

Gilead Tadmor

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Research Interests

My background is in the areas of mathematical systems theory, control design and reduced order models. In addition to ongoing work in linear robust and optimal control, research activities over the past several years included work on modeling, estimation and design in distributed nonlinear systems, driven by applications to fluid flow systems and medical imaging. In the flow control area I work on very low order, design-accessible models and means to exploit these models both to gain insight into the physics of the system and in effective nonlinear feedback design. In the area of robust control I utilize game- and operator-theoretic methods for robust estimation and control of delay and preview systems and for sampled data systems. Recent activities in medical imaging include dynamic 3D electrocardiography and the use of dynamic models for multi-modal brain imaging. Previous work in optimal and robust control include the introduction of differential games methods in H_∞ control of time varying and distributed parameters systems, and applications to basic systems theory. Previous focal applications include power engineering and electric motor drives. Other past areas of research include discrete event control systems and functional differential equations. My research has been supported by industry, including UTRC, the Charles Stark Draper Laboratory and Sat-Con Technology Co., and by government agencies, including the National Science Foundation (NSF), the Army Research Office (ARO), the US-Israel BSF, and the Air Force Office of Scientific Research.

Education

1974-1977 B.Sc., Mathematics and Philosophy, Tel Aviv University, Tel Aviv, Israel.
1977-1979 M.Sc., Mathematics, The Weizmann Institute of Science, Rehovot, Israel.
1979-1984 Ph.D., Mathematics, The Weizmann Institute of Science, Rehovot, Israel.

Positions Held

2006-present Professor, Department of Mathematics, Northeastern University
Fall 2005 Lady Davis Visiting Professor, Faculty of Mechanical Eng., The Technion, Israel
2003-2010 Director, Communications and Digital Signal Processing (CDSP) Center
for Research and Graduate Studies, Northeastern University.
Summer 2001 Visiting Faculty Fellow, Air Force Research Laboratory, Wright-Patterson AFB
1989-present Department of Electrical & Computer Engineering, Northeastern University.
(Assistant Professor, 1989; Associate Professor, 1994; Professor, 2003)
1998-1999 Visiting Research Scientist, SatCon Technology Corporation, Cambridge, MA.
1988-1989 Assistant Professor, Center for Engineering Mathematics, Program in
Mathematics, The University of Texas - Dallas.

1987-1988 Assistant Professor (Research), Division of Applied Mathematics & Center
for Control Systems, Brown University.
1985-1987 Post Doctoral Fellow, Laboratory for Information and Decision systems, M.I.T.
1984-1985 Post Doctoral Fellow and Lecturer, Department of Electronic Systems,
School of Engineering, Tel Aviv University.

Consulting

<i>United Technologies Research Center:</i>	Aeroengine control, parameter estimation, fluid flow control, nonlinear filtering
<i>SatCon Technology Co.:</i>	Electric motor control
<i>Lighthouse Software:</i>	CAD
<i>Corning Applied Technologies:</i>	Dynamic estimation, polarization control in fiber-optic communication systems
<i>Mitsubishi Electric Research Laboratory:</i>	Modeling and control of elevator and AC systems

Invited Visits & Seminars (alphabetic host list):

Abo University (Åbo, Finland), Ben Gurion University of the Negev (Beer-Sheva, Israel), Berlin Institute of Technology (TUB, Berlin, Germany), Brown-Bovery Co. Research Center (now ABB, Switzerland), CalTech, Cambridge University (UK), Florida State University, George Washington University, Harvard University, IEEE Boston Chapter, Illinois Institute of Technology, Inst. of Math & its Applications (IMA Minnesota), University of Minnesota, Ohio State University, Osaka University (Japan), Princeton University, RAFAEL (Israel), Rensselaer Polytechnic Institute (RPI), Royal Institute of Technology (KTH, Stockholm, Sweden), Rutgers University, Technion (Haifa, Israel), Tel Aviv University, University of Illinois at Urbana-Champaign, University of Maryland (College Park), University of Minnesota, University of Texas, Dallas, University of Toronto, United Technologies Research Center (East Hartford, CT), US Air Force Academy, Weizmann Inst. of Science (Rehovot, Israel).

Research Grants include support by the US National Science Foundation, the Army Research Office, the Air Force Office of Scientific Research, the US-Israel Bi-National Science Foundations, and by industrial grants from Draper Laboratory and SatCon Technology Co..

Patent.

- G. Tadmor and A. M. Stanković, US5998957: “*Dissipativity- based controller for synchronous electric drives, and associated methods*”,

Masters Theses Supervised at Northeastern University

1. Edgar M. Vaughan, M.Sc, 1991 (Co-advised with C. A. Jacobson)
2. Louis J. Poehiman, M.Sc, 1992 (Co-advised with C. A. Jacobson)
3. Pablo O. Arambel, M.Sc. 1993
4. Wei-wen Wang, M.Sc. 1994
5. Geunsung Song, M.Sc. 1995 (Co-advised with A. Stanković)
6. Zoran Ćorić, M.Sc. 1996 (Co-advised with A. Stanković)
7. A. Barnett, M.Sc. 1977 (Co-advised with A. Stanković)
8. Ömur Baş, M.Sc. 1997 (Co-advised with A. Stanković)
9. Roberto Pileggi, M.Sc. 1997
10. Vladan Petrović, M.Sc. 1998 (Co-advised with A. Stanković)
11. K. Eisenhauer, M.Sc., 2001
12. G. Eirea, M.Sc., 2001 (Co-advised with A. Stanković)
13. Ruoying Ma, M.Sc., 2003
14. Sai Chen, M.Sc., 2004
15. Abhimanyu Das, M.Sc., 2006
16. Gerard Pons-Moll, Diplom, 2008 (Tech. U. Catalonia degree, Co-advised with D. Brooks)
17. Guillem Crosas, Diplom, 2009 (Tech. U. Catalonia degree, Co-advised with D. Brooks)
18. Anshuman Mishra, M.Sc., 2009
19. Yiman Hou, M.Sc., 2010
20. Arun Kushik Parthasaraty, M.Sc., 2010

21. Marc Queralt Madrigal, Diplom, 2010 (Tech. U. Catalonia degree, Co-advised with D. Brooks)
22. Daniel Bissex, M.Sc., 2010
23. Jaume Coll Font, Diplom, (Tech. U. Catalonia degree, Co-advised with D. Brooks), 2011
24. Emily Anesta, M.Sc., 2011
25. Ajendra Sharma, M.Sc., pending
26. Golnaz Shapurian, M.Sc., pending

Doctoral Theses Supervised at Northeastern University

1. Pablo O. Arambel, Ph.D. 1995
2. Vladislav Davidkovich, Ph.D. 1998 (Co-advised with A. Stanković)
3. Timoor Sakharuk, Ph.D. 1998 (Co-advised with A. Stanković)
4. İsmail Ağirman, Ph.D. 1999 (Co-advised with A. Stanković)
5. Lu Jiang, Ph.D., 2002 (Co-advised with A. Stanković)
6. Alireza Ghodrati, Ph.D. 2005 (Co-advised with D. Brooks)
7. Srinivas Laxminarayan, Ph.D., 2011 (Co-advised with D. Brooks),
8. Kham Nguyen, Ph.D., 2011 (co-advised with J. Makhoul, BBNT)
9. Oliver Lehmann, Ph.D., pending
10. Asieh Ahani, Ph.D., pending (co-advised with D. Brooks)

Other Graduate Research Projects Supervised at Northeastern University

1. Nilufer Koldan, (2006/7, Ph.D. Candidate, Mathematics Dept.), *Investigation of a Parabolized Flow Model*
2. John Gonzalez, (2006, M.Sc. Candidate, mathematics), *Investigation of Generalized Mean Field Flow Models*

Undergraduate Research and Thesis

1. Laurent Jabre, visiting student, Concordia University, 1998

2. Scott Kelley, Mechanical Eng. Northeastern University, 2008.
3. Greg Malkov, Electrical Eng. Northeastern University, 2009.

Advising Graduate Research Outside Northeastern University

1. Johannes Gerhard, Diplom (MS), TU Berlin, 2003
2. Mark Pastoor, Ph.D., TU Berlin, 2008
3. Oliver Lehmann, Diplom (MS), TU Berlin, 2010

Service on Doctoral Theses Committees Outside NEU

1. Feng Lin, University of Toronto, 1988
2. Matts Sägfors, Åbo University, Åbo, Finland, 1998
3. Sanath Alahakoon, Royal Inst. of Technology (KTH), Stockholm, Sweden, 2000
4. Mark Pastoor, Berlin Inst. of Technology (TU Berlin), Berlin, Germany, 2008
5. Stefan Almér, Royal Inst. of Technology (KTH), Stockholm, Sweden, 2008
6. Shmuel Safonov, Tel Aviv University, Tel Aviv, Israel, 2008

Publications

Book

1. B. R. Noack, M. Morzyński and G. Tadmor (Editors), **Reduced-Order Modeling for Flow Control**, CISM Courses and Lectures V. 528, Springer Verlag, 2011.

Journal Articles

1. Z. Artstein and G. Tadmor, *Linear systems with indirect control: the underlying measure*, SIAM J. Control and Optim. 20 (1982), 96-111
2. G. Tadmor, *Functional differential equations of retarded and of neutral type: analytic solutions and piecewise continuous controls*, J. Diff. Eqs. 51 (1984), 151-181
3. G. Tadmor, *Optimal controls and their discontinuities in quadratic problems of delay systems*, IEEE Trans. Automatic Control AC-30 (1985), 666-673
4. G. Tadmor, *An interpolation problem associated with H_∞ optimization in systems with distributed lags*, Systems and Control Letters 8 (1987), 313-319

5. G. Tadmor, *Trajectory stabilizing controls in hereditary linear systems*, SIAM J. Control and Optim. 26 (1988), 138 – 154
6. O. Maimon and G. Tadmor, *Model based low level control in flexible manufacturing systems*, Int. J. of Robotics and Computer Integrated Manufacturing 4 (1988), 423-128
7. Y. Ohta, S.K. Mitter and G. Tadmor, *Sensitivity minimization over a frequency band*, Int. J. Control 48 (1988), 2129-2138
8. G. Tadmor and O. Maimon, *Control of large discrete event systems: constructive algorithms* IEEE Trans. Automatic Control AC-34 (1989), 1164-1168
9. G. Tadmor, *H_∞ Interpolation in systems with commensurate input lags*, SIAM J. Control and Optim. 27 (1989), 511-526
10. G. Tadmor, *Worst case design in the time domain: the maximum principle and the standard H_∞ problem*, Math. Control Signals Systems 3 (1990), 301-324
11. G. Tadmor, *Input-output norms in general linear systems*, Int. J. Control 51 (1990), 511-521
12. Gilead Tadmor, *Uncertain feedback loops and robustness*, Automatica 27 (1991), 1039-1042.
13. B. Bienz-Tadmor, T.A. DiCerbo, G. Tadmor and L. Lasagna, *Biopharmaceuticals and conventional drugs: clinical success rates*, Bio/Technology 10 (1992), 521-525
14. G. Tadmor, *H_∞ Optimal sampled data control in continuous time systems*, Int. J. Control 56 (1992), 99-141
15. G. Tadmor and M. Verma, *Factorization and Nehari theorem in time varying systems*, Math. Control, Signal and Systems 5 (1992), 419-452
16. G. Tadmor, *Receding horizon revisited: an easy way to robustly stabilize an LTV system*, Systems and Control Letters 18 (1992), 285-294
17. G. Tadmor, *The standard H_∞ problem and the maximum principle: the general linear case*, SIAM J. Control and Optim. 31 (1993), 813-846
18. W.M. Haddad and G. Tadmor, *Reduced order LQG controllers for linear time varying systems*, Systems and Control Letters 20 (1993), 87-97
19. I. Gurov and G. Tadmor, *On the robustness of H_∞ state feedback control to nonlinear perturbations*, Automatica 30 (1994), 499-502.

20. P.O. Arambel and G. Tadmor, *Robust H_∞ identification of linear periodic discrete time systems*, Int. J. Robust and Nonlinear Control 4(1994), 595-612.
21. G. Tadmor and J. Turi, *Neutral equations and associated semigroups*, J. Diff. Eqs. 116(1995), 59-87.
22. G. Tadmor, *A time varying Beurling-Lax theorem and a related interpolation problem*, Math. Control, Signals and Systems 7(1995), 148-166.
23. G. Tadmor, *The Nehari problem in systems with distributed input delays is inherently finite dimensional*, System and Control Letters 26(1995), 11-16.
24. C.A. Jacobson, A. M. Stanković and G. Tadmor, *On The Reduction of Certain Frequency Shaped Linear Quadratic Dissipative Design Problems to An H_∞ Formulation*, IEEE Trans. Automatic Control AC-41(1996), 121-125.
25. C. A. Jacobson, A. M. Stanković, G. Tadmor and M. Stevens, *Towards a dissipativity framework for power system stabilizers design*, IEEE Transactions on Power Systems, 11(4), Nov. 1996, pp. 1963-1968
26. G. Tadmor, *Robust control in the gap: a state space solution in the presence of a single input delay*, IEEE Trans. Automatic Control AC-42 (1997), 1330 – 1335.
27. G. Tadmor, *Weighted sensitivity minimization in systems with a single delay: A state space approach*, SIAM J. Control and Optim. 35 (1997), 1445–1469.
28. P. O. Arambel and G. Tadmor, *Identifiability and persistent excitation in full matrix fraction parameter estimation*, Automatica 33 (1997), 689-692.
29. A. M. Stanković, G. Tadmor and T. A. Sakharuk, *On robust control analysis and design for load frequency regulation*, IEEE Trans. Power Systems 13 (1998), 449 – 455.
30. P. O. Arambel and G. Tadmor, *Decomposition and approximation of periodic systems*, IEEE Trans. AC-44 (1999), 858 – 864.
31. A.M. Stanković, P.C. Stefanov, G. Tadmor and D.J. Šobajić *Dissipativity as a unifying control design framework for suppression of low frequency oscillations in power systems*, IEEE Trans. on Power Systems, 14 (1999), pp.192-199.
32. A. M. Stanković, G. Tadmor, Z. Čorić and Ā Ağirman, *On Torque Ripple Reduction in Current-Fed Switched Reluctance Motors*, IEEE Transactions on Industrial Electronics 46 (1999), 177 – 183.

33. T. A. Sakharuk, B. Lehman, A. M. Stanković and G. Tadmor, *Effects of finite switching frequency and delay on PWM controlled systems*, IEEE Trans. Circuits & Sys. I 47 (2000), pp. 555 – 567
34. V. Petrović, R. Ortega, A. M. Stanković and G. Tadmor, *Design and implementation of an adaptive controller for torque ripple minimization in PM synchronous motors*, IEEE Trans. on Power Electronics 15 (2000), pp. 771 – 880.
35. G. Tadmor, *The standard H_∞ problem in systems with a single input delay*, IEEE Trans. Automatic Control 45 (2000), pp. 382 - 397.
36. İ Ađirman, G. Tadmor, A. M. Stanković and H. Lev-Ari, *Adaptive torque-ripple minimization in switched reluctance motors*, IEEE Transactions on Industrial Electronics 48 (2001), pp. 664 – 672.
37. G. Tadmor, *Dissipative design, lossless dynamics and the nonlinear TORA benchmark example*, IEEE Transactions on Control Systems Technology 9 (2001), pp.391 - 398.
38. G. Tadmor and L. Mirkin, *Control of systems with I/O delay: A review of some problem-oriented methods*, IMA J of Math. Control and Information 19 (2002), pp. 185-199.
39. T. Sakharuk, A. M. Stanković, G. Tadmor and G. Eirea, *Modeling of PWM inverter-supplied AC drives at low switching frequency*, IEEE Trans. Circuits & Systems I: Fundamental Theory 49 (2002), pp. 621 – 631.
40. G. Tadmor, *On approximate phasor models in dissipative, bilinear systems*, IEEE Transaction on Circuits & Systems I: Fundamental Theory 49 (2002), pp. 1167 – 1179
41. G. Tadmor and A. Banaszuk, *Observer based control of vortex motion in a combustor recirculation region*, IEEE Transactions on Control Systems Technology 10 (2002), pp. 749 – 755.
42. L. Mirkin and G. Tadmor, *Yet Another H_∞ Discretization*, IEEE Trans. Aut. Control 48 (2003), 891 – 894.
43. Y. Wang, G. Haller, A. Banaszuk and G. Tadmor, *Closed Loop Lagrangian Separation Control in a Bluff Body Shear Flow Model*, Physics of Fluids 15 (2003), pp. 2251 – 2266.
44. G. Tadmor, *Control of a Dual Drive to Attenuate Switching Frequency Ripple In A Large Permanent Magnet Synchronous Motor*, IEEE Trans. Control Systems Tech. 12 (2004), 21 – 35.

45. G. Tadmor, *Observers and feedback control of a rotating vortex pair*, IEEE Trans. Control Systems Tech. 12 (2004), 36 – 51.
46. B.R. Noack, K. Afanasiev, M. Morzyński, G. Tadmor and F. Thiele, *A hierarchy of low-dimensional models for the transient and post-transient cylinder wake*, J. Fluid Mechanics 497 (2003), 335 – 363
47. B. R. Noack, I. Mezić, G. Tadmor and A. Banaszuk, *Optimal mixing in recirculation zones*, Physics of Fluids 16 (2004), 867 – 888.
48. G. Tadmor and L. Mirkin, *H_∞ Control and Estimation with Preview - Part I: Matrix ARE Solutions in Continuous Time*, IEEE Trans. Automatic Control 50 (2005), 19 – 28.
49. G. Tadmor and L. Mirkin, *H_∞ Control and Estimation with Preview - Part II: Fixed-Size ARE Solutions in Discrete Time*, IEEE Trans. Automatic Control 50 (2005), 29 – 40.
50. G. Tadmor, *Dissipative Systems Analysis and Control, Theory and Applications, Book Review*, Automatica, 41 (2005), 177 – 179
51. A. Ghodrati, D.H. Brooks, G. Tadmor, B. Punske and R. MacLeod, *Wavefront-based Inverse Electrocardiography using an Evolving Curve State Vector and Phenomenological Propagation and Potential Models*, Int. J. of Bioelectromagnetism 7 (2005), 210 – 213
52. H. Yu, M. Leeser, G. Tadmor and S. Siegel, *Real-time Particle Image Velocimetry for feedback Loops Using FPGA Implementation*, AIAA Journal of Aerospace Computing, Information, and Communication 3 (2006), 52 – 62
53. A. Ghodrati, D. H. Brooks, G. Tadmor and R. S. MacLeod, *Wavefront-based models for inverse electrocardiography*, IEEE Transactions on Biomedical Engineering 53 (2006), 821 - 1831
54. M. Morzyński, B.R. Noack and G. Tadmor, *Global stability analysis and reduced order modeling for bluff-body flow control*, Journal of Theoretical and Applied Mechanics 45 (2007), 621-642
55. L. Mirkin and G. Tadmor, *On Geometric and Analytic Constraints in the H^∞ Fixed-Lag Smoothing*, IEEE Trans. Automatic Control, 52 (2007), 1514-1519
56. B.R. Noack, M. Schlegel, B. Ahlborn, G. Mutschke, M. Morzyński, P. Comte & G. Tadmor, *A finite-time thermodynamics of unsteady flows*. J. Non-Equilib. Thermodyn., 33 (2008), 103-148

57. M. Pastoor, L. Henning, B.R. Noack, R. King & G. Tadmor, *Feedback shear layer control for bluff body drag reduction*. J. Fluid Mechanics 608 (2008), 161 - 196
58. W. Stankiewicz, M. Morzyński, B. R. Noack and G. Tadmor, *Reduced order Galerkin models of flow around NACA 0012 Airfoil*, Math. Modeling and Anal. 13 (2008), 113 - 122
59. W. Stankiewicz, M. Morzyński, R. Roszak, B. R. Noack, & G. Tadmor, *Reduced order modelling of a flow around a NACA-0012 airfoil with varying angle of attack*. Archives of Mechanics 60 (2008), 509 – 526.
60. M. Luchtenburg, B. Günther, B.R. Noack, R. King & G. Tadmor, *A Generalized Mean Field Model for the natural and high-frequency actuated flow around a high lift configuration*, J. Fluid Mechanics 623 (2009), 283-316
61. L. Mirkin and G. Tadmor, *Imposing FIR Structure on H_2 Preview Tracking and Smoothing Solutions*, SIAM J. on Control & Optim. 48 (2009), 2433 – 2460.
62. D. R. Williams, G. Tadmor, T. Colonius, W. Kerstens , V. Quach and S. Buntain, *The Lift Response of a Stalled Wing to Pulsatile Disturbances*, AIAA J. 47 (2009), 3031 – 3037.
63. Z. Ma, C. W. Rowley and G. Tadmor, *Snapshot-based balanced truncation for linear time-periodic systems*, IEEE Transactions on Automatic Control 55 (2010), 469 – 473.
64. G. Tadmor, O. Lehmann, B. R. Noack and M. Morzyński, *Mean Field Representation of the Natural and Actuated Cylinder Wake*, Physics of Fluids 22 (2010), 034102.
65. B. .R. Noack, M. Schlegel M. Morzyński & G. Tadmor, *System reduction strategy for Galerkin models of fluid flows*. Intl. J. Numer. Meth. Fluids 63 (2010) 231 – 248.
66. J. Kasten, C. Petz, I. Hotz, G. Tadmor, B. R. Noack and H.-C. Hege, *Lagrangian Feature Extraction of the Cylinder Wake*, Physics of Fluids 22 (2010), 091108.
67. A. V. G. Cavalieri, G. Daviller, P. Comte, P. Jordan, G. Tadmor and Y. Gervais, *Using LES to explore sound-source mechanisms in jets*, Proc. Eng. 6 (2010), 104 – 113. (Selected papers from the IUTAM 2010 Symposium on Computational Aero-Acoustics for Aircraft Noise Prediction.)

68. G. Tadmor, O. Lehmann, B. R.Noack, L. Cordier, J. Delville, J.-P. Bonnet and M. Morzyński, *Reduced order models for closed-loop wake control*, Philosophical Trans. Royal Soc. A, 369 (2011), 15131524.
69. G. Tadmor and B. R. Noack, *Bernoulli, Bode, and Budgie*, IEEE Control Systems Magazine 31 (2011), 18 – 23.
70. A. V. G. Cavalieri, G. Daviller, P. Comte, P. Jordan, G. Tadmor and Y. Gervais, *Using large eddy simulation to explore sound-source mechanisms in jets*, J. of Sound and Vibration 330 (2011), 4098 – 4113
71. S. Laxminarayan, G. Tadmor, S. G. Diamond, E. Miller, M. A. Franceschini and D. H. Brooks, *Modeling habituation in rat EEG evoked responses via a neural mass model with feedback*, Biological Cybernetics, in press.

Chapters in Books

1. G. Tadmor, H_∞ *Interpolation in systems with input lags*, in **Linear Circuits, Systems and Signal Processing: Theory and Applications**, C.I. Byrnes, C.F. Martin and R.E. Saeks Editors, North Holland, 1988, pp. 603 – 608
2. O. Maimon and G. Tadmor, *Efficient low level control of FMS*, in **Artificial Intelligence: Manufacturing Theory and Practice**, S.T. Kumra, R.L. Kashyap and A.L. Soyster Editors, Inst. of Industrial Engineering Publications, 1989, pp. 377 – 398
3. G. Tadmor, H_∞ *In the time domain: the standard problem*, in **Recent Advances in Robust Control**, P. Dorato and R.K. Yedavalli editors, IEEE Press, 1990, pp. 326 – 327
4. G. Tadmor, *Robust control with temporally local information*, in **Recent Advances of Mathematical Theory of Systems, Control, Networks and Signal Processing**, H. Kimura and S. Kodama Editors, Mita 1992, pp. 153 – 158
5. G. Tadmor, *Robust sampled data control in continuous time systems*, in **Recent Advances of Mathematical Theory of Systems, Control, Networks and Signal Processing**, H. Kimura and S. Kodama Editors, Mita 1992, pp. 487 – 492
6. C.A. Jacobson and G. Tadmor, *A note on H_∞ system identification with probabilistic a priori information*, in **The Modeling of Uncertainty in Control System**, R.S. Smith and M.A. Dahleh editors, Lecture notes in control and information sciences ; 192, Springer, 1994, pp. 79 – 92

7. G. Tadmor, *The Beurling-Lax Theorem and Interpolation: An LTV System Perspective*, in **Systems and Network: Mathematical Theory and Applications**, Volume II, U. Helmke, R. Mennicken and J. Saurer Editors, Akademie Verlag, 1994, pp. 881 – 884
8. G. Tadmor, *Robust Control Of Systems With A Single Input Lag*, in **Stability and Control of Time Delay Systems**, L. Dugard and E. Verriest Editors, Springer, 1999, pp. 258 – 282 (<http://dx.doi.org/10.1007/BFb0027490>)
9. G. Tadmor, *Comments on Dissipative Designs and the TORA Benchmark*, in **Advances in System Theory**, T. Djaferis, Editor, Kluwer, 1999, pp. 405 – 417.
10. G. Tadmor and A. Banaszuk, *Observer based control of vortex motion in a recirculation zone*, in **Nonlinear Control Systems 2001** A.B.Kurzanski & A.L.Fradkov, Editors, Elsevier, Amsterdam, 2002, pp. 1315-1318.
11. B.R. Noack, I. Pelivan, G. Tadmor, M. Morzyński & P. Comte *Robust low-dimensional Galerkin models of natural and actuated flows*, in **Fourth Aeroacoustics Workshop**, W. Schröder & P. Trölsch, Editors, 2004.
12. R. King, M. Seibold, O. Lehmann, B. R. Noack and G. Tadmor, *Non linear flow control based on a low dimensional model of fluid flow*, in **Control and Observer Design for Nonlinear Finite and Infinite Dimensional Systems**, T. Meurer, K. Graichen and E.D. Gilles, Editors, Lecture notes in Control & Information Science Volume 322, pp. 369 - 386, Springer, 2005
13. L. Henning, M. Pastoor, B.R. Noack, R. King and G. Tadmor, *Feedback control applied to the bluff body wake*. In **Active Flow Control**, R. King (Editor). Notes on Numerical Fluid Mechanics and Multidisciplinary Design 95, 369 - 390, Springer, 2007
14. M. Morzyński, W. Stankiewicz, B.R. Noack, R. King, F. Thiele and G. Tadmor, *Continuous mode interpolation for control-oriented models of fluid flow*. In **Active Flow Control**, R. King (Editor). Notes on Numerical Fluid Mechanics and Multidisciplinary Design 95, 260 - 278, Springer, 2007.
15. M. Schlegel, B. R. Noack, P. Comte, D. Kolomenskiy, K. Schneider, M. Farge, J. Scouten, D. M. Luchtenburg and G. Tadmor, *Reduced-order modelling of turbulent jets for noise control*. In **Numerical Simulation of Turbulent Flows and Noise Generation**, C.-D. Munz, M. Manhart, D. Juvé and C. Brun (Editors). Notes on Numerical Fluid Mechanics and Multidisciplinary Design (NNFM) 104, 3 - 27, Springer-Verlag, 2009.

16. D. M. Luchtenburg, K. Aleksic, B. R. Noack, M. Schlegel, G. Tadmor and R. King, *Turbulence Control Based on Reduced-Order Models and Nonlinear Control Design*. In **Active Flow Control II**, R. King, Editor, Notes on Numerical Fluid Mechanics and Multidisciplinary Design 108, pp. 341–356, Springer Verlag, 2010.
17. M. Sznaier, O. Camps, N. Ozay, T. Ding, G. Tadmor and D. Brooks, *The role of dynamics in extracting information sparsely encoded in high dimensional data streams*, in **Dynamics of Information Systems: Theory and Applications** (M.J. Hirsch, P.M. Pardalos and R. Murphey, Editors), Springer 2010
18. M. Morzyński, W. Stankiewicz, F. Thiele, B. R. Noack and G. Tadmor, *Global stability analysis – a key enabler in ROM and flow control*, **EUCASS Flight Physics Book**, 567 – 568, 2011.
19. M. Morzyński, B. R. Noack and G. Tadmor, *Global Stability Analysis for Linear Dynamics* (34 pages), in **Reduced-Order Modeling for Flow Control**, B. R. Noack, M. Morzyński and G. Tadmor (Editors), CISM Courses and Lectures V. 528, Springer Verlag, 2011.
20. B. R. Noack, M. Schlegel, M. Morzyński and G. Tadmor, *Galerkin Methods for Nonlinear Dynamics* (39 pages), in **Reduced-Order Modeling for Flow Control**, B. R. Noack, M. Morzyński and G. Tadmor (Editors), CISM Courses and Lectures V. 528, Springer Verlag, 2011.
21. G. Tadmor, O. Lehmann, B. R. Noack and M. Morzyński, *Galerkin Models Enhancements for Flow Control* (102 pages), in **Reduced-Order Modeling for Flow Control**, B. R. Noack, M. Morzyński and G. Tadmor (Editors), CISM Courses and Lectures V. 528, Springer Verlag, 2011.

Conference Presentations and Proceeding Papers

1. Z. Artstein and G. Tadmor, *The underlying measures of linear systems with indirect controls*, Proc. of the 20th IEEE Conf. Decision and Control, pp. 1018–1021, 1981
2. O. Maimon and G. Tadmor, *Efficient supervisors in discrete event systems*, Proc. of the 1986 IEEE conference on Systems, Man and Cybernetics (invited)
3. G. Tadmor and O. Maimon, *From systems constraints to finite state machine models in discrete event systems*, Proc. of the 1987 American Control Conference, pp. 1721–1724

4. G. Tadmor, *H_∞ interpolation and systems with input delays*, 1987 MTNS (invited); talk & abstract; an accompanying paper appeared as a book chapter.
5. G. Tadmor, *Trajectory stabilizing controls in hereditary linear systems*, Proc. of the 26th IEEE Conf. Decision and Control, pp. 2180–2181, 1987
6. G. Tadmor, *H_∞ in the time domain: the four block problem*, Inst. for Mathematics and its Applications - Summer 1988 Workshop on Signal Processing (invited talk).
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130. S. Laxminarayan, S. G. Diamond, E. Miller, G. Tadmor, D. Boas and D. H. Brooks, *Controlling Dimensionality in a Systems Approach to Dynamic Multimodal Functional Brain Imaging*, 40th Asilomar Conference on Signals, Systems and Computers, 10/29-11/1/2006, Asilomar, CA
131. B. R. Noack, M. Morzyński, W. Stankiewicz and G. Tadmor, *Generalized mean-field model of oscillatory flow using continuous mode interpolation*, Paper OL.00006, 59th Annual Meeting of the APS Division of Fluid Dynamics, November 19-21, 2006; Tampa Bay, Florida
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133. L. Mirkin and G. Tadmor, *FIR Solutions of the H^2 Preview Tracking and Smoothing Problems*, IEEE Conference on Decision and Control (CDC), 2006
134. G. Tadmor, M. D. Centuori, B. R. Noack, O. Lehmann, M. Luchtenburg and M. Morzyński, *A Low Order Galerkin Design Model for Feedback Flow Stabilization Over a 2-D Airfoil*, 45th AIAA Aerospace Sciences Meeting and Exhibit, 8 - 11 Jan 2007, Reno, Nevada, Paper AIAA 2007-1313.
135. G. Tadmor, J. Gonzalez, B. R. Noack, O. Lehmann, M. Morzyński and W. Stankiewicz, *Shift Modes and Transient Dynamics in Low Order, Design Oriented Galerkin Models*, 45th AIAA Aerospace Sciences Meeting and Exhibit, 8 - 11 Jan 2007, Reno, Nevada, Paper AIAA 2007-111.
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Linearized models, 45th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, Jan. 8-11, AIAA Paper 2007-709

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139. G. Tadmor, B.R. Noack & M. Morzyński, Enablers for low dimensional Galerkin models for control and observation in fluid dynamics. (Invited, abstract) Minisymposium on Model Reduction for Flows in Porous Media, SIAM Conf. on Mathematical & Comp. Issues in Geoscience, Santa-Fe NM, March 19-22, 2007
140. G. Tadmor, B.R. Noack, D. Centuori, O. Lehmann & M. Morzyński, *Coherent structures, temporal harmonics and multi-resolution in reduced order empirical fluid flow models*. (Invited, abstract), SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah, May 28 June 1, 2007.
141. G. Tadmor, B. R. Noack, O. Lehmann and M. Morzyński, *Empirical and Analytic Generalized Mean Field Models*, Amer. Phys. Soc. Div. Fluid Dynamics 60th Ann. Meeting, (Bulletin Am. Phys. Soc., Vol. 52, No. 17, EE.04), Nov. 18-20, 2007
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144. L. Mirkin and G. Tadmor, On Performance Limitation Factors in the H_∞ Preview Problems, 46th IEEE Conference on Decision and Control, December 12-14, 2007
145. Stankiewicz, W., Morzyński, M., Noack, B. R. & Tadmor, G., *Model for vortex shedding for NACA-0012 airfoil having high AoA*, 2nd Workshop on Bluff-Body Wakes, Instabilities and Control, KUDELA, H. (organizer), Politechnika Wroclawska, Wroclaw, 27.-28. November 2007.
146. D. R. Williams, J. Collins, C. Jankhot, T. Colonius and G. Tadmor, *Control of Flow Structure on a Semi-Circular Planform Wing*, 46th AIAA Aerospace

sciences Meeting & Exhibit, Reno, NV, January 7-10, 2008, AIAA Paper 2008-634

147. W-T. Joe, K. Taira, T. Colonius, D. G. MacMynowski and G. Tadmor, *Closed-Loop Control of Vortex Shedding on a Two-Dimensional Flat-Plate Airfoil at a Low Reynolds Number*, 46th AIAA Aerospace sciences Meeting & Exhibit, Reno, NV, January 7-10, 2008, AIAA Paper 2008-597
148. Noack, B. R., Schlegel, M., Pastoor, M., Luchtenburg, M., King, R., Mutschke, G., Morzyński, M., Comte, P. Tadmor, G., and Ahlborn, B., Low-dimensional Galerkin models, statistical physics and attractor control towards a unifying theory for unsteady shear flows (invited talk). Industrial Applications of Low Order Models Based On Proper Orthogonal Decomposition (POD) Workshop, organized by Iollo, A., Institut de Mathématiques de Bordeaux, 2008.
149. Noack, B. R., Cordier, L., Morzyński, M. & Tadmor, G. *Reduced order models for feedback flow control: A review of key enablers and show stoppers* (invited talk). 79. Jahrestagung der Gesellschaft für angewandte Mathematik und Mechanik (GAMM) e.V., ZARM, University of Bremen, Germany, 2008.
150. G. Tadmor, D. Bissex, B. R. Noack, M. Morzyński, T. Colonius and K. Taira, *A Fast Approximate POD Algorithm for Long Time Data Trajectories*, 38th AIAA Fluid Dynamics / 4th Flow Control Conference and Exhibit, June 23-26, 2008
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155. M. Schlegel, B. R. Noack¹, B. Ahlborn, G. Mutschke, M. Morzyński, P. Comte & G. Tadmor, *Finite-time thermodynamics of shear flows - modelling attractors of simple to complex dynamics*, Dynamics Days Europe, Delft (Holand), August 25 - 29, 2008
156. D. R. Williams, J. Collins, G. Tadmor and T. Colonius, *Lift force time delays on 2D and 3D wings in unsteady flows*, 61st Annual Meeting of the Division of Fluid Dynamics of the APS, San Antonio, Texas, USA, November 23 - 25, 2008
157. M. Pastoor, L. Henning, B. R. Noack, R. King and G. Tadmor, *Vortex-model based flow control of turbulent wakes in experiment*, 61st Annual Meeting of the Division of Fluid Dynamics of the APS, San Antonio, Texas, USA, November 23 - 25, 2008
158. G. Tadmor, B. R. Noack, M. Schlegel and M. Morzyński, *A generalized Landau model for oscillatory to complex shear flows - enablers for reduced, low and least-order Galerkin models*, 61st Annual Meeting of the Division of Fluid Dynamics of the APS, San Antonio, Texas, USA, November 23 - 25, 2008
159. M. Schlegel, B. R. Noack, P. Jordan and G. Tadmor, *Least-order modal flow decompositions for aerodynamic and aeroacoustic goal functionals*, 2nd Int. Conf. on Jets, Wakes and Separated Flows, Berlin, Germany, September 16-19, 2008, (<http://www.fd.tu-berlin.de/index.php?id=494>)
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161. K. Aleksić, R. King, B. R. Noack, O. Lehmann, M. Morzyński & G. Tadmor, *Nonlinear model predictive control based on a low dimensional model of fluid flow*, 2nd Int. Conf. on Jets, Wakes and Separated Flows, Berlin, Germany, September 16-19, 2008
162. A. Bennis, M. Leeser, G. Tadmor and R. Tedrake, *Implementation of a Highly Parameterized Digital PIV System On Reconfigurable Hardware*, 12th Annual Workshop on High Performance Embedded Computing (HPEC), September 23 25, 2008
163. D. Williams, J. Collins, V. Quach, W. Kerstens, S. Buntain, T. Colonius, G. Tadmor and C. Rowley, *Low Reynolds Number Wing Response to an Oscillating Freestream with and without Feed Forward Control*, 47th AIAA Aerospace Sciences Meeting, 2009

164. A. Mishra, G. Tadmor and Z. Rusak, *Bifurcation analysis of the axisymmetric vortex breakdown in a pipe*, 39th AIAA Fluid Dynamics Conference, 2009 (AIAA-2009-3709)
165. M. Morzyński, B. R. Noack, M. Schlegel, and G. Tadmor, *Turbulent flow modeling via Galerkin method and Finite Time Thermodynamics*, Third Symposium on Hybrid RANS-LES Methods, 10-12 June 2009, Gdansk, Poland
166. B. Ahlborn, F. Curzon, B. R. Noack, M. Schlegel & Gilead Tadmor³, *Thermodynamics of Turbulence*, 10th Joint European Thermodynamics Conference (JETC - X), Copenhagen, 22-24 June 2009
167. G. Tadmor, B. R. Noack, M. Schlegel, M. Morzyński and S. Kelley, *Mean Field Models and Finite-Time Thermodynamics: A Unified Framework for Low Order, Multi-Scale Galerkin Models of Fluid Flows*, 10th Joint European Thermodynamics Conference (JETC - X), Copenhagen, 22-24 June 2009
168. G. Tadmor, *From Mean Fields and Thermodynamics to Traveling Waves: A Review of Physics-Based Model Reduction in Fluid Dynamics and Control*, 6th IFAC Symposium on Robust Control Design (ROCOND'09), Haifa, Israel, June 16-18, 2009 (plenary presentation)
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170. A. Bennis, M. Leeser and G. Tadmor, *The Effect of Parameterization on a Reconfigurable Implementation of PIV*, World Congress in Computer Science, Computer Engineering, and Applied Computing 2009 (WORLDCOMP09)
171. G. Tadmor, B. R. Noack, M. Schlegel and M. Morzyński, *Physics-Based Low Order Galerkin Models in Fluid Dynamics & Flow Control*, in *Coping with Complexity: Model Reduction and Data Analysis workshop*, 6th Algorithms for Approximation (A4A6) meeting, Leicester, UK, August 31 – September 4, 2009
172. B. R. Noack, M. Schlegel, G. Tadmor and M. Morzyński, *System reduction strategy for Galerkin models of fluid flows*, in *Coping with Complexity: Model Reduction and Data Analysis workshop*, 6th Algorithms for Approximation (A4A6) meeting, Leicester, UK, August 31 – September 4, 2009
173. B. R. Noack, M. Schlegel and G. Tadmor, *Least-order shear flow representations for control of aerodynamic and aeroacoustic observables*, in *Coping with Complexity: Model Reduction and Data Analysis workshop*, 6th Algorithms for Approximation (A4A6) meeting, Leicester, UK, August 31 – September 4, 2009

174. G. Pons Moll, G. Tadmor, R.S. MacLeod, B. Rosenhahn and D. H. Brooks, *4D Cardiac Segmentation of the Epicardium and Left Ventricle*, 11th International Congress of the IUPESM, Medical Physics and Biomedical Engineering World Congress, 2009
175. G. Pons Moll, G. Crosas Cano, G. Tadmor, R. S. MacLeod, B. Rosenhahn, and D. H. Brooks, *Parametric Modeling of the Beating Heart with Respiratory Motion Extracted from MR Images*, Computers in Cardiology, September 13-16, 2009
176. S. Laxminarayan, D. H. Brooks, and G. Tadmor, *A dynamical systems approach to modeling habituation in evoked responses as observed in concurrent EEG / optical measurements in rats*, Mathematical Research Centre Workshop on Brain Activity Modeling, Montreal, PQ, Canada, Aug. 2009
177. G. Tadmor, B. R. Noack, M. Schlegel and M. Morzyński, *A unifying low order flow modeling framework that covers statistical, deterministic and mean-field effects*, SIAM Conf. on Applications of Dynamical Systems, Snowbird, UT, May 17-21, 2009
178. Z. Ma, C. W. Rowley and G. Tadmor, *Snapshot-based Balanced Truncation for Time-periodic Systems*, SIAM Conf. on Applications of Dynamical Systems, Snowbird, UT, May 17-21, 2009
179. M. Morzyński, W. Stankiewicz, F. Thiele, B. R. Noack and G. Tadmor, *Global stability analysis a key enabler in ROM and flow control*, 3rd European Conference on Aero-Space Sciences (EUCASS), July 6-9, 2009, Versailles, France.
180. G. Tadmor, B. R. Noack, M. Schlegel and M. Morzyński, *Physics based Galerkin model reduction tools for fluid flow systems* (Invited talk) 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials, Blacksburg, VA
181. J. Kasten, C. Petz, I. Hotz, G. Tadmor, B. R. Noack and H.-C. Hege, *Lagrangian Feature Extraction of the Cylinder Wake, a poster at the Gallery of Fluid Motion*, Gallery of Fluid Motion (award winning) poster, 2009 Meeting of the Division of Fluid Dynamics (DFD09) of the American Physical Society, November 22-24, Minneapolis, MN
182. D. R. Williams, G. Tadmor, T. Colonius, W. Kerstens, V. Quach and S. Buntain, *The Lift Response of a Stalled Wing to Pulsatile Disturbance*, 2009 Meeting of the Division of Fluid Dynamics (DFD09) of the American Physical Society, November 22-24, Minneapolis, MN
183. G. Tadmor, B. R. Noack, M. Schlegel, O. Lehmann, S. Kelley and M. Morzyński, *Representing broad band effects by low order Galerkin models of fluid flows*, 2009

Meeting of the Division of Fluid Dynamics (DFD09) of the American Physical Society, November 22-24, Minneapolis, MN

184. T. Colonius, D. R. Williams, G. Tadmor, W. Kerstens, V. Quach and S. Buntain, *Scalning of transient lift response to actuation in a 3D separated flow*, 2009 Meeting of the Division of Fluid Dynamics (DFD09) of the American Physical Society, November 22-24, Minneapolis, MN
185. A. Mishra, Z. Rusak and G. Tadmor, *Global Description of Bifurcation Branches and Nonlinear Dynamics of Vortex Flow in a Pipe*, 2009 Meeting of the Division of Fluid Dynamics (DFD09) of the American Physical Society, November 22-24, Minneapolis, MN
186. J. Kasten, C. Petz, I. Hotz, G. Tadmor, B. R. Noack and H.-C. Hege, *Cylinder Wave*, **National Geographic Daily News, Best Fluid Motion Pictures**, February 1, 2009. Reproduction of the award winning APS-DFD 2009 award winning poster. (http://news.nationalgeographic.com/news/2010/02/photogalleries/100201-fluid-motion-winners-pictures/#fluid-cylinder-wave_12511_600x450.jpg)
187. J. Kasten, C. Petz, I. Hotz, G. Tadmor, B. R. Noack and H.-C. Hege, *Lagrangian Feature Extraction of the Cylinder Wake*, APS Nonlinear and Statistical Physics (GSNP) Meeting, March 15-17, 2010. Invited poster. Reproduction of the award winning APS-DFD 2009 award winning poster.
188. D. Williams, W. Kerstens, J. Pfeiffer, R. King, G. Tadmor, T. Colonius, *Closed-Loop Control of a Wing in an Unsteady Flow*, 48th AIAA Aerospace Sciences Meeting Including the New Horizons Forum and Aerospace Exposition, 2010, AIAA Paper 2010-358.
189. G. Tadmor, O. Lehmann, A. Manela, B. R. Noack & M. Schlegel, *Broadband effects and boundary forcing in low and least order Galerkin models of fluid flows*, 16th US National Congress of Theoretical and Applied Mechanics (USNCTAM), 2010
190. G. Tadmor, B. R. Noack, O. Lehmann and M. Schlegel, *Including Broadband Interactions and Boundary Forcing in Low and Least Order Galerkin Models of Fluid Flows*, SIAM Annual Meeting, 2010
191. B. Erem, A. Ghodrati, G. Tadmor, R. MacLeod, and D.H. Brooks, *Combining initialization and inverse methods for inverse electrocardiography*. Int. Cong. on Electrocardiology (ICE), Lund, Sweden, June 2010.

192. M. Queralt Madrigal, G. Tadmor, G. Crosas Cano and D. H. Brooks, *Low-Order 4D Dynamical Modeling of the heart motion under respiration*, 8th International Symposium on Biomedical Imaging (ISBI), Chicago, IL, 2011
193. S. Laxminarayan, G. Tadmor, L. Gagnon, M. A. Franceschini, D. Boas and D. H. Brooks, *A coupled model to jointly predict EEG and optical evoked response changes in rats under varying stimulus patterns*, 8th Int. Symp. on Noninvasive Functional Source Imaging of the Brain and Heart & 8th Int. Conf. on Bioelectromagnetism (NFSI-ICBEM), Banff, Alberta, Canada, 2011
194. G. Tadmor & al., *Modeling Fluid Flow on Inertial Manifolds: Physics, Geometry and the Challenge of Model Reduction*, French-Israeli Workshop on Delays & Robustness, April 3 – 5, 2011 (invited talk, abstract).
W. Stankiewicz, R. Roszak, M. Morzyński, B. R. Noack & G. Tadmor,
195. *Continuous Mode Interpolation between Multiple Operating and Boundary Conditions for Reduced Order Modelling of the Flow*, APS