

May 21, 2007



Robert R. Bitmead — Curriculum Vitæ

Current Position and Work Address:

Associate Vice-Chancellor for Academic Personnel and
Professor, Cymer Corporation Endowed Chair for High-Performance Dynamic Systems Modeling and Control,
Department of Mechanical and Aerospace Engineering,
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Date and Place of Birth: April 10, 1954. Sydney, NSW, Australia.

Nationality: Australian. US Permanent Resident.

Marital Status: Married with two independent children.

Academic Qualifications:

1980: PhD in Electrical Engineering, University of Newcastle, Australia.
Thesis title: Convergence properties of discrete-time stochastic adaptive estimation algorithms.
1977: ME in Electrical Engineering, University of Newcastle, Australia.
1976: BSc (Hons I) in Applied Mathematics, University of Sydney, Australia.

Academic Appointments:

October 2006 – present, Associate Vice-Chancellor for Academic Personnel.
December 2001 – present, Cymer Corporation Endowed Chair in High-Performance Dynamical Systems and Control.
July 1999 – present, Professor of Mechanical & Aerospace Engineering, University of California San Diego.
May 2003 – August 2003, Visiting Professor, Department of Systems Science, Kyoto University, Japan.
March 1995 – July 1999, Professor of Systems Engineering, Research School of Information Sciences and Engineering, Australian National University.
July 1991 – June 1999, Executive Director of Cooperative Research Centre for Robust and Adaptive Systems,

combining ANU, Australian Defence Science and Technology Organisation, Boeing, and BHP Research Pty Ltd. July 1987 – March 1995, Senior Fellow of Systems Engineering, Research School of Information Sciences and Engineering, Australian National University. (Prior to January 1, 1994, Research School of Physical Sciences and Engineering.)

October 1994 – January 1995, Professeur Invité, Institut National de Recherche en Informatique et en Automatique, Sophia-Antipolis, France.

May 1988 – December 1988, Chargé de Cours Invitée, Laboratoire d'Automatique, Université Catholique de Louvain. Louvain-la-Neuve, Belgium.

December 1982 – June 1987, Fellow in Systems Engineering, Research School of Physical Sciences, Australian National University.

July 1984 – December 1984, Visiting Assistant Professor, School of Electrical Engineering, Cornell University, Ithaca, New York USA.

February 1980 – December 1982, Lecturer in Electrical Engineering, James Cook University of North Queensland, Townsville, Australia.

May 1979 – February 1980, Australian Research Grants Committee Research Associate in Electrical Engineering, University of Newcastle, Australia.

Teaching Experience:

Courses on Control Systems, Network Theory, Communications Systems, Digital Signal Processing, Optimization Techniques, Microprocessor Systems, Stochastic Processes, Adaptive Estimation, System Identification, Linear Control Design.

UCSD: MAE140 Linear Circuits, MAE143A Signals and Systems, MAE143B Linear Control, MAE280B Linear Control System Design, MAE283A Parametric Identification: Theory and Methods, MAE283B Approximate Systems Identification and Control, MAE285 Optimal Control and Estimation.

Postgraduate Student Supervision:

Phillip C.V. Musumeci, MEngSci, *Automatic control of base cutter height on sugar cane harvesters*, James Cook University of North Queensland, completed 1983.

Iven M.Y. Mareels, PhD, *Dynamics of adaptive control*, Australian National University, completed 1986.

Philip Parker, PhD, *Frequency domain descriptions of linear systems*, Australian National University, completed 1988.

Rodney A. Kennedy, PhD (joint), *Operational aspects of decision feedback amplifiers*, Australian National University, completed 1988.

Wei-Yong Yan, PhD, *Robust control and periodic control*, Australian National University, completed 1990.

Michael R. Frater, PhD (joint), *Estimation of the statistics of rare events in data communications systems*, Australian National University, completed 1991.

Peter J. Kootsookos, PhD, *FIR(q) filter designs*, Australian National University, completed 1991.

Salvatore Crisafulli, PhD, *Adaptive speech coding via feedback techniques*, Australian National University, completed 1992.

Zhuquan Zang, PhD, *Performance, analysis and enhancement of adaptive control systems*, Australian National University, completed 1992.

John P. Homer, PhD (joint), *Adaptive echo cancellation in adaptive communications*, Australian National University, completed 1994.

Barbara F. La Scala, PhD, *Approaches to frequency tracking and vibration control*, Australian National University, completed 1994.

Craig R. Watkins, PhD, *New techniques in signal coding*, Australian National University, completed 1994.

Ari G. Partanen, PhD, *Controller refinement with application to a sugar cane crushing mill*, Australian National

University, completed 1995.

Jenny Fulton, MEng, *Smoothing techniques for the reconstruction of missing samples*, Australian National University, completed 1997.

Allan J. Connolly, PhD (joint), *The design and synthesis of narrow band disturbance rejection controllers*, Australian National University, completed 1997.

Leonardo Kammer, PhD, *Performance monitoring and assessment under and LQ criterion*, Australian National University, completed 1998.

Gordon Sutton, PhD, *Nonlinear model predictive control design*, Australian National University, completed 1999.

Wayne J. Dunstan, PhD, *Nonlinear System Identification with application to combustion instability*, University of California, San Diego, completed 2003.

C. William Cooper, PhD, *Channel Allocation in Wireless Networks*, University of California, San Diego, completed May 2004.

Sangho Ko, PhD, *Performance Limitations in Linear Estimation and Control: Constraint and Quantization Effects*, University of California, San Diego, completed March 2005.

Jun Yan, PhD, *Constrained Model Predictive Control, State Estimation and Coordination*, University of California, San Diego, completed April 2006.

Chengjin Zhang, PhD, *State-Space Models and Methods for MIMO Communications*, University of California, San Diego, completed September 2006.

Jisang Park, PhD, University of California, San Diego, current.

Keunmo Kang, PhD, University of California, San Diego, current.

Areas of Interest and Research:

Adaptive Processes, Adaptive Control, Signal Processing, Telecommunications, Stability Theory, Nonlinear Dynamical Systems, Stochastic Processes, Control System Design, System Identification, Industrial Applications, Model Predictive Control.

Fellowships and Grants Received:

AFOSR Grant "Control and Information Architecture for Coordinated Networked Systems," 2005-2007.

NSF Grant "Collaborative Research: Objective-Oriented Mobile Heterogeneous Sensor Networks for Coordinated Control," 2003-2005.

NSF Grant "Nonlinear System Identification with Application to Combustion Instability Control," 2002-2005.

Ericsson contract "Multiple Antenna Systems for Wireless Communications," 2002-2006.

NSF Grant "Complexity and Experiment Design in Identification for Control", 2000-2002.

DARPA Grant "Advanced System Design with Composite Tensegrity Materials", 2000-2002.

Cooperative Research Centre Grant (First Round), 1991-1999.

CSR Sugar Mill Control Project Grant, 1989-1998.

Ministère de l'Enseignement Supérieure et de la Recherche (France) grant 1994-1995.

Australian Telecommunications and Electronics Research Board Grant, "Adaptive Quantizers in Communications Systems" 1989-92.

Australian Telecommunications and Electronics Research Board Grant (joint), "Modelling of Rare and Damaging Events in Packet Switched Networks" 1988-91.

Australian Telecommunications and Electronics Research Board Grant, "Stochastic Dynamics of Decision Feedback Equalizers" 1986-9.

Centre for Information Sciences Research (ANU) Grant for the appointment of a Research Fellow in Telecommunications, 1988.

Australian Department of Defence Grant, co-investigator, "Kalman Filtering Techniques for Towed Array Shape Estimation", 1984-6.

Visiting Professor, School of Electrical Engineering, Cornell University, USA, 1984.

Radio Research Board Grant, “Nonparametric Techniques for Adaptive Filtering and Control”, 1983-6.
US/Australia Cooperative Science Program Grant for study in USA, 1984.
Fulbright Award for Postgraduate study at Stanford University, Information Systems Laboratory, 1977.

Professional Society Memberships and Boards:

Fellow of the International Federation of Automatic Control, 2005.
Fellow of the Australian Academy of Technological Sciences & Engineering, 1999.
Fellow of the Institute of Electrical and Electronics Engineers, 1991.
Citation: “For contributions to the development of the theory of adaptive control and filtering.”
Fellow of the Institution of Engineers, Australia, 1994.
Council Member, International Federation of Automatic Control, 1996-2002.
Technical Board Member, International Federation of Automatic Control, 1990-1996.
Chairman of the International Federation of Automatic Control, Coordinating Committee on Control Design, 1993-1996.
Chairman of the International Federation of Automatic Control Technical Committee on Mathematics of Control 1990-1993.
Vice-Chairman of the International Federation of Automatic Control Technical Committee on Mathematics of Control, 1987-1990.
Member International Federation of Automatic Control Technical Committee on Theory, 1986-1996.
Chairman, IEEE Control Systems Society Fellow Evaluation Committee, 1995.
Member International Committee of the IEEE Control Systems Society.
Member IFAC Working Group on Adaptive Systems and Signal Processing.
Member National Committee on Automation, Control and Instrumentation (NCACI), Institution of Engineers, Australia, 1994-2003.
Chairman, IFAC Sub-committee of NCACI.
Chairman, Australian Capital Territory Section of the Institute of Electrical and Electronics Engineers, 1993-1994.

Editorships:

Editor for Adaptive & Intelligent Control, *Automatica*, January 2002-December 2005.
Foundation Editor (Adaptive Control Theory), *International Journal of Adaptive Control and Signal Processing*, 1987-1992.
Associate Editor, *Automatica*, 1989-1993.
Associate Editor, *IEEE Transactions on Automatic Control*, 1984-1986.

Conference Activities:

General Chairman, IEEE Conference on Decision and Control, Sydney, 2000.
Program Chairman, IFAC Symposium on Adaptive Control and Signal Processing, Glasgow UK, 1998.
Technical Chairman, International Symposium on Signal Processing and its Applications, Gold Coast, 1990.
Vice-Chairman, International Program Committee, IFAC International Symposium on Adaptive Systems in Control and Signal Processing, Grenoble 1992.
Vice-Chairman of Program Committee, IEEE Conference on Decision and Control, Tucson AZ, 1992.
IFAC System Identification Symposium, International Program Committee, Rotterdam 2003.
European Control Conference Porto 2001 International Program Committee.
European Control Conference Cambridge 2003 International Program Committee.
IFAC Workshop on Adaptive Control and Signal Processing Como 2001 International Program Committee.
Member International Program Committee, IFAC International Symposium on Adaptive Systems in Control and Signal Processing, Budapest 1995.

Member Technical Committee, International Symposium on Signal Processing and its Applications, Gold Coast, 1992.

Member Technical Program Committee, IEEE International Workshop on Intelligent Signal Processing and Communications Systems, Taipei 1992.

Member International Program Committee, IFAC Symposium on Identification and System Parameter Estimation, Budapest 1991.

Member International Program Committee, IFAC Symposium on Adaptive Control and Signal Processing, Glasgow, 1989.

Member International Program Committee, Identification '88, Beijing, 1988.

Member Technical Committee, International Symposium on Signal Processing and its Applications, Brisbane, 1987.

Member International Program Committee, IFAC Workshop on Robustness Issues in Adaptive Control, Newcastle, 1988.

Honours:

1989 Australian Telecommunications and Electronics Research Board Medal.

1990 IFAC citation for paper I.M.Y. Mareels and R.R. Bitmead, "Nonlinear dynamics in adaptive control: periodic and chaotic stabilization. Part II: analysis", *Automatica*, vol. 24, No. 4, July 1988, pp. 485-497.

1993 Finalist in the triennial IFAC Applications Prize Paper Award for the paper A.G. Partanen and R.R. Bitmead, "Excitation versus control issues in closed loop identification for a sugar cane crushing mill," *IFAC World Congress Sydney*.

1994 Vice-Chancellor's Award for Excellence in Teaching, Australian National University.

2001 Inaugural Cymer Endowed Chair for high performance dynamical systems modeling and control.

2001-2006 IEEE Control Systems Society Distinguished Lecturer.

2002 International Federation of Automatic Control Outstanding Service Award *for sustained outstanding performance in major leadership positions in IFAC*.

Consultancies:

CSR Sugar Mills Group, Ingham, Queensland, Australia.

BHP Steel, Port Kembla, New South Wales, Australia.

MOOG Inc, East Aurora, New York, USA.

United Technologies Research Center, East Hartford, Connecticut, USA.

General Electric Global Research Laboratories, Niskayuna New York USA.

Australian Federal Police Technical Section, Canberra Australia.

Pratt and Whitney, East Hartford, Connecticut, USA.

Polaris Wireless Inc., Santa Clara, California, USA.

ROBERT R. BITMEAD

PUBLICATIONS ¹

BOOKS

- [B1] B.D.O. Anderson, R.R. Bitmead, C.R. Johnson Jr, P.V. Kokotovic, R.L. Kosut, I.M.Y. Mareels, L. Praly and B.D. Riedle, *Stability of Adaptive Systems: Passivity and Averaging Analysis*, M.I.T. Press, Cambridge MA, 1986.
- [B2] R.R. Bitmead, M. Gevers and V. Wertz, *Adaptive Optimal Control: the Thinking Man's GPC*, Prentice-Hall Australia, Sydney, 1990.
- [B3] R.R. Bitmead, M.A. Johnson and M.J. Grimble (eds), *Adaptive Systems in Control and Signal Processing 1998*, Pergamon Press, Elsevier Science, Oxford UK, 482pp., 2000.

CHAPTERS IN BOOKS

- [Ch1] R.R. Bitmead and B.D.O. Anderson, "Asymptotically Fast Solution of Toeplitz and Related Systems of Linear Equations", in *Large Scale Matrix Problems*, Å. Björck, R.J. Plemmons, H. Schneider (Eds.), Elsevier North Holland Inc., New York, 1981, pp. 103-116, (ISBN 0 44400 563 3).
- [Ch2] R.R. Bitmead and C.R. Johnson Jr, "Discrete averaging principles and robust adaptive identification", in *Advances in Control and Dynamic Systems*, Volume 25, C.T. Leondes (ed.), Academic Press, New York, 1987, pp. 237-271 (ISBN 0 12 012725 3).
- [Ch3] M.R. Gevers, R.R. Bitmead, I.R. Petersen and R.J. Kaye, "When is the solution of the Riccati equation stabilizing at every instant?", in *Frequency Domain and State Space Methods for Linear Systems*, C.I. Byrnes and A. Lindquist (eds), Elsevier Science Publishers B.V. (North Holland), 1986, pp. 531-540, (ISBN 0 444 70038 2).
- [Ch4] R.R. Bitmead, "Adaptive Control Algorithms", in *Numerical Linear Algebra, Digital Signal Processing and Parallel Algorithms*, P. van Dooren and G. Golub (eds), NATO ASI Series F, Springer Verlag, Berlin, 1990, pp. 19-40 (ISBN 3 540 52300 6).
- [Ch5] R.R. Bitmead and M. Gevers, "Riccati Difference and Differential Equations: Stabilizability, Convergence, Monotonicity" in *The Riccati Equation in Control, Systems and Signals*, S. Bittanti, A.J. Laub and J.C. Willems (eds), Springer-Verlag, Berlin, 1991, pp. 263-291 (ISBN 3 540 53099 1).
- [Ch6] B.D.O. Anderson, W-Y. Yan and R.R. Bitmead, "Trade-offs among conflicting objectives in robust control design" in *Control and Dynamic Systems*, C.T. Leondes (ed.), Academic Press, New York, 1992, pp. 1-53 (ISBN 0 12 012750 4).
- [Ch7] R.R. Bitmead and P.E. Caines, "Escape Time Formulation of Robust Stochastic Adaptive Control," in *Advances in Adaptive Control*, K.S. Narendra, R.Ortega, P. Dorato (eds), IEEE Press, New York, 1991. pp. 197-202 (ISBN 0 87942 278 5).

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- [Ch8]** P.J. Kootsookos and R.R. Bitmead, "The Nehari Shuffle and Minimax FIR Filter Design," in *Stochastic Techniques in Digital Signal Processing*, C.T. Leondes (ed.), International Series on Advances in Control and Dynamic Systems, vol. 64, Academic Press, San Diego, 1994 (ISBN 0 12012 764 4).
- [Ch9]** W-Y. Yan and R.R. Bitmead, "Decentralized Control Techniques in Time Varying (PTV) Discrete - Time Control Systems," in *Control and Dynamic Systems*, vol. 72, Academic Press, New York, 1995, pp. 153-181 (ISBN 0 12012 772 5).
- [Ch10]** G. De Nicolao, R.R. Bitmead and M. Gevers, "Discrete-time Fake Riccati Equations for Kalman Filtering and Receding Horizon Control," in *Digital Design and Control Systems Techniques and Applications*, C.T. Leondes (ed.), International Series on Advances in Control and Dynamic Systems, vol. 76, Academic Press, New York, 1996, pp. 79-102 (ISBN 0 12 012776 8).
- [Ch11]** G.J. Sutton and R.R. Bitmead, "Performance and Computational Implementation of Nonlinear Model Predictive Control on a Submarine," in *Nonlinear Model Predictive Control*, F. Allgöwer and A. Zheng, Birkhäuser Verlag, Berlin, 2000, pp. 461-472 (ISBN 3 7643 6297 9).
- [Ch12]** R.R. Bitmead, "Iterative Optimal Control," in *Lecture Notes on Iterative Identification and Control Design*, P. Albertos and A. Sala (eds), European Science Foundation, Strasbourg France, 2000, pp. 153-166 (ISBN 84 7721 895 1).
- [Ch13]** R.R. Bitmead and A. Sala, "Modelling and Identification for Control," *Lecture Notes on Iterative Identification and Control Design*, P. Albertos and A. Sala (eds), European Science Foundation, Strasbourg France, 2000, pp. 41-64 (ISBN 84 7721 895 1).
- [Ch14]** R.R. Bitmead and A. Sala, "The Carpentry and Machinery of joint Identification and Control: data preparation and iterative control of a sugar cane crushing mill," *Lecture Notes on Iterative Identification and Control Design*, P. Albertos and A. Sala (eds), European Science Foundation, Strasbourg France, 2000, pp. 219-241 (ISBN 84 7721 895 1).
- [Ch15]** R.R. Bitmead and W.J. Dunstan, "Model quality for the Windsurfer scheme of adaptive control," in *Essays in Adaptive Control*, G.C. Goodwin (ed.), Springer Verlag, London, 2001, pp. 231-243 (ISBN 1 85233 396 0).
- [Ch16]** R.R. Bitmead and A. Sala, "Data Preparation for Identification," in *Iterative Identification and Control: Advances in Theory and Applications* P. Albertos and A. Sala (eds), Springer Verlag, London, 2002, pp. 41-62 (ISBN 185 233 5092).
- [Ch17]** R.R. Bitmead, "Iterative Optimal Control Design," in *Iterative Identification and Control: Advances in Theory and Applications* P. Albertos and A. Sala (eds), Springer Verlag, London, 2002, pp. 167-184 (ISBN 185 233 5092).
- [Ch18]** R.R. Bitmead, "Helicopter Vibration Control," in *Iterative Identification and Control: Advances in Theory and Applications* P. Albertos and A. Sala (eds), Springer Verlag, London, 2002, pp. 211-223 (ISBN 185 233 5092).
- [Ch19]** R.R. Bitmead and A. Sala, "Iterative Identification and Control: a sugar cane crushing mill," in *Iterative Identification and Control: Advances in Theory and Applications* P. Albertos and A. Sala (eds), Springer Verlag, London, 2002, pp. 271-295 (ISBN 185 233 5092).
- [Ch20]** J.A. Fulton, R.R. Bitmead and R.C. Williamson, "Smoothing Approaches to Reconstruction of Missing Data in Array Processing," in *Defence Applications of Signal Processing*, Proceedings of the US/Australia Joint Workshop on Defence Applications of Signal Processing, Elsevier, 2001, pp. 87-94. (ISBN 0 444 50864 3).

- [Ch21] I.M.Y. Mareels, J.P. Homer and R.R. Bitmead, "Dimension Analysis for Least Mean Square Algorithms," in *Least-Mean-Square Adaptive Filters*, S. Haykin and B. Widrow (eds), Wiley, Hoboken NJ, 2003, pp. 145-174 (ISBN 0 471 21570 8).

ARTICLES IN REFEREED JOURNALS

- [P1] R.R. Bitmead and B.D.O. Anderson, "Matrix fraction description of the lossless positive real property", *I.E.E.E. Transactions on Circuits and Systems*, vol. CAS-24, no. 10, October 1977, pp. 546-550.
- [P2] R.R. Bitmead and B.D.O. Anderson, "The matrix Cauchy index: properties and applications", *SIAM J. Applied Math.*, vol. 33, no. 4, December 1977, pp. 655-672.
- [P3] B.D.O. Anderson and R.R. Bitmead, "Stability of matrix polynomials", *International Journal of Control (Routh Centenary Issue)*, vol. 26, no. 2, August 1977, pp.235-248.
- [P4] B.D.O. Anderson and R.R. Bitmead, "A dynamical interpretation of column and row properness of matrix fraction descriptions", *I.E.E.E. Transactions on Automatic Control*, vol. AC-23, no. 6, December 1977, pp. 1101-1102.
- [P5] R.R. Bitmead, S.-Y. Kung, B.D.O. Anderson and T. Kailath, "Greatest common divisors via generalized Sylvester and Bezout matrices", *I.E.E.E. Transactions on Automatic Control*, vol. AC-23, no. 6, December 1978, pp. 1043-1047.
- [P6] R.R. Bitmead and H. Weiss, "On the solution of the discrete-time Lyapunov matrix equation in controllable canonical form", *I.E.E.E. Transactions on Automatic Control*, vol. AC-24, no. 3, June 1979, pp. 481-482.
- [P7] R.R. Bitmead and B.D.O. Anderson, "Lyapunov techniques for the exponential stability of linear difference equations with random coefficients", *I.E.E.E. Transactions on Automatic Control*, vol. AC-25, no. 4, August 1980, pp. 782-787.
- [P8] R.R. Bitmead and B.D.O. Anderson, "Performance of adaptive estimation algorithms in dependent random environments", *I.E.E.E. Transactions on Automatic Control*, vol. AC-25, no. 4, August 1980, pp. 788-794.
- [P9] K.S. Sin, G.C. Goodwin and R.R. Bitmead, "An adaptive d-step ahead predictor based on least squares", *I.E.E.E. Transactions on Automatic Control*, vol. AC-25, no. 6, December 1980, pp. 1161-1165.
- [P10] R.R. Bitmead and B.D.O. Anderson, "Adaptive frequency sampling filters", *I.E.E.E. Transactions on Circuits and Systems*, vol. CAS-28, no. 6, June 1981, pp. 524-534.
- [P11] R.R. Bitmead, "Explicit solution of the discrete-time Lyapunov and Kalman-Yacubovich equations", *I.E.E.E. Transactions on Automatic Control*, vol. AC-26, no. 6, December 1981, pp.1291-1294.
- [P12] R.R. Bitmead, "On recursive discrete Fourier transformation", *I.E.E.E. Transactions on Acoustics, Speech and Signal Processing*, vol. ASSP-30, Number 2, April 1982, pp. 319-322.
- [P13] R.R. Bitmead, "Convergence in distribution of LMS-type adaptive parameter estimates", *I.E.E.E. Transactions on Automatic Control*, vol. AC-28, Number 1, January 1983, pp. 54-60.
- [P14] R.M. Johnstone, C.R. Johnson Jr., R.R. Bitmead and B.D.O. Anderson, "Exponential convergence of recursive least squares with exponential forgetting factor", *Systems and Control Letters*, vol. 2, no. 2, August 1982, pp. 77-82.

- [P15] A.L. Shipman, R.R. Bitmead and G.H. Allen, "Diffuse edge fitting and following: a location-adaptive approach", *I.E.E.E. Transactions on Pattern Analysis and Machine Intelligence*, vol. PAMI-6, no. 1, January 1984, pp. 96-102.
- [P16] R.R. Bitmead, "Persistence of excitation conditions and the convergence of adaptive schemes", *I.E.E.E. Transactions on Information Theory*, vol. IT-30, Number 2, March 1984, pp. 183-191.
- [P17] R.R. Bitmead, "Convergence properties of LMS-type adaptive estimators with unbounded dependent inputs", *I.E.E.E. Transactions on Automatic Control*, vol. AC-29, No. 5, May 1984, pp. 477-479.
- [P18] R.R. Bitmead, M.R. Gevers, I.R. Petersen and R.J. Kaye, "Monotonicity and stabilizability properties of solutions of the Riccati difference equation: propositions, lemmas, theorems, fallacious conjectures and counterexamples", *Systems and Control Letters*, vol. 5, no 5, April 1985, pp. 309-315.
- [P19] R.R. Bitmead, B.D.O. Anderson and T.S. Ng, "Convergence rate determination for gradient based adaptive estimators", *Automatica*, vol. 22, no. 2, March 1986, pp. 185-191.
- [P20] M. Bodson, S.S. Sastry, B.D.O. Anderson, I.M.Y. Mareels and R.R. Bitmead, "Nonlinear averaging theorems and the determination of parameter convergence rates in adaptive control", *Systems and Control Letters*, vol. 7, 1986, pp. 145-157.
- [P21] M.-A. Poubelle, I.R. Petersen, M.R. Gevers and R.R. Bitmead, "A miscellany of results on an equation of Count J.F. Riccati", *I.E.E.E. Transactions on Automatic Control*, vol. AC-31, no. 7, July 1986, pp. 651-654.
- [P22] W.A. Sethares, D.A. Lawrence, C.R. Johnson Jr. and R.R. Bitmead, "Parameter drift in the LMS adaptive filter", *I.E.E.E. Trans. Acoustics, Speech and Signal Processing*, vol. ASSP-34, August 1986, pp. 185-191.
- [P23] R.R. Bitmead, A-C. Tsoi and P.J. Parker, "A Kalman filtering approach to short-time Fourier analysis", *I.E.E.E. Trans. Acoustics, Speech and Signal Processing*, vol. ASSP-34, December 1986, pp. 1493-1501.
- [P24] I.M.Y. Mareels and R.R. Bitmead, "Nonlinear dynamics in adaptive control: chaotic and periodic stabilization", *Automatica*, vol. 22, No. 6, November 1986, pp. 641-655.
- [P25] I.M.Y. Mareels, R.R. Bitmead, M. Gevers, C.R. Johnson Jr, R.L. Kosut and M.A. Poubelle, "How exciting can a signal really be?", *Systems and Control Letters*, vol. 8, No. 6, January 1987, pp. 197-204.
- [P26] R.A. Kennedy, B.D.O. Anderson and R.R. Bitmead, "Tight bounds on the error probabilities of decision feedback equalizers", *I.E.E.E. Transactions on Communications*, vol. COM-35, No. 10, October 1987, pp. 1022-1028.
- [P27] W.A. Sethares, I.M.Y. Mareels, B.D.O. Anderson, C.R. Johnson Jr, R.R. Bitmead, "Excitation conditions for signed-regressor least mean squares adaptation", *I.E.E.E. Transactions on Circuits and Systems*, vol. CAS-35, No. 6, June 1988, pp. 613-624.
- [P28] I.M.Y. Mareels and R.R. Bitmead, "Nonlinear dynamics in adaptive control: periodic and chaotic stabilization. Part II: analysis", *Automatica*, vol. 24, No. 4, July 1988, pp. 485-497.
- [P29] I.M.Y. Mareels and R.R. Bitmead, "Bifurcation Effects in Robust Adaptive Control", *I.E.E.E. Transactions on Circuits and Systems*, vol. CAS-35, No. 7, July 1988, pp. 835-841.
- [P30] M.-A. Poubelle, R.R. Bitmead and M.R. Gevers, "Fake Algebraic Riccati Techniques and Stability", *I.E.E.E. Transactions on Automatic Control*, vol. AC-33, no. 4, April 1988, pp. 379-381.
- [P31] R.A. Kennedy, B.D.O. Anderson and R.R. Bitmead, "Channels leading to rapid error recovery for decision feedback equalizers: passivity analysis", *I.E.E.E. Transactions on Communications*, 1989, pp. 1126-1135.

- [P32] W.Y. Yan and R.R. Bitmead, “Decentralized control of multi-channel systems with direct control feedthrough”, *International Journal of Control*, vol. 49, No 6, 1989, pp.2057-2075.
- [P33] R.A. Kennedy, G. Pulford, B.D.O. Anderson and R.R. Bitmead, “When has a decision-directed equalizer converged?”, *I.E.E.E. Transactions on Communications*, vol. 37, No 8, August 1989, pp.879-884.
- [P34] G. Bastin, R.R. Bitmead, G. Campion and M.Gevers, “Identification of Linearly Overparametrized Nonlinear Systems,” *I.E.E.E. Transactions on Automatic Control*, vol. 37, No 7, July 1992, pp. 1073–1078.
- [P35] G.J. Rey, R.R. Bitmead and C.R. Johnson Jr., “The Dynamics of Bursting in Simple Adaptive Feedback Systems with Leakage,” *I.E.E.E. Transactions on Circuits and Systems*, vol. 38, No 5, May 1991, pp.476-488.
- [P36] W. Yan, R.R. Bitmead and B.D.O. Anderson, “Design Problems for Sensitivity and Complementary Sensitivity,” *Systems and Control Letters*, vol. 15, pp. 137-146, 1990.
- [P37] R.R. Bitmead, C.R. Johnson Jr, C.R. Pollock, “Optical adaptive signal processing: an appraisal,” *International Journal of Adaptive Control and Signal Processing*, vol. 5, pp. 87-92, 1991.
- [P38] M.R. Frater, R.R. Bitmead, R.A. Kennedy and B.D.O. Anderson, “Fast Simulation of Rare Events using Reverse-time Models,” *Computer Networks and ISDN-systems*, vol 20, pp. 315–321, 1990.
- [P39] S. Crisafulli and R.R. Bitmead, “Adaptive Quantization: Solution via Non-adaptive Kalman Filtering,” *I.E.E.E. Transactions on Communications.*, Vol 41, number 5, pp 741-748, May 1993.
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