

Note on Abbreviations: All journal titles are written out in full. IEEE stands for Institute of Electrical and Electronics Engineers. Proceedings volumes of conferences sponsored by the IEEE are archived, in bound form over the years, and more recently in electronic form at the website <http://ieeexplore.ieee.org> . ASME stands for American Society of Mechanical Engineers. AMS stands for American Mathematical Society. IFAC stands for International Federation of Automatic Control. The abbreviation “Proc.” is used to denote “Proceedings”. The link to Google Scholar citations is <http://scholar.google.com/citations?user=tMGdVcEAAAAJ>

Research and Scholarly Work

A. Books

1. J.E. Marsden, P.S. Krishnaprasad and J.C. Simo, editors, *Dynamics and Control of Multibody Systems*, vol. 97 in the series, *Contemporary Mathematics*, American Mathematical Society, Providence, 1989, 468 pages.
2. W.F. Shadwick, P.S. Krishnaprasad and T.S. Ratiu, editors, *Mechanics Day*, vol. 7 in the series, *Fields Institute Communications*, American Mathematical Society, Providence, 1995, 260 pages.

B. Papers in Books

1. “On the Geometry of Linear Passive Systems” (1980), in C.I. Byrnes and C.F. Martin eds. *Linear Systems Theory*, in series *Lectures in Applied Mathematics* vol. 18, pp. 253-275, American Mathematical Society, Providence, R.I. (Also Notices of the AMS, Nov. 1978, abstracts).
2. “The Dynamics of Two Coupled Rigid Bodies” (1988), in M. Levi and F. M. A. Salam (Eds.) *Dynamical Systems Approaches to Nonlinear Problems in Systems and Circuits*, pp. 373-378, SIAM Publications, Philadelphia, 1988 (with R. Grossman and J. E. Marsden).
3. “Stability Analysis of a Rigid Body with a Flexible Attachment using the Energy-Casimir Method” (1987), in M. Luksic, C. F. Martin and W. Shadwick (Eds.), *Differential Geometry: The Interface between Pure and Applied Mathematics*, in series, *Contemporary Mathematics* Vol. 68, pp. 253-273, American Mathematical Society, Providence, 1987, (with T. A. Posbergh and J. E. Marsden).
4. “Multibody Simulation in an Object Oriented Programming Environment” (1989), in R. Grossman (Ed.), *Symbolic Computation: Applications to Scientific Computing*, pp. 153-180, SIAM Publications, Philadelphia, 1989, (with N. Sreenath).
5. “Eulerian Many-Body Problems” (1989), in J. E. Marsden, P.S. Krishnaprasad and J.C. Simo (Eds.), *Dynamics and Control of Multibody Systems*, in series, *Contemporary Mathematics*, vol. 97, pp. 187-208, American Mathematical Society, Providence, 1989.

6. “Discrete Affine Wavelet Transforms for Analysis and Synthesis of Feedforward Neural Networks” (1991), in R.P. Lippmann, J.E. Moody, D.S. Touretzky (Eds.), *Advances in Neural Information Processing Systems III*, pp. 743-749, Morgan Kaufmann Publishers, San Mateo, 1991 (with Y.C. Pati).
7. “Motion Control and Coupled Oscillators” (1997), Board of Mathematical Sciences, National Research Council, *Motion, Control and Geometry: Proceedings of a Symposium*, pp. 52-65, National Academy Press, Washington D.C.
8. “Languages, Behaviors, Hybrid Architectures and Motion Control” (1998), in J. Baillieul and J. C. Willems (Eds.), *Mathematical Control Theory* (volume in honor of the 60th birthday of Roger Brockett), pp. 199-226, Springer-Verlag, New York, (with V. Manikonda, and J. Hendler).
9. “Some Gradient-based Joint Diagonalization Methods for ICA”, in G. Puntinet and A. Prieto (Eds.), *ICA 2004, Lecture Notes in Computer Science*, vol. 3195, pp. 437-444, (with B. Afsari).
10. “Quotient Signal Estimation” (2005), in I. Sabadini, D. Struppa, and D. Walnut (Eds.), *Harmonic Analysis, Signal Processing and Complexity*, pp. 151-162, Progress in Mathematics Series, Vol. 238, Birkhauser Publishing, Boston (with D. Napoletani, C. Berenstein and D. Struppa).
11. “Boundary Tracking and Obstacle Avoidance using Gyroscopic Control” (2013), In *Recent Trends in Dynamical Systems: Proc. Conf. in Honor of Jürgen Scheurle* (eds A. Johann, H-P Kruse, F Rupp, S Schmitz), pp. 417-446, Springer Proceedings in Mathematics & Statistics, vol. 35 Basel, Switzerland: Springer (with F. Zhang and E. W. Justh)
12. “Enlargement, Geodesics, and Collectives” (2015), In F. Nielsen and F. Barbaresco (Eds.), *Geometric Science of Information 2015*, LNCS 9389, pp. 558-565, Springer International Publishing, Switzerland (with E. W. Justh)

C. Papers in Refereed Journals

1. “Descent Approach to a Class of Inverse Problems” (1977), *Journal of Computational Physics*, 24, pp. 339-349, (with R.G. Barakat).
2. “Symplectic Mechanics and Rational Functions” (1979), *Recherche di Automatica*, vol. 10, no. 2, pp. 107-135, (Invited).
3. “A Scaling Theory for Linear Systems” (1980), *IEEE Transactions on Automatic Control*, vol. AC-25, no. 2, pp. 197-207, (with R.W. Brockett).
4. “Radon Inversion and Kalman Reconstructions: A Comparison” (1981), *IEEE Transactions on Automatic Control*, vol. AC-26, no. 2, pp. 483-487, (with D. Rohler).

5. "Homogeneous Interconnected Systems: An Example" (1981), *IEEE Transactions on Automatic Control*, vol. AC-26, no. 4, pp. 894-901, (with M. El-Sayed).
6. "On Families of Systems and Deformations" (1983), *International Journal of Control*, vol. 38, no. 5, pp. 1055-1079, (with C.F. Martin).
7. "Current Algebras and the Identification Problem" (1983), *Stochastics*, vol. 11, pp. 65-101, (with S.I. Marcus and M. Hazewinkel).
8. "On the Equilibria of Rigid Spacecraft with Rotors" (1984), *Systems and Control Letters*, vol. 4, pp. 157-163, (with C. A. Berenstein).
9. "Lie-Poisson Structures, Dual-Spin Spacecraft and Asymptotic Stability" (1985), *Nonlinear Analysis: Theory, Methods and Applications*, vol. 9, no. 10, pp. 1011-1035.
10. "The Self-Tuning Controller: Comparison with Human Performance in the Control of Arterial Pressure" (1985), *Annals of Biomedical Engineering*, vol. 13, pp. 341-357, (with K. Stern, B. Walker, H. Chizeck, M. Dauchot, and P. Katona).
11. "Hamiltonian Structures and Stability for Rigid Bodies with Flexible Attachments" (1987), *Archive for Rational Mechanics and Analysis*, vol. 98, no. 1, pp. 71-93, (also *Report of the Center for Pure and Applied Mathematics*, University of California, Berkeley, PAM-276, 38 pages, 1985), (with J.E. Marsden).
12. "Towards a Cell Decomposition for Rational Functions" (1986), *IMA Journal of Mathematical Control and Information*, (special issue on *Parametrization Problems*), vol.3, no. 2 & 3, pp. 137-150, (with P. A. Fuhrmann, invited).
13. "The Dynamics of Coupled Planar Rigid Bodies Part I: Reduction, Equilibria and Stability" (1988), *Dynamics and Stability of Systems*, vol. 3, no. 1 & 2, pp. 25-49, (with N. Sreenath, Y. G. Oh, and J. E. Marsden).
14. "The Hamiltonian Structure of Nonlinear Elasticity: The Convective Representation of Solids, Rods, and Plates" (1988), *Archive for Rational Mechanics and Analysis*, vol. 104, no. 2, pp. 125-183, (with J. C. Simo, and J. E. Marsden).
15. "The Dynamics of Coupled Planar Rigid Bodies Part II: Bifurcations, Periodic Solutions, and Chaos" (1989), *Journal of Dynamics and Differential Equations*, vol. 1, no. 3, pp. 269-298, (with Y.-G. Oh, N. Sreenath and J. E. Marsden).
16. "Hamiltonian Dynamics of a Rigid Body in a Central Gravitational Field" (1991), *Celestial Mechanics and Dynamical Astronomy*, vol. 50, pp. 349-386, (with L-S. Wang, and J.H. Maddocks).

17. "An Analog Neural Network Solution to the Inverse Problems of 'Early Taction' " (1992), *IEEE Transactions on Robotics and Automation*, vol. 8, no. 2, pp. 196-212, (with Y.C. Pati, and M.C. Peckerar).
18. "Analysis and Synthesis of Feed-forward Neural Networks Using Discrete Affine Wavelet Transformations" (1993), *IEEE Transactions on Neural Networks*, vol. 4, no. 1, pp. 73-85, (with Y.C. Pati).
19. "Stabilization of Rigid Body Dynamics by Internal and External Torques" (1992), *Automatica*, vol. 28, no. 4, pp. 745-756, (with A.M. Bloch, J.E. Marsden and G.S. Alvarez).
20. "Gyroscopic Control and Stabilization" (1992), *Journal of Nonlinear Science*, vol. 2, pp. 367-415, (with L-S. Wang).
21. "Steady Rigid-Body Motions in a Central Gravitational Field" (1992), *Journal of Astronautical Sciences*, vol. 40, no. 4, October-December, pp. 449-478, (with L-S. Wang and J.H. Maddocks).
22. "Almost Poisson Integration of Rigid Body Systems" (1993), *Journal of Computational Physics*, vol. 107, no. 1, pp. 105-117, (with M. Austin and L-S. Wang).
23. "On the Geometry and Dynamics of Floating Four Bar Linkages" (1994), *Dynamics and Stability of Systems*, vol. 9, no. 1, pp. 19-45 (with R. Yang).
24. "Dissipation Induced Instabilities" (1994), *Annales de L'Institut Henri Poincaré: Analyse Non Lineare*, vol. 11, no. 1, pp. 37-90, (with A.M. Bloch, J.E. Marsden, T.S. Ratiu).
25. "Optimal Control of a Rigid Body with Two Oscillators" (1996), *Fields Institute Communications*, vol. 7, pp. 233-260. (also Institute for Systems Research Technical Report TR 93-63) (with R. Yang and W.P. Dayawansa).
26. "The Euler-Poincaré Equations and Double Bracket Dissipation" (1996), *Communications in Mathematical Physics*, vol. 175, pp. 1-42, also Fields Institute Technical Report, FI94-CT01, and The Erwin Schroedinger International Institute for Mathematical Physics, Vienna, Preprint ESI 73 (1994), (with A.M. Bloch, J.E. Marsden and T.S. Ratiu).
27. "Optimal Control and Poisson Reduction" (1994), **published only as Institute for Systems Research Technical Report TR-93-87, 16 pages.**
28. "Motion Control of Drift-Free, Left-Invariant Systems on Lie Groups" (1995), *IEEE Transactions on Automatic Control*, vol. 40, no.9, pp. 1539-1554, (with N.E. Leonard).
29. "Nonholonomic Mechanics and Symmetry" (1997), *Archive for Rational Mechanics and Analysis*, vol. 136, pp. 21-99, (with A.M. Bloch, J.E. Marsden, R.M. Murray).

30. “An Application of Lie Groups in Distributed Control” (2001), *Systems and Control Letters*, vol. 43, no.1, pp. 43-52, (with G.A. Kantor).
31. “Pattern-forming Systems for Control of Large Arrays of Actuators” (2001), *Journal of Nonlinear Science*, vol. 11, pp. 239-277, (with E.W. Justh).
32. “Cayley Transforms in Micromagnetics” (2001), *Physica B*, vol. 306, pp. 195-199 (with X. Tan).
33. “Adaptive Optics with Advanced Phase-Contrast Techniques: Part II High Resolution Wave-Front Control” (2001), *Journal of the Optical Society of America A*, vol. 18, no. 6, pp. 1300-1311, (with E.W. Justh, M.A. Vorontsov, G.W. Carhart, and L.A., Beresnev).
34. “Oscillations, SE(2) -Snakes and Motion Control: A Study of the Roller Racer” (2001), *Dynamical Systems*, vol. 16, no. 4, pp. 347-397, (with D. Tsakiris).
35. “Controllability of a Class of Underactuated Mechanical Systems with Symmetry” (2002), *Automatica*, vol. 38, no. 11, pp. 1837-1850, (with V. Manikonda).
36. “Bio-mimetic Sound Source Localization” (2002), *IEEE Sensors Journal*, vol. 2, no. 6, pp. 607-616, (with A.A. Handzel).
37. “Analysis of a High-Resolution Optical Wave-Front Control System” (2004), *Automatica*, vol. 40, no. 7, pp. 1129-1141, (E.W. Justh and M.A. Vorontsov).
38. “Approximate Nonlinear Filtering and its Applications in Navigation” (2005), *Automatica*, vol. 41, no. 6, pp. 945-956, (with B. Azimi-Sadjadi).
39. “Equilibria and Steering Laws for Planar Formations” (2004), *Systems and Control Letters*, vol. 52, no. 1, pp. 25-38, (with E.W. Justh).
40. “Convergence Analysis and Analog Circuit Applications for a Class of Networks of Nonlinear Coupled Oscillators” (1997), **recommended for publication pending final revision**, in *IEEE Transactions on Neural Networks*, (with E. Justh and F. Kub). **Final version was not submitted.**
41. “On a Low-Dimensional Model for Ferromagnetism” (2005), *Nonlinear Analysis: Theory, Methods and Applications*, vol. 61, no. 8, pp 1147-1482 (with R. V. Iyer)
42. “A Particle Filtering Approach to Change Detection for Nonlinear Systems” (2004), *EURASIP Journal on Applied Signal Processing*, vol. 15, pp. 2295-2305, (with B. Azimi-Sadjadi).
43. “Coordinated Orbit Transfer for Satellite Cluster,” (2004), in *Astrodynamics, Space Missions, and Chose*, E. Belbruno and P. Gurfil (Eds.), in the series, *Annals of the New York Academy of Sciences*, vol. 1017, pp. 112-137, (with F. Zhang).

44. “The Hannay-Berry Phase of the Vibrating Ring Gyroscope” (2004), **to be re-submitted** (with Sean Andersson).
45. “Approximate Inversion of Hysteresis with Application to Control of Smart Actuators” (2005), *IEEE Transactions on Automatic Control*, vol. 50, no. 6, pp. 798-810, (with R. V. Iyer and X. Tan).
46. “Control of Hysteresis in Smart Actuators with Application to Micro-positioning” (2005), *Systems and Control Letters*, vol. 54, no. 5, pp. 483-492. (X. Tan and J. S. Baras).
47. “Echolocating Bats use a Nearly Time-optimal Strategy to Intercept Prey” (2006), *PLoS Biology*, **4**, 865-873, e. 108 (with K. Ghose, T. K. Horiuchi, and C. F. Moss).
48. “Steering Laws for Motion Camouflage” (2006), *Proceedings of the Royal Society of London A*, **462**, 3629-3643 (with E. W. Justh).
49. “Active Pointing Control for Short Range Free-space Optical Communication:” (2007), *Communications in Information and Systems*, **72**, 177-194 (A. Komae and P. Narayan).
50. “Pursuit and an Evolutionary Game” (2009), *Proceedings of the Royal Society of London A*, **465**, 1539-1559 (with E. Wei and E. W. Justh).
51. “Effect of Competitive Prey Capture on Flight Behavior and Sonar Beam Pattern in Paired Big Brown Bats, *Eptesicus fuscus*” (2010), *The Journal of Experimental Biology*, **213**, No. 19, pp. 3348-3356 (with C. Chiu, P. V. Reddy, W. Xian, and C. F. Moss).
52. “Optimal Natural Frames” (2011), *Communications in Information and Systems*, **11**, No. 1, pp. 17-34 (with E. W. Justh), published online October 2010.
53. “Jerrold Eldon Marsden (1942-2010)” (2011), *IEEE Control Systems Magazine*, April 2011, pp. 105-108 (with A.M. Bloch, N. E. Leonard and R. M. Murray).
54. “Remembering Jerry Marsden (1942-2010)” (2012), *Notices of the American Mathematical Society*, **59**, No. 6, June/July, pp. 758-775 (with T. Ratiu, A. Weinstein and others).
55. “Dynamics of Mutual Motion Camouflage” (2012), *Systems and Control Letters*, **61**(9), pp. 894-903 (with M. Mischiati).
56. “Symmetry and reduction in collectives: cyclic pursuit strategies” (2013), *Proceedings of the Royal Society of London A*, **469** (October 8 issue), 20130264, published online 21 August 2013, 24 pages plus 12 pages electronic supplement (with K. S. Galloway, and E. W. Justh).

57. “Optimality, reduction, and collective motion” (2015), *Proceedings of the Royal Society of London A*, **471**(2177), 20140606; DOI:10.1098/rspa.2014.0606. Published online 1 April 2015, 22 pages plus 20 pages electronic supplement (with E. W. Justh).
58. “Symmetry and reduction in collectives: low dimensional cyclic pursuit” (2016), *Proceedings of the Royal Society of London A*, **472**, DOI:10.1098/rspa.2016.0465, 2016, 21 pages in print and 10 pages electronic supplement (with Kevin S. Galloway and E. W. Justh).
59. “Geometric decompositions of collective motion” (2017), *Proceedings of the Royal Society of London A*, **473**, DOI:10.1098/rspa.2016.0571, 2017, 23 pages in print and 14 pages electronic supplement (with Matteo Mischiati).
60. “Sub-Riemannian geometry and finite-time thermodynamics Part 1: The stochastic oscillator” (2019), *Discrete and Continuous Dynamical Systems Series S*, published online 2019, DOI: 10.3934/dcdss.2020072, 26 pages (with Yunlong Huang).

D. Papers in Conference Proceedings:

(Articles submitted to American Control Conference, IEEE Conference on Decision and Control and the IEEE International Conference on Robotics and Automation are consistently refereed prior to the conference and only accepted articles are included in the Proceedings. Acceptance rates vary. IFAC Symposia on Robot Control require full paper review. The annual Allerton Conference at the University of Illinois, and the annual Conference on Information Sciences and Systems which alternates between Johns Hopkins University and Princeton University, require only review of submitted abstracts. The American Control Conference was in its early editions known as the Joint Automatic Control Conference, and in that era papers had only session numbers in the proceedings and not page numbers.)

1. “Scaling Rational Functions and Linear System Identification” (1977), *Proc. Conference on Information Sciences and Systems*, the Johns Hopkins University, (with R.W. Brockett).
2. “Geometry of Parametric Models: Some Probabilistic Questions” (1977), *Proc. 15th Allerton Conference Control, Communication and Computing*, Allerton, Illinois, pp. 661-670, (Invited Paper).
3. “Information Measures in Decentralized Systems” (1979), *Proc. 17th Allerton Conference on Control, Communication and Computing*, Allerton, Illinois, (with M. El-Sayed).
4. “Model Reduction Using an Information Rate Criterion” (1979), *Proc. 17th Allerton Conference on Control, Communication and Computing*, Allerton, Illinois (with B. Evans).
5. “Theory of Stochastic Systems: Application to Blood Pressure Control” (1980), *Proc. IEEE International Symposium on Circuits and Systems*, pp. 478-481, IEEE, New York. (with P.G. Katona and K.S. Stern; invited paper).

6. “Nonlocal Control Laws” (1980), *Proc. Joint Automatic Control Conference*, San Francisco, (invited paper with M. El-Sayed).
7. “Deformation of Lie Algebras and the Wei-Norman Equations” (1980), *Proc. 19th IEEE Conference on Decision and Control*, pp. 661-662, IEEE, New York.
8. “Some Nonlinear Filtering Problems Arising in Recursive Identification” (1981), in M. Hazewinkel and J.C. Willems eds, *Stochastic Systems: The Mathematics of Filtering, Identification and Applications*, pp. 299-304, Reidel, Dordrecht, (with S.I. Marcus).
9. “Identification and Tracking: A Class of Nonlinear Filtering Problems” (1981), *Proc. Joint Automatic Control Conference*, session FP-5, American Automatic Control Council, Philadelphia, (with S.I. Marcus, invited paper).
10. “On the Lie Algebra of the Identification Problem” (1982), *Proc. IFAC Symposium on Digital Control*, New Delhi, India, January 1982 (with S.I. Marcus, invited paper).
11. “System Identification and Nonlinear Filtering: Lie Algebras” (1981), *Proc. 20th IEEE Conference on Decision and Control*, pp. 330-334, IEEE, New York (with S.I. Marcus and M. Hazewinkel).
12. “Approximation Methods for Nonlinear Filtering Problems Arising in System Identification” (1981), *Proc. 20th IEEE Conference on Decision and Control*, pp. 594, IEEE, New York (with M. Hazewinkel and B. Hanzon).
13. “Intrinsic Filtering Equations” (1982), *Proc. 21st IEEE Conference on Decision and Control*, pp. 1125, IEEE, New York (invited).
14. “Asymptotic Observers as Limits of Nonlinear Filters” (1982), *Proc. 21st IEEE Conference on Decision and Control*, pp. 1126-1127, IEEE, New York (with J. Baras).
15. “On Certain Infinite Dimensional Lie Algebras and Related System-Theoretic Problems” (1983), in Paul Fuhrmann (ed.) *Proc. Symposium on the Mathematical Theory of Networks and Systems, Beer Sheva, Israel*, in series: *Lecture Notes in Control and Information Sciences*, pp. 591-604, Springer-Verlag, Berlin. (invited plenary lecture)
16. “Symmetries and the Reduced Linearization Problem” (1983), *Proc. Conference on Information Sciences and Systems*, the Johns Hopkins University, pp. 408-413, (with J. Han).
17. “Lie-Poisson Structures and Dual-Spin Spacecraft” (1983), *Proc. 22nd IEEE Conference on Decision and Control*, pp. 814-824, IEEE, New York (invited).
18. “Symmetries and the Reduced Linearization Problem II” (1983), *Proc. 22nd IEEE Conference on Decision and Control*, pp. 1162-1164, IEEE, New York (with J. H. Han, invited).

19. "Geometric Methods for Multi-body Dynamics" (1984), *Proc. AIAA Dynamics Specialists Conference*, pp. 607-615, AIAA, New York (with M. El-Baraka, invited)
20. "Disturbance Decoupling Control of the Swing Equations" (1984), *Proc. 23rd IEEE Conference on Decision and Control*, pp. 191-193, IEEE, New York (with E. H. Abed, invited).
21. "DYNAMAN: A Tool for Manipulator Design and Analysis" (1986), *Proc. IEEE International Conference on Robotics and Automation*, pp. 836-842, IEEE, New York, (with N. Sreenath); also Technical Research Report TR-85-12, Systems Research Center, University of Maryland, 39 pages.
22. "Neural Networks for Tactile Perception" (1988), *Proc. IEEE International Conference on Robotics and Automation*, pp. 134-139, IEEE, New York, (with Y. C. Pati, D. Friedman, C. T. Yao, M. C. Peckerar, R. Yang, C. R. K. Marrian).
23. "Relative Equilibria for Two Rigid Bodies Connected by a Ball-in-Socket Joint" (1989), *Proc. 28th IEEE Conference on Decision and Control*, pp. 692-697, IEEE, New York, (with L-S. Wang).
24. "On The Dynamics of Floating Four-Bar Linkages" (1989), *Proc. 28th IEEE Conference on Decision and Control*, pp. 1632-1637, IEEE, New York, (with R. Yang).
25. "On the Dynamics of Floating Four-Bar Linkages II: Bifurcations of Relative Equilibria" (1990), *Proc. 29th IEEE Conference on Decision and Control*, pp. 1288-1293, IEEE, New York, (with R. Yang).
26. "A Multi-body Analog of Dual-Spin Problems" (1990), *Proc. 29th IEEE Conference on Decision and Control*, pp. 1294-1299, IEEE, New York, (with L-S. Wang).
27. "Geometric Phases and Optimal Reconfiguration for Multi-body Systems" (1990), *Proc. 1990 American Control Conference*, pp. 2240-2244, American Automatic Control Council, Philadelphia, (invited).
28. "Mobile Robot Navigation using Potential Functions" (1991), *Proc. IEEE International Conference on Robotics and Automation*, pp. 2047-2053, IEEE, New York, (with R. Shahidi, and M. Shayman).
29. "Geometric Phases, Anholonomy and Optimal Movement" (1991), *Proc. IEEE International Conference on Robotics and Automation*, pp. 2185-2189, IEEE, New York, (with R. Yang).
30. "On Symplectic and Almost Poisson Integration of Rigid Body Systems" (1991), *Proc. International Conference on Computational Engineering Science*, Melbourne, Australia, August 1991, pp. 54-59, (with M. Austin and L-S. Wang), (invited).

31. "Asymptotic Stability, Instability and Stabilization of Relative Equilibria" (1991), *Proc. 1991 American Control Conference*, pp. 1120-1125, American Automatic Control Council, Philadelphia, (with A.M. Bloch, J.E. Marsden and T.S. Ratiu), (invited paper).
32. "Mechanical Systems with Partial Damping" (1991), *Proc. 30th IEEE Conference on Decision and Control*, pp. 2356-2360, IEEE, New York, (with L-S. Wang and W.P. Dayawansa).
33. "Control Problems on Principal Bundles and Nonholonomic Mechanics" (1991), *Proc. 30th IEEE Conference on Decision and Control*, pp. 1133-1138, IEEE, New York, (with R. Yang and W. Dayawansa), (invited).
34. "Decomposition of $H^2(\pi^+)$ via Rational Wavelets" (1992), *Proc. Conference on Information Sciences and Systems*, pp. 15-20, Princeton, (with Y.C. Pati).
35. "Adaptive Friction Compensation for Bi-Directional Low-Velocity Position Tracking" (1992), *Proc. 31st IEEE Conference on Decision and Control*, pp. 267-273, IEEE, New York, (with N.E. Leonard).
36. "Approximations of Stable Linear Systems via Rational Wavelets" (1992), *Proc. 31st IEEE Conference on Decision and Control*, pp. 1502-1507, IEEE, New York, (with Y.C. Pati).
37. "Averaging on Lie Groups, Attitude Control and Drift" (1993), *Proc. Conference on Information Sciences and Systems*, pp. 369-374, the Johns Hopkins University, (with N.E. Leonard).
38. "Motion Planning for a Class of Active Robotic Systems" (1993), *Proc. IEEE Symposium on New Directions in Control Theory and Applications*, June 21-23, Greece, (with D. Tsakiris).
39. "Chaplygin Dynamics and Lagrangian Reduction" (1993), in Chien W-Z., Guo Z-H., Guo Y-Z., eds., *Proc. 2nd International Conference on Nonlinear Mechanics-(ICNM II)*, pp. 745-749, Peking University Press, China, (with R. Yang, W. Dayawansa).
40. "Averaging for Attitude Control and Motion Planning" (1993), *Proc. 32nd IEEE Conference on Decision and Control*, pp. 3098-3104, IEEE, New York, (with N.E. Leonard).
41. "Modeling of Impact on a Flexible Beam" (1993), *Proc. 32nd IEEE Conference on Decision and Control*, pp. 1377-1382, IEEE, New York, (with Q.F. Wei and W.P. Dayawansa).
42. "Wavelet Based Identification of Smart Structures with Surface Mounted Actuators and Sensors" (1993), *Proc. 32nd IEEE Conference on Decision and Control*, pp. 486-491, IEEE, New York, (with R. Rezaifar, Y.C. Pati and W.P. Dayawansa).

43. "An Improved Model for the Dynamics of Spur Gear Systems with Backlash Consideration" (1993), *Advances in Design Automation*-vol. 1, DE-vol. 65-1, pp. 235-243, ASME, New York, (with T.K. Shing and L.W. Tsai).
44. "Orthogonal Matching Pursuit: Recursive Function Approximation with Applications to Wavelet Decomposition" (1993), *Proc. 27th Asilomar Conference on Signals, Systems and Computers*, Nov. 1-3, 1993, pp 40-44, (with Y.C. Pati and R. Rezaifar).
45. "A Fast Recursive Algorithm for System Identification and Model Reduction using Rational Wavelets" (1993), *Proc. 27th Asilomar Conference on Signals, Systems and Computers*, Nov. 1-3, 1993, pp 35-39, (with Y.C. Pati, R. Rezaifar and W.P. Dayawansa).
46. "High-Order Averaging on Lie Groups and Control of an Autonomous Underwater Vehicle" (1994), *Proc. 1994 American Control Conference*, pp. 157-162, American Automatic Controls Council, Philadelphia, (with N.E. Leonard).
47. "Approximation of Dynamical Effects due to Impact on Flexible Bodies" (1994), *Proc. 1994 American Control Conference*, pp. 1841-1845, American Automatic Controls Council, Philadelphia, (with Q-F. Wei and W.P. Dayawansa).
48. "2-Module Nonholonomic Variable Geometry Truss Assembly: Motion Control" (1994), in L. Sciavicco, C. Bonivento, F. Nicolo, ed., *Proc. Fourth IFAC Symposium on Robot Control '94*, Capri, Italy, September 19-21, pp. 263-268, Pergamon Press, (also Institute for Systems Research Technical Report TR 93-90), (with D.P. Tsakiris).
49. "Control of Switched Electrical Networks Using Averaging on Lie Groups" (1994), *Proc. 33rd IEEE Conference on Decision and Control*, pp. 1919-1924, IEEE, New York, (with N.E. Leonard).
50. "G-Snakes: Nonholonomic Kinematic Chains on Lie Groups" (1994), *Proc. 33rd IEEE Conference on Decision and Control*, pp. 2955-2960, IEEE, New York, (with D. Tsakiris).
51. "Rational Wavelets in Model Reduction and System Identification" (1994), *Proc. 33rd IEEE Conference on Decision and Control*, pp. 3394-3399, IEEE, New York, (with Y.C. Pati).
52. "Motion Control of an Autonomous Underwater Vehicle with an Adaptive Feature" (1994), *Proc. Symposium on Autonomous Underwater Vehicle Technology*, pp. 283-288, IEEE Oceanic Engineering Society, Cambridge, (with N.E. Leonard).
53. "Dynamic Model of a Spur Gear System with Backlash and Friction Consideration" (1994), *Proc. 1994 ASME Design Technical Conference*, DE-Vol. 71, Machine Elements and Machine Dynamics, pp. 155-163, ASME, New York, (with T.K. Shing and L.W. Tsai).

54. "Smart Motor Concept Based on Piezoelectric-Magnetostrictive Resonance" (1995), in I. Chopra ed. *Proc. SPIE Conference on Smart Structures and Materials 1995: Special Conference on Smart Structures and Integrated Systems*, SPIE vol. 2443, pp. 763-770, SPIE, Bellingham, (with R. Venkataraman, W.P. Dayawansa, and J. Loncaric).
55. "Identification and Intelligent Control of 2D Smart Composite" (1995), in V.V. Varadhan ed. *Proc. SPIE Conference on Smart Structures and Materials 1995: Special Conference on Mathematics and Control in Smart Structures*, SPIE vol. 2442, pp. 231-240, SPIE, Bellingham (with T. Kugarajah and W.P. Dayawansa).
56. "A Motion Description Language and a Hybrid Architecture for Motion Planning with Nonholonomic Robots" (1995), *IEEE International Conference on Robotics and Automation*, (Nagoya, Japan), pp. 2021-2028, IEEE, New York, (with V. Manikonda and J. Hendler).
57. " H_∞ Control for Impulsive Disturbances: A State Space Solution" (1995), *Proc. American Control Conference*, pp. 4379-4383, American Automatic Control Council, Philadelphia, (with Q. Wei and W.P. Dayawansa).
58. "Formalizing Behavior-based Planning for Nonholonomic Robots" (1995), *Proc. International Joint Conference on Artificial Intelligence*, pp. 142-149, (with V. Manikonda and J. Hendler).
59. "Oscillations, SE(2)-Snakes and Motion Control" (1995), *Proc. 34th IEEE Conference on Decision and Control*, pp. 2806-2811, IEEE, New York (with D. Tsakiris, invited).
60. "Convergence Analysis of a Class of Networks of Nonlinear Coupled Oscillators" (1995), *Proc. 34th IEEE Conference on Decision and Control*, pp. 1284-1289, IEEE, New York (with E. Justh).
61. "Dynamics and Controllability of a Planar Rigid Body with a Thruster" (1996), *Proc. Conference on Information Sciences and Systems*, Princeton University, pp 161-166, (with V. Manikonda).
62. "Controllability of Lie-Poisson Reduced Dynamics" (1997), *Proc. 1997 American Control Conference*, American Automatic Control Council, Philadelphia, pp 2203-2207 (with V. Manikonda).
63. "On Approximate Inversion and Feedback Stabilization for Systems on Matrix Lie Groups" (1997), *Proc. 1997 American Control Conference*, American Automatic Control Council, Philadelphia, pp 2576-2580 (with H. Struemper).
64. "Approximate Tracking for Systems on Three-dimensional Matrix Lie Groups via Feedback Nilpotentization" (1997), in M. Guglielmi (ed.), *Proc. Fifth IFAC Symposium on Robot Control*, (SYROCO'97, Nantes, France, September 3-5, 1997), pp 25-32 (with H. Struemper).

65. “Control Problems of Hydrodynamic Type” (1998), invited paper for special session on Control of under-actuated Systems at the *Proc. IFAC Symposium on Nonlinear Control Systems* (NOLCOS'98, Enschede, The Netherlands, July 1-3, 1998), vol. 1: 139-144 (with V. Manikonda).
66. “A Model for a Thin Magnetostrictive Actuator” (1998), *Proc. of 32nd Annual Conference on Information Science and Systems*, Princeton University, pp. 813-818, (with R. Venkataraman).
67. “Efficient Implementation of Controllers for Large Scale Linear Systems via Wavelet Packet Transforms” (1998), *Proc. of 32nd Annual Conference on Information Science and Systems*, Princeton University, pp. 52-56, (with G. Kantor).
68. “Nonlinear Model Reduction for RTCVD” (1998), *Proc. of 32nd Annual Conference on Information Science and Systems*, Princeton University, pp. 819-824, (with A.J. Newman).
69. “A Lyapunov Functional for the Cubic Nonlinearity Activator-Inhibitor Model Equation” (1998), *Proc. 37th IEEE Conference on Decision and Control*, pp. 1404-1409, IEEE, New York, (with E.W. Justh).
70. “Computation for Nonlinear Balancing” (1998), *Proc. 37th IEEE Conference on Decision and Control*, pp. 4103-4104, IEEE, New York, (with A.J. Newman).
71. “Qualitative Analysis of the Bulk Ferromagnetic Hysteresis Model” (1998). *Proc. 37th IEEE Conference on Decision and Control*, pp. 2443-2448, IEEE, New York, (with R. Venkataraman).
72. “Analysis of a Complex Activator Inhibitor Equation” (1999), *Proc. American Control Conference*, pp. 1613-1617, American Automatic Control Council, Philadelphia, (with E.W. Justh).
73. “A Novel Algorithm for the Inversion of the Preisach operator” (2000), in V.V. Varadan (ed.) *Smart Structures and Materials 2000; Mathematics and Control in Smart Structures*, Proc. SPIE, vol. 3984, pp 404-414. (with R. Venkataraman).
74. “Fast Evaluation of Demagnetizing Field in Three Dimensional Micromagnetics Using Multipole Approximation” (2000), in V.V. Varadan (ed.) *Smart Structures and Materials 2000; Mathematics and Control in Smart Structures*, Proc. SPIE, vol. 3984, pp 195-201 (with X. Tan and J.S. Baras).
75. “Computational Micromagnetics for Magnetostrictive Actuators” (2000), in V.V. Varadan (ed.) *Smart Structures and Materials 2000; Mathematics and Control in Smart Structures*, Proc. SPIE, vol. 3984, pp. 162-173, (with X. Tan and J.S. Baras).

76. “Stability Analysis of Iterative Learning Controls” (2000), in M. Fleiss and A. Eljai (eds). *Proc. 14th International Symposium on Mathematical Theory of Networks and Systems (CDROM)*, 10 pages, (with J-Q. Shao).
77. “Computing Balanced Realizations for Nonlinear Systems” (2000), in M. Fleiss and A. Eljai (eds). *Proc. 14th International Symposium on Mathematical Theory of Networks and Systems (CDROM)*, 10 pages, (with A.J. Newman).
78. “Adaptive Wavefront Control Using a Nonlinear Zernike Filter” (2000), in *High-resolution Wavefront Control: Methods, Devices and Applications II, Proc. 45th Annual Meeting of SPIE*, pp. 189-200, (with E.W. Justh, M.A. Vorontsov, G.W. Carhart, and L.A. Beresnev).
79. “Sub-band Based Independent Component Analysis” (2000), *Proc. ICA2000*, pp. 199-204, (with Y. Qi and S. Shamma).
80. “Approximate Inversion of Hysteresis: Theory and Numerical Results” (2000), *Proc. 39th IEEE Conference on Decision and Control*, pp. 4448-4454, IEEE, New York (with R. Venkataraman).
81. “Nonlinear Analysis of a High-resolution Optical Wave-front Control System” (2000), *Proc. 39th IEEE Conference on Decision and Control*, pp. 3301-3306, IEEE, New York (with E.W. Justh and M.A. Vorontsov).
82. “Approximate Nonlinear Filtering and its Applications for GPS” (2000), *Proc. 39th IEEE Conference on Decision and Control*, pp. 1579-1584, IEEE, New York (with B. Azimi-Sadjadi).
83. “Relative Equilibria and Stability of Rings of Satellites” (2000), *Proc. 39th IEEE Conference on Decision and Control*, pp. 1285-1288, IEEE, New York.
84. “Integer Ambiguity Resolution in GPS Using Particle Filtering” (2001), *Proc. American Control Conference*, pp. 3761-3766, (with B. Azimi-Sadjadi).
85. “Control of Hysteresis: Theory and Experimental results” (2001), *Smart Structures and Materials 2001, Modeling, Signal Processing, and Control in Smart Structures*, Proceedings of SPIE 2001, vol. 4326, pp. 101-112, (with X. Tan, R. Venkataraman).
86. “Analysis of a High-Resolution Optical Wave-Front Control System” (2001), *Proc. Conference on Information Sciences and Systems*, vol. 2, pp. 718-723, (invited paper for special session on optical signal processing), (with E.W. Justh).
87. “The Berry-Hannay Phase of the Equal-sided Spring-jointed Four-bar Mechanism” (2001), *Proc. 40th IEEE Conf. on Decision and Control*, pp. 3406-3407, IEEE, New York, (with S. Andersson).

88. "Formation Dynamics under a Class of Control Laws" (2002), *Proc. American Control Conference*, pp. 1678-1685, American Automatic Control Council, Philadelphia, (with F. Zhang).
89. "Coordinated Orbit Transfer for Satellite Clusters" (2002), *Proc. 41st IEEE Conference on Decision and Control*, pp. 4095-4100, IEEE, New York, (with F. Zhang).
90. "Degenerate Gradient Flows: A Comparison Study of Convergence Rate Estimates" (2002), *Proc. 41st IEEE Conference on Decision and Control*, pp. 4712-4717, IEEE, New York, (S. Andersson).
91. "Control over a Free-space Optical Channel" (2002), *Proc. 41st IEEE Conference on Decision and Control*, pp. 2029-2031, IEEE, New York.
92. "Change Detection for Nonlinear Systems: A Particle Filtering Approach" (2002), *Proc. American Control Conference*, pp. 4072-4079, American Automatic Control Council, Philadelphia, (with B. Azimi-Sadjadi).
93. "Control of Small Formations Using Shape Coordinates" (2003), *Proc. IEEE International Conference on Robotics. Automation*, pp. 2510-2515 (with F. Zhang and M. Goldgeier, invited).
94. "A Dynamic Model for Magnetostrictive Hysteresis" (2003), *Proc. American Control Conference*, pp. 1074-1079, American Automatic Control Council, Philadelphia (with X. Tan and J.S. Baras).
95. "A Biomimetic Apparatus for Sound Source Localization" (2003), *Proc. 42nd IEEE Conference on Decision and Control*, pp. 5879-5884, IEEE, New York (with A. Handzel, S. Andersson, and M. Gebremichael).
96. "Steering Laws and Continuum Models for Planar Formations" (2003), *Proc. 42nd IEEE Conference on Decision and Control*, pp 3609-3614, IEEE, New York (with E. Justh).
97. "On the Complexity of the Motion Description Language MDLe" (2003), *Proc. 42nd IEEE Conference on Decision and Control*, pp 3360-3365, IEEE, New York (with D. Hristu-Varsakelis and M. Egerstadt).
98. "Robot Phonotaxis with Dynamic Sound-Source Localization" (2004), *Proc. IEEE International Conference on Robotics and Automation*, pp. 4833-4838, (with S. Andersson, A. Handzel and V. Shah).
99. "Experimental Study of Curvature-based Control Laws for Obstacle Avoidance" (2004), *Proc. IEEE International Conference on Robotics and Automation*, pp. 3849-3854, (with F. Zhang, A. O'Connor and D. Luebke)

100. "Boundary Following Using Gyroscopic Control" (2004), *Proc. 43rd IEEE Conference on Decision and Control*, pp. 5204-5209, IEEE, New York (with F. Zhang and E. Justh).
101. "Natural Frames and Interacting Particles in Three Dimensions" (2005), *Proc. 44th IEEE Conference on Decision and Control*, pp. 2842-2846, IEEE, New York (with E. Justh).
102. "Motion Camouflage in Three Dimensions" (2006), *Proc. 45th IEEE Conf. Decision and Control*, pp. 3327-3332, IEEE, New York (with E. Justh and P.V. Reddy).
103. "Motion Camouflage with Sensorimotor Delay" (2007), *Proc. 46th IEEE Conference on Decision and Control*, pp. 1660-1665, IEEE, New York (with P. V. Reddy and E. W. Justh).
104. "Motion Camouflage in a Stochastic Setting" (2007), *Proc. 46th IEEE Conference on Decision and Control*, pp. 1652-1659, IEEE, New York (with K. Galloway and E. W. Justh).
105. "Stochastic Control for Long Range Cooperative Optical Beam Tracking" (2007), *Proc. 46th IEEE Conference on Decision and Control*, pp. 4938-4943, IEEE, New York (with A. Komae and P. Narayan).
106. "Pursuit and Cohesion" (2008), *Mathematisches Forschungsinstitut Oberwolfach Report 33/2008*, Applied Dynamics and Geometric Mechanics, eds. J. E. Marsden, J. Scheurle, pp. 1880 -1884.
107. "Geometry of Cyclic Pursuit" (2009), *Proc. 48th IEEE Conference on Decision and Control*, pp. 7485-7490, IEEE, New York (with K. Galloway and E. W. Justh).
108. "Motion Camouflage for Coverage" (2010), *Proc. American Control Conference*, pp. 6429-6435, American Automatic Control Council, Philadelphia (with M. Mischiati).
109. "Cyclic Pursuit in 3 Dimensions" (2010), *Proc. 49th IEEE Conference on Decision and Control*, pp. 7141-7146 (with K. Galloway and E. W. Justh).
110. "Extremal Collective Behavior" (2010), *Proc. 49th IEEE Conference on Decision and Control*, pp. 5432-5437 (with E. W. Justh).
111. "Control of Collectives" (2011), *Mathematisches Forschungsinstitut Oberwolfach Report 39/2011*, DOI: 10.4171/OWR/2011/39, Applied Dynamics and Geometric mechanics, eds. A. M. Bloch, T. S. Ratiu and J. Scheurle, pp. 2247-2250.
112. "Mutual Motion Camouflage in 3D" (2011), *Proc. 18th IFAC World Congress*, pp. 4483-4486 (with M. Mischiati).
113. "Portraits of Cyclic Pursuit" (2011), *Proc. 50th IEEE Conference on Decision and Control and European Control Conference (CDC-ECC)*, pp. 2724-2731 (with K. Galloway and E. W. Justh).

114. “Trajectory Smoothing as a Linear Optimal Control Problem” (2012), *Proc. 50th Allerton Conference on Communication, Control and Computing*, pp. 1490-1497, IEEE Xplore, IEEE, New York, <http://dx.doi.org/Allerton.2012.6483395> (with B. Dey)
115. “Control-theoretic Data Smoothing” (2014), *Proc. 53rd IEEE Conference on Decision and Control*, pp. 5064 – 5070, IEEE, New York (with B. Dey).
116. “Subriemannian geodesics for coupled non-holonomic integrators” (2016), *Proc. American Control Conference*, pp. 7281-7288, IEEE Xplore, IEEE, New York, (with Eric Justh), <https://doi.org/10.1109/ACC.2016.7526822>
117. “Steering Laws for Beacon Pursuit under Limited Sensing” (2016), *Proc. 55th IEEE Conference on Decision and Control*, pp. 3848-3855, IEEE, New York (with U. Halder and B. Schlotfeldt).
118. “Motion Camouflage in the Presence of Sensory Noise and Delay” (2016), *Proc. 55th IEEE Conference on Decision and Control*, pp. 2846-2852, IEEE, New York (with V. Raju).
119. “Optimal Control of a Stochastic Oscillator in Nonequilibrium Thermodynamics” (2016), *Proc. 55th IEEE Conference on Decision and Control*, pp. 197-202, IEEE, New York (with Y. Huang).
120. “A Variational Problem on the Probability Simplex” (2018), *Proc. 57th IEEE Conference on Decision and Control*, pp. 3522-3528, IEEE, New York (with V. Raju)

E. Selected Technical Reports

1. “Deconvolution Methods for Multisensors”, Technical Report, Department of Mathematics, University of Maryland, MD85-23-CB, TR85-19, June 1985, 63 pages (with C. A. Berenstein and B. A. Taylor). Also available from Defense Technical Information Center, Washington D.C.
2. “Geophysical Inversion and Two-Dimensional Signal Processing”, Systems Research Report TR-85-31, Systems Research Center and The Electrical Engineering Department, University of Maryland, 38 pages (with G. L. Blankenship).
3. “Proceedings of the Workshop on Research Needs in Intelligent Control”, Joint NSF-EPRI Publication, 1991, (with other contributors).
4. “Affine Frames of Rational Wavelets in $H^2(\pi^+)$ ”, Systems Research Center Technical Report TR 92-44, (joint with Y.C. Pati), 26 pages.
5. “Averaging and Motion Control on Lie Groups”, Institute for Systems Research Technical Report TR 93-59, (with N.E. Leonard), 47 pages.

6. “A Wavelet Approach to Temperature Determination via Diffuse Reflectance Spectroscopy”, Institute for Systems Research Technical Report TR 96-61, (with T. Kugarajah and W.P. Dayawansa), 12 pages.
7. “Controllability of Lie-Poisson Reduced Dynamics”, Institute for Systems Research Technical Report TR 97-59 (with V. Manikonda). (25 pages)
8. “Tracking and Stabilization for Control Systems on Matrix Lie Groups”, Institute for Systems Research Technical Report TR 97-34 (with H. Struemper). (23 pages)
9. “Characterization of an ETREMA MP 50/6 Magnetostrictive Actuator” (1998), Center for Dynamics and Control of Smart Structures Technical Report, CDCSS TR 98-1, 11 pages (with R. Venkataraman and J. Rameau).
10. “The Hybrid Motor Prototype: Design Details and Demonstration Results” (1998), Center for Dynamics and Control of Smart Structures Technical Report, CDCSS TR 98-2, 13 pages (with R. Venkataraman and W.P. Dayawansa).
11. “Languages, Behaviors, Hybrid Architectures and Motion Control” (1998), Center for Dynamics and Control of Smart Structures Technical Report, CDCSS TR 98-3, 31 pages (with V. Manikonda and J. Hendler).
12. “Modeling and Model Reduction for Control and Optimization of Epitaxial Growth in a Commercial Rapid Thermal Chemical Vapor Deposition Reactor” (1998). Institute for Systems Research Technical Report ISR TR 98-45, 63 pages, (with A.J. Newman, S. Ponczak, and P. Brabant).
13. “Quotient signal decomposition and order estimation” (2002), Institute for Systems Research Technical Report, TR-2002-47, (with D. Napoletani and C.A. Berenstein).
14. “A simple control law for UAV formation flying” (2002), Institute for Systems Research Technical Report, TR 2002-38, 35 pages (with E.W. Justh).

F. Other

1. “Hybrid Motor” (1996), University of Maryland Invention Disclosure, PS-96-048, (with J. Loncaric, R. Venkataraman, W. P. Dayawansa); high fees deterred submission of a patent application.
2. “Wavefront Phase Sensors Based Using Optically or Electrically Controlled Phase Spatial Light Modulators” (2002), Joint disclosure to the University of Maryland and Army Research Laboratory (PS-2001-078). Awarded **U.S. Patent 6,911,637** in 2005 (with M. A. Vorontsov, E. W. Justh, L. Beresnev, J. C. Ricklin).

