrahim, D. Ramegowda, and P. Seiler. "Vision-based vehicle navigation system and method," United States Patent # 8284997, filed March 11, 2009 and issued October 9, 2012.
13. P. Seiler, "Coordinated Control of Unmanned Aerial Vehicles," Ph. D. Thesis, University of California, Berkeley, 2001.
14. J.K.Hedrick, D. Godbole, R. Rajamani, and P. Seiler, "Stop and Go Cruise Control," PATH Technical Report, submitted to BMW AG, 1999.

Service

1. Member, Systems and Dynamics AEM Department Committee, Fall 2011 –
2. Committee for re-design of the AEM Department Webpage, Fall 2016-
3. Associate editor, IEEE Control Systems Letters, January 2017 –
4. 2016 College of Science and Engineering Teaching Fellows Program
5. 2016 American Control Conference, Program Committee, 2015-2016.
6. Associate editor, Control Engineering Practice, October 2009 – December 2016
7. Department seminar co-chair, Fall 2011 – Spring 2014
8. Faculty Advisor, CanSat Team, Fall 2013-Spring 2014, Fall 2014-Spring 2015.
9. Co-organized an invited session at the 2013 American Control Conference with Prof. Eilyan Bitar. Session title: "Challenges in Modeling and Control of Wind Energy Systems."
10. SysTol 2013 International Program Committee, Associate Editor, 2013.
11. Referee: AIAA Journal of Guidance, Dynamics and Control; Automatica; Control Engineering Practice; European Journal of Control; IEEE Journal of Control System Technology; IEEE Transactions on Automatic Control; International Journal of Adaptive Control and Signal Processing; International Journal of Robust and Nonlinear Control.

Workshops

1. P. Seiler, A. Marcos, and B. Vanek, "Robust Control Short Course," ESA European Space Research and Technology Centre, November-December 2017.
2. A. Packard, and P. Seiler, "Robust Control Short Course," Ford, October 2016.
3. G. Balas, A. Packard, and P. Seiler, "Robust Control Short Course," Ford, October 2014.
4. G. Balas, J. Doyle, K. Glover, A. Packard, P. Seiler, R. Smith, L. Lessard, and F. Borrelli, "40 Years of Robust Control: 1978 to 2018", American Control Conference, June 2014.
5. A. Packard, P. Seiler, A. Hjartarson, and G. Balas, "Linear, Parameter-Varying Control: Tools and Applications," American Control Conference, June 2014.
6. G. Balas, A. Packard, and P. Seiler, "Robust Control Short Course," Caterpillar, May 2014.
7. G. Balas, A. Packard, and P. Seiler, "Robust Control Short Course for Space Systems," ESA European Space Research and Technology Centre, February 2014.
8. G. Balas, A. Packard, and P. Seiler, "Robust Control Short Course for Space Systems," ESA European Space Research and Technology Centre, November 2012.
9. G. Balas, A. Packard, and P. Seiler, "Robust Control Short Course for Space Systems," ESA European Space Research and Technology Centre, November 2011.
10. A. Packard, U. Topcu, P. Seiler, and G. Balas, "Quantitative Local Analysis of Nonlinear Systems using Sum-of-Squares Decompositions," NASA Langley Research Center, September 2009.
11. A. Packard, U. Topcu, P. Seiler, and G. Balas, "Quantitative Local Analysis of Nonlinear Systems using Sum-of-Squares Decompositions," American Control Conference, June 2009.

Invited Seminars and Talks

1. February 2019, "Robust Control: Past Successes and Future Directions", University of Michigan, Ann Arbor.

2. January 2019, "Robust Control: Past Successes and Future Directions", Honeywell, Minneapolis, MN.
3. November 2018, "Enhancing Robustness in Reinforcement Learning", UTRC, East Hartford, CT.
4. April 2018, "Finite Horizon Robustness Analysis of LTV Systems Using Integral Quadratic Constraints", International Workshop on Robust LPV Control Techniques and Anti-Windup Design, ONERA, Toulouse, France.
5. March 2018, "Finite Horizon Robustness Analysis of LTV Systems Using Integral Quadratic Constraints", University of Stuttgart.
6. December 2017, "Design and Analysis of Safety Critical Systems", Hungarian Computer and Automation Research Institute, Budapest, Hungary.
7. October 2017, "Finite Horizon Robustness Analysis of LTV Systems Using Integral Quadratic Constraints", Hungarian Computer and Automation Research Institute, Budapest, Hungary.
8. September 2017, "Finite Horizon Robustness Analysis of LTV Systems Using Integral Quadratic Constraints", International Workshop in Robust Modeling, Design & Analysis, Bristol, England.
9. January 2017, "Design and Analysis of Safety Critical Systems", University of Michigan, Ann Arbor.
10. October 2016, "Control of Flexible Aircraft", Aerospace Control & Guidance Systems Committee, Meeting Number 117 **(Best Paper Presentation Award at Meeting)**.
11. March 2016, "Robust Analysis and Synthesis for Linear Parameter Varying Systems", University of Michigan, Ann Arbor.
12. December 2015, "Robust Analysis and Synthesis for Linear Parameter Varying Systems", Virginia Polytechnic Institute and State University, Blacksburg.
13. October 2015, "Robust Analysis and Synthesis for Linear Parameter Varying Systems", Plenary, 1st IFAC Workshop on LPV Systems: In Memory of Gary J. Balas, Grenoble, France.
14. October 2015, "Robust Analysis and Synthesis for Linear Parameter Varying Systems", Chalmers University of Technology, Gothenburg, Sweden.
15. April 2015, "Robust Analysis and Synthesis for Linear Parameter Varying Systems", University of Illinois, Urbana-Champaign.
16. November 2014, "Control-Oriented Modeling for Wind Farms", University of Texas, Dallas.
17. November 2014, "Control-Oriented Modeling for Wind Farms", Texas A&M, College Station.
18. July 2014, "IQC Uncertainty Analysis for LPV Systems," University of Győr, Győr , Hungary.
19. July 2014, "IQC Uncertainty Analysis for LPV Systems," Hungarian Computer and Automation Research Institute, Budapest, Hungary.
20. July 2014, "IQC Uncertainty Analysis for LPV Systems," University of Stuttgart.
21. May 2014, "Stability Analysis with Dissipation Inequalities and Integral Quadratic Constraints", Short Course: Optimization and control, Institute for Mathematics and its Applications, UMN.
22. May 2014, "Synthesis for Linear Parameter Varying Systems", Short Course: Optimization and control, Institute for Mathematics and its Applications, UMN.
23. February 2014, "IQC Uncertainty Analysis for LPV Systems," ESA-CNES-DLR Workshop on Linear Parameter Varying Control: A Framework for Adaptable Space Systems, ESA European Space Research and Technology Centre.
24. February 2014, "A Holistic View of Wind Farm Control," St. Anthony Falls Seminar.
25. November 2013, "Advanced Multivariable Control for Industrial Wind Turbines", 49th Annual Minnesota Power Systems Conference.

26. September 2013, "Design and Analysis of Safety Critical Systems," University of Minnesota, Department of Computer Science and Engineering.
27. July 2013, "Fault Detection and Health Monitoring for Wind Turbines," Invited talk in panel session entitled "Monitoring and Diagnostics of Wind Turbine Generators," 2013 IEEE Power and Energy Society (PES) General Meeting.
28. May 2013, "High Reliability Monitoring and Control of Wind Turbines," University of Colorado, Boulder.
29. May 2013, "High Reliability Monitoring and Control of Wind Turbines," National Wind Technology Center, Golden, Colorado.
30. February 2013, "Design and Analysis of Safety Critical Systems," University of Minnesota, Department of Electrical and Computer Engineering.
31. November 2012, "Latest worst case LTI analysis tools (LFT-LPV and μ-tools) for robust performance analysis beyond the single loop margins. Simulation based worst case validation and verification tools as a complement to Monte Carlo simulation," ESA-CNES-DLR Workshop on Worst Case Analysis Tools for Guidance Navigation & Control Systems, ESA European Space Research and Technology Centre.
32. October 2012, "Design and Analysis of Safety Critical Systems," AddSafe Workshop, Toulouse, France.
33. August 2012, "Control Systems Research at the University of Minnesota," Seagate Technology, Shakopee, Minnesota.
34. August 2012, "Advanced Multivariable Control for Industrial Wind Turbines," at Goodrich Aerospace (United Technologies), Burnsville, Minnesota.
35. May 2012, "Design and Analysis of Safety Critical Systems," California Institute of Technology, California.
36. May 2012, "Advanced Multivariable Control for Industrial Wind Turbines," California Institute of Technology, California.
37. February 2012, "Design and Analysis of Safety Critical Systems," at Honeywell R&D Labs, Minneapolis, Minnesota.
38. October 2011, "Advanced multivariable control for industrial wind turbines," at Saint Anthony Falls Laboratory.
39. April 2011, "Design challenges for commercial flight control systems," at Hungarian Computer and Automation Research Institute, Budapest, Hungary.
40. December 2010, "A Dissipation Inequality Formulation for Integral Quadratic Constraints," University of California, Berkeley.
41. November 2010, "A Dissipation Inequality Formulation for Integral Quadratic Constraints," Notre Dame.
42. April 2010, "A Dissipation Inequality Formulation for Integral Quadratic Constraints," DLR.
43. March 2010, "A Dissipation Inequality Formulation for Integral Quadratic Constraints," Hungarian Computer and Automation Research Institute, Budapest, Hungary.

Visits

Oct 2017 – April 2018	Hungarian Computer and Automation Research Institute, Budapest, Hungary
September 2017	University of Bristol, England
July 2014	Hungarian Computer and Automation Research Institute, Budapest, Hungary
April 2011	Hungarian Computer and Automation Research Institute, Budapest, Hungary
March-May 2010	Hungarian Computer and Automation Research Institute, Budapest, Hungary

Current Funding and Support

1. **[ONR]** Office of Naval Research
   - Title: Finite-Horizon Robustness: Moving Beyond Traditional Stability Analysis
   - Joint with: A. Packard and M. Arcak at University of California, Berkeley
   - Amount: $400,000 (UMN) and $814,000 (UCB)
   - Award Period: 6/1/2018 – 5/31/2022

2. **[NASA7]** NASA SBIR Phase 2
   - Title: Developing a certifiable UAS reliability assessment approach through algorithmic redundancy
   - Amount: $200,000 (Subcontract to Systems Technology, Inc.)
   - Award Period: 4/1/2018-3/31/2020

3. **[NASA6]** NASA SBIR Phase 2
   - Title: Defining Handling Qualities of Unmanned Aerial Systems
   - Amount: $200,000 (Subcontract to Systems Technology, Inc.)
   - Award Period: 6/1/2017-5/31/2019

4. **[ION1]** Institute on the Environment Renewable Development Fund
   - Title: Simulation, Measurement, Modeling, and Control of Wind Plant Power
   - Joint with: L. Shen, M. Guala, J. Hong, J. Marr, and J. Nichols
   - Amount: $717,360
   - Award Period: 05/30/2016 – 05/29/2019

5. **[NSF3]** National Science Foundation: National Robotics Initiative (Collaborative Proposal)
   - Title: Autonomous Quadrotors for 3D Modeling and Inspection of Outdoor Infrastructure
   - Joint with: S.I. Roumeliotis (UMN) and P. Mordohai (Stevens Inst. Of Technology)
   - Amount: $1,015,280 (UMN) and $355,496 (Stevens Institute of Technology)
   - Award Period: 9/1/2016-8/31/2019

6. **[XCEL]** Xcel RDF Energy Production Project
   - Title: Virtual Wind Simulator with Advanced Control & Aeroelastic Model for Improving the Operation of Wind Farms
   - Joint with: F. Sotiropolous, L. Chamorro, X. Yang, J. Marr, Mikhail Energy Consulting Group, Barr Engineering
   - Amount: $1,287,590
   - Award Period: 6/1/2015-5/31/2019

7. **[Seagate]** Seagate Technologies
   - Title: Uncertainty Modeling and Robust Control for Disk Drives
   - Funding: $50,000 (9/2018 - 8/2019)
   - Funding: $50,000 (9/2017 - 8/2018)
   - Funding: $63,527 (9/2016 - 8/2017)
   - Funding: $69,250 (9/2014 - 8/2015)
   - Funding: $57,504 (9/2013 - 8/2014)
   - Funding: $58,000 (9/2012 - 8/2013)

8. **[NSF1]** National Science Foundation: CAREER Program
   - Title: CAREER: Probabilistic Tools for High Reliability Monitoring and Control of Wind Farms
   - Amount: $400,000
   - Award Period: 3/1/2013-2/28/2018

Past Funding and Support

9. **[NASA5]** NASA SBIR Phase 1
    - o Title: Developing a certifiable UAS reliability assessment approach through algorithmic redundancy
    - o Amount: $25,000 (Subcontract to Systems Technology, Inc.)
    - o Award Period: 6/9/2017-12/8/2017

10. **[NSF2]** National Science Foundation: Cyber-Physical Systems Program (Collaborative Proposal)
    - o Title: Managing Uncertainty in the Design of Safety-Critical Aviation Systems
    - o Joint with: D. Gebre-Egziabher, J. Rife, and S. Guyer
    - o Amount: $473,560 (UMN) and ~$316,000 (Tufts)
    - o Award Period: 9/1/2013-8/31/2017

11. **[PFC]** Partnership for Affordable Content
    - o Title: Online Resource for AEM4321/EE4231: Automatic Control Systems
    - o Amount: $1,500
    - o Award: 2016

12. **[NASA4]** NASA SBIR
    - o Title: Development and Flight Testing of RAIDER: An Autonomous Upset Recovery System
    - o Joint with: Raghu Venkataraman and Brian Taylor
    - o Amount: $90,000 (Subcontract to Barron Associates)
    - o Award Period: 6/1/2016-8/31/2017

13. **[NASA3]** NASA STTR
    - o Title: Distributed, Passivity-Based, Aeroservoelastic Control (DPASC) of Structurally Efficient Aircraft in the Presence of Gusts
    - o Joint with: Harald Pfifer and Brian Taylor
    - o Amount: $190,000 (Subcontract to Tao Systems)
    - o Award Period: 5/6/2015-5/5/2017

14. **[NASA2]** NASA NRA
    - o Title: Lightweight Adaptive Aeroelastic Wing for Enhanced Performance Across the Flight Envelope
    - o Joint with: Aurora Flight Sciences, CMSoft Inc., Schmidt and Associates, Systems Technology, Inc., and Virginia Tech
    - o Amount: $4,620,000 Total with $1,734,510 for UMN
    - o Award Period: 9/2/2014-9/1/2019

15. **[MND1]** University of Minnesota MnDrive Transdisciplinary
    - o Title: Sustainable Energy Systems: Control Systems and Sensors to Link Rural Renewables and Demand for Sustainable Industrial Energy in Food Processing Systems
    - o Joint with: E. Wilson, T. Smith, and S. Dhople
    - o Amount: $500,00
    - o Award Period: 7/1/2014-6/30/2016

16. **[MND2]** University of Minnesota MnDrive Transdisciplinary
    - o Title: Precision Agriculture: Robotics and Sensor Development for Revolutionary Improvements in the Global Food Supply and Reduced Environmental Impact in the Agriculture Industry
    - o Joint with: G. Balas, B. Taylor, D. Gebre-Egziabher, J. Weyrauch, I. MacRae, R. Koch, D. Malvick, and T. Hurley
    - o Amount: $500,000
    - o Award Period: 7/1/2014-6/30/2016

17. **[MND3]** University of Minnesota MnDrive Exploratory
    - o Title: Smart Actuators for Preventative Maintenance of Small Uninhabited Aircraft
    - o Joint with: Brian Taylor
    - o Amount: $20,000
    - o Award Period: 1/1/2015-5/31/2015

18. **[IREE2]** University of Minnesota Initiative for Renewable Energy and the Environment
    - o Title: Innovating for sustainable electricity systems: Integrating renewables, reallocating transmission and driving demand
    - o Joint with: E. Wilson, B. Wollenberg, S. Dhople, J. Marshall, A. Klass, T. Smith, and H. Osofsky
    - o Amount: $750,000
    - o Award Period: 1/1/2013 – 12/31/2015

19. **[DTI1]** University of Minnesota Digital Technology Seed Grant Initiative
    - o Title: Convex Optimization Methods for Robust Stability Analysis and Safety Assessment of Cyber-Physical Power Systems
    - o Joint with: S. Dhople
    - o Amount: $60,000
    - o Award Period: 7/1/2013 – 6/30/2014

20. **[NASA1]** NASA: Vehicle Systems Safety Technologies Topic 1-9: Validation of Integrated Safety Critical Technologies under LOC Conditions
    - o Title: Analytical Validation Tools for Safety Critical Systems Under Loss-of-Control Conditions
    - o Joint with: G. Balas and A. Packard
    - o Amount: $1,059,842
    - o Award Period: 9/1/2012 – 8/31/2015

21. **[AFOSR]** Air Force Office of Scientific Research
    - o Title: A Merged IQC/SOS Theory for Analysis of Nonlinear Control Systems
    - o Joint with: G. Balas and A. Packard
    - o Amount: $465,000
    - o Award Period: 7/1/2012 – 6/30/2015

22. **[IREE1]** University of Minnesota Initiative for Renewable Energy and the Environment
    - o Title: Design Tools for Multivariable Control of Large Wind Turbines
    - o Joint with: G. Balas
    - o Amount: $278,600
    - o Award Period: 7/1/2011 – 6/30/2014