

Laurent Charles Louis BARATCHART

V I T A

March 9, 2017

Born 9/5/55 in Cotonou, Dahomey

French citizen

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Personal address

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Studies

Graduated from the Ecole Nationale Supérieure des Mines de Saint-Etienne, France 1975-1978.

Received the DEA de Méthodes Mathématiques de la Gestion et de l'Economie degree from the university of Paris-Dauphine in 1978.

Received the Agrégation de Mathématiques degree in 1981.

Received the docteur-ingénieur degree from the Ecole des Mines de Paris in 1982 (Prof. P. Bernhard, advisor):

Une structure différentielle pour certaines classes de systèmes, application à l'approximation L^2 .

Received the thèse d'Etat degree in 1987 from the university of Nice (Prof. A. Galligo, advisor):

Sur l'approximation rationnelle L^2 pour les systèmes dynamiques linéaires.

Positions held

Graduate student and then research fellow at I.N.R.I.A. (Rocquencourt) 1979-1982.

Research fellow at INRIA (Sophia-Antipolis) 1982-1987, adjunct-head of the project “Equations Différentielles Ordinaires et Récursives Appliquées”.

Invited researcher at the University of Florida in Gainesville, Spring 1988.

Directeur de Recherche at INRIA (Sophia-Antipolis) since 7/1/1987.

Head of the project “Mathématiques et Informatique de l'Automatique et de l'Optimisation pour l'Utilisateur” at INRIA-Sophia, 1988-2003.

Currently head of the project “Analyse et Problèmes Inverses pour le Contrôle et le Signal” at INRIA-Sophia.

Invited Professor at Cyprus University, Nicosia, Spring 2006.

Invited Professor at Vanderbilt University, Nashville, Fall 2009.

Main research interests:

Approximation theory, Function Theory, Potential Theory, Orthogonal Polynomials, Harmonic Analysis, Inverse Problems, Controlled Dynamical Systems.

Conferences on Invitation

Workshop on parametrization problems, Bremen, 1985
Modelling, Robustness, and Sensitivity Reduction, Groningen, 1986
From Data to Model, Laxenburg 1987
US-USSR Conference on Approximation Theory, Tampa, 1990
Analysis of Controlled Dynamical Systems, Lyon 1990.
Modelling and Control of Uncertain Systems, Sopron, 1990
From Data to Model, Laxenburg 1991
Computational Methods in Function Theory, Penang 1994
Constructive methods in complex analysis, Oberwolfach, 1995
Numerische Methoden der Approximationstheorie, Oberwolfach, 1997
Computational Methods in Function Theory, Cyprus 1997 (plenary speaker)
Minimal Energy Problems, Hong-Kong 1999
Colloquium University of South Florida, Tampa, March 2000.
Northern British seminar on Functional Analysis, Glasgow, November 2000.
Colloquium Vanderbilt University, Nashville, March 2002.
Colloquium University of Michigan, East Lansing, March 2003.
Special semester on Mathematical System Theory, Mittag-leffler Institute, Stockholm 2003.
Advances in Constructive Approximation, Nashville, 2003 (plenary speaker).
12-th St-Petersburg Summer Meeting in Mathematical Analysis, St-Petersburg 2003.
Funktiontheorie, Oberwolfach 2004.
Journes d'Approximation, Lille, 2004.
Constructive Function Tech04, Atlanta, 2004 (plenary speaker).
Journées d'Analyse Fonctionnelle de Bordeaux, Bordeaux, 2005.
Colloquium University of Michigan, East Lansing, March 2006.
Modern approaches in Asymptotics of Polynomials, BIRS Banff, 2007.
Colloquium University of Newcastle upon Tyne, April 2008.
PICOF, (plenary speaker) Marrakech, 2008.
Journes d'Approximation, Lille, 2008.
Orthogonal Polynomials and Approximation Theory, Madrid, 2008.
Hilbert Spaces of Entire Functions (plenary speaker), Montréal, december 2008.
Econometrics, Time Series Analysis, Systems identification, (plenary speaker) Vienna, 2009.
Colloquium University of Mississippi, Oxford, October 2009.
Colloquium University of Michigan, East Lansing, October 2009.
MTNS 2010 (semi-plenary speaker), Budapest, July 2010.
Finite and Infinite Dimensional Complex Analysis and Applications (plenary speaker), Macau, August 2010.
Colloquium Morningside Inst., Chinese Acad. Sc., Beijing, August 2010.
New Perspectives in Univariate and Multivariate Orthogonal Polynomials, BIRS Banff, 2010.
Computational Complex Analysis and Approximation Theory, Protaras, Cyprus, June 2011
Conference on Blaschke products and their Applications, Fields Institute, Toronto, 2011.
Recent trends in analysis, Bordeaux, Septembre 2011.
Workshop on Potential Theory and Applications, Széged, June, 2012.
Colloquium, State University of New York, Albany, October 2012.
Colloquium, University of Oregon, Eugene, October 2012.
Inverse Problems and Nonlinear Equations, Palaiseau, May 2013.
Journées d'Analyse, Bordeaux, Octobre 2013.
Gonchar days, Steklov Institute, Moscou, Novembre 2013 (plenary speaker).
Complex Analysis and Related Topics, St-Petersburg, April 2014.
Constructive Function Theory 2014, Nashville, May 2014 (plenary speaker).
Orthogonal Polynomials, Integrable Systems and their Applications, Shanghai, October 2014.
Special Functions and Orthogonal Polynomials, FoCM 2014, Montevideo, december 2014.

Orthogonal Polynomials and Integrable Systems, Workshop AMS-EMS-MSP, Porto, 2015.
IEEE International Instrumentation and Measurement Technology Conference, Pisa, 2015.
Workshop on Blaschke Products and Function Theory, Hong-Kong, 2015.
10-th ISAAC Congress, Macau, 2015.
Orthogonal and Multiple Orthogonal Polynomials, BIRS, Oaxaca, 2015.
Annual Conference of the Functional Analysis, Harmonic Analysis and Probability Research Group (Gdr CNRS), Luminy, 2015 (plenary speaker).
25-th St-Petersburg Summer Meeting in Mathematical Analysis, St-Petersburg 2016.
New Trends in Approximation Theory, Fields Institute, Toronto 2016.
Quasilinear equations, Inverse Problems and their Applications, Moscow Institute of Technology, Dolgoprundy 2016 (plenary speaker).
SIGMA 2016, Luminy, 2016.
Complex Analysis Day, Marne-la-Vallée, 2016.

Teaching activities

1985-1986: Undergraduate Algebra, LM2 program of the University of Nice.
 1986-1991: Undergraduate course in Control, MST2 ISI program, University of Nice.
 1991-1992: Graduate course in Harmonic Analysis, ESSI program, University of Nice.
 1991-1992: Graduate course in Control, DEA *Robotique et Vision*, University of Nice.
 1994-1995: Graduate course in Control, DEA *Systèmes dynamiques et turbulence*, INLN Nice.
 1996-1997 Graduate course in Control, DEA ARAVIS, University of Nice.
 1996-1997: Graduate course in Function Theory, DEA de Mathématiques, University of Nice.
 1995-1998 Head of the Control program, DEA ARAVIS, University of Nice.
 2004-2005 Graduate course in Potential Theory, DEA de Mathématiques, University de Provence (Marseille I).
 2005-2006 Graduate course in Approximation Theory, DEA de Mathématiques, Université de Provence (Marseille I).
 Spring 2006 Graduate course in Function Theory, University of Cyprus.
 2007-2008 Graduate course in Approximation Theory DEA de Mathématiques, Université de Provence (Marseille I).
 2009-2010 Differential Equations, 2-d year, Vanderbilt University.
 Advisor of 13 graduate students.

Editorial and managing activities

Scientific secretary of the 8th and 9th International Conference on Analysis and Optimization of Systems;
 Member of the program committee of the conference “Automatique pour l’aéronautique et l’espace”, 1990 SMAI conference.
 Member of the program committee of the 10th conference “Analysis and Optimization of Systems”, Sophia-Antipolis 1992.
 Member of the program committee of the “International Workshop on Operator Theory and its Applications”, Bordeaux 2000.
 2003-2005 Member of the “commission de spécialistes” of the Université de Provence since Septembre.
 Member of the program committee of “Constructive Functions Tech’04”, Atlanta 2004.
 Member of the program committee of the 15th IFAC “Symposium on System Identification” (SYSID) 2009, Saint-Malo, France.
 Member of the program committee of “Problemes Inverses, Contrôle et Optimisation de Formes” (PICOF), 2010, Carthagena, Spain .
 Member of the program committee of “Mathematical Theory of Network and Systems” (MTNS) 2010, Budapest, Hungary.
 Member of the program committee of “Computational Complex Analysis and Approximation Theory” (CCAAT) 2011, Protaras, Cyprus.

Member of the program committee of “Symposium on System Identification” (SYSID) 20012, Brussels, Belgium.

Member of the program committee of “Mathematical Theory of Network and Systems” (MTNS) 2014, Groningen, The Netherlands.

Member of the program committee of “Symposium on System Identification” (SYSID) 20015, Beijing, China.

Member of the program committee of “Mathematical Theory of Network and Systems” (MTNS) 2016, Minneapolis, Minnesota, USA.

Member of the program committee of “CDPS-Control of Distributed Parameter Systems” 2017, Bordeaux, France.

Member of the program committee of “Symposium on System Identification” (SYSID) 20018, Stockholm, Sweden.

1992-2000 Team leader of the TMR-program funded *European Research Network on System Identification*, including CWI (the Netherlands), University of Louvain-la-neuve (Belgium), Linköping University (Sweden), KTH-Stockholm (Sweden) TU Wien (Austria), IRISA (France), Padova University (Italy), Cambridge University (England).

Co-principal investigator (with E.B. Saff) of NSF grant INT-9417234

Principal investigator of NATO Grant PST CLG 979703.

Principal investigator of ANR Grant 07-BLAN-0247-01 *Analyse Harmonique et Problèmes Inverses*.

Investigator of NSF Grant ”CMG Collaborative Research: Imaging Magnetization Distributions in Geological Samplings” (2009- 2012)

Investigator of Cyprus NF grant “Orthogonal polynomials in the complex plane: distribution of zeros, strong asymptotics and Shape reconstruction.”

Head of the équipe associée INRIA “Inverse Magnetization Problems in Geosciences” joint with MIT Geosciences Lab. and Vanderbilt university Math dept.

Co-principal investigator of MIT-FRANCE seed fund “Ultra-high Sensitivity Magnetometry for Analyzing Ancient Rock Magnetism”

Member of the Editorial Boards of “Computational Methods and Function Theory” and “Complex Analysis and Operator Theory”.

Member of the ANR panel on Mathematics, 2016.

Principal investigator of 18 industrial contracts with Dassault, CNES, Alcatel Alenia Space, Thomson TMX, Thalès.

Publication List

Chapters in books

- [1] (with P. Bernhard) Automatique et Systèmes, in *Les Techniques de l'Ingénieur, Traité Généralités*, 1992.
- [2] Identification and function theory, in *Harmonic analysis and rational approximation*, pp. 211–230, Lecture Notes in Control and Inform. Sci., 327, Springer, Berlin, 2006.

Papers in refereed Journals

- [1] (with J. Grimm) An elementary proof of the nonexistence of canonical forms in the real and complex case, *Systems and Control Letters*, vol 3, n. 4, 1983.
- [2] On the parametrization of linear constant systems, *SIAM J. cont. and opt.*, vol. 23, n. 5, 1984.
- [3] Existence and Generic Properties of L^2 Approximants for Linear Systems, *I.M.A. Journal of Math. Control and Information*, Vol. 3, pp 89-101, 1986.

- [4] (with A. Ailon, J. Grimm, and G. Langholz) On Polynomial Controllability with Polynomial State for Linear Constant Systems, Technical Note in IEEE. trans. on Automatic Control, vol. 31, n. 2, 1986.
- [5] (with M. Olivi) Index of critical points in l^2 -approximation, Systems & Control Letters, vol. 10, pp 167-174, 1988.
- [6] (with M. Cardelli and M. Olivi) Identification and rational l^2 -approximation: a gradient algorithm, Automatica, vol.27, n. 2, pp 413-418, 1991.
- [7] (with F. Wielonsky) Rational Approximation in H^2 and Stieltjes integrals : a uniqueness theorem, Constructive Approximation, vol. 9, pp 1-21, 1993.
- [8] (with M. Olivi and F. Wielonsky) On a rational approximation problem in the real Hardy space H^2 , Theoretical Computer Science, vol. 94, pp 175-197, 1992.
- [9] (with M. Zerner) On the recovery of functions from pointwise boundary values in a Hardy-Sobolev class of the disk, Journal of Computational and Applied Mathematics, vol. 46, pp 255-269, 1993.
- [10] (with D. Alpay and A. Gombani) On the differential structure of matrix-valued inner functions, Operator Theory: Advances and Applications, vol. 73, pp 30-68, 1994.
- [11](with E. B. Saff and F. Wielonsky) Rational interpolation of the exponential function, Canadian Jour. of Math, vol. 47, pp 1121-1147, 1995.
- [12] (with J. Leblond and J. R. Partington) Hardy approximation to L^∞ functions on subsets of the circle, Constructive Approximation, vol. 12, pp 423-435, 1995.
- [13] (with E. B. Saff and F. Wielonsky) A criterion for uniqueness of a critical point in H_2 rational approximation, Journal d'Analyse Mathématique, vol. 70, pp. 225-266, 1996.
- [14] (with J. Leblond, J. R. Partington and N. Torkhani) Robust Identification from band-limited data, IEEE Trans. on Autom. Control, vol. 42, pp 1318-1325, 1997.
- [15](with J. Leblond) Hardy approximation to L^p functions on subsets of the circle for $1 \leq p < \infty$, Constructive Approximation, vol. 14, pp 41-56, 1998.
- [16] (with M. Olivi) Critical points and error rank in best H_2 matrix rational approximation of fixed Mc-Millan degree, Constructive Approximation, vol. 14, pp 273-300, 1998.
- [17] (with M. Berthod and L. Pottier) Optimization of positive generalized polynomials under l^p constraints, Journal of Convex Analysis, vol. 5, n. 2, pp 353-379, 1998.
- [18] (with J. Leblond, F. Mandrea, et E. B. Saff) How can meromorphic approximation help to solve some 2D inverse problems for the Laplacian?, Inverse Problems, vol. 15, pp-79-90, 1999.
- [19] (with H. Stahl et F. Wielonsky) Non-uniqueness of rational best approximants, Journal of Computational and Applied Maths, vol. 105, pp 141-154, 1999.
- [20](with J. Leblond et J.R. Partington) Problems of Adamjan-Arov-Krein type on subsets of the circle and minimal norm extensions, Constructive Approximation, vol 16, pp 333-357, 2000.
- [21](with H. Stahl et F. Wielonsky) Asymptotic error estimates for L^2 best rational approximants to Markov functions, Journal of Approximation Theory, vol. 108, pp 53-96, 2001.

- [22] (with H. Stahl et F. Wielonsky) Asymptotic uniqueness of best rational approximations of given degree to Markov functions in \mathcal{L}^2 of the circle, *Constructive Approximation*, vol. 17, pp 103-138, 2001.
- [23] (with V. Prokhorov and E.B. Saff) Best meromorphic approximation of Markov functions on the unit circle, *Foundations of Computational Mathematics*, vol. 1, n.4, pp. 385-416, 2001.
- [24] (with S. Bila, D. Baillargeat, M. Aubourg, S. Verdeyme, P. Guillon, F. Seyfert, J.Grimm, C. Zanchi and J. Sombrin) Direct electromagnetic optimization of microwave filters, *Microwave Magazine*, IEEE, Volume: 2 (1), 46 - 51, 2001.
- [25] (with V. Prokhorov and E.B. Saff) Asymptotics for minimal Blaschke products and best L^1 meromorphic approximation to Markov functions, *Computational Methods and Function Theory*, vol.1 (2), 501–520, 2001.
- [26] (with F. Seyfert) An L^p analog to AAK Theory for $p \geq 2$, *Journal of Functional Analysis*, vol. 191, pp 52-122, 2002.
- [27] (with J. Leblond et J.R. Partington) Asymptotic estimates for interpolation and constrained approximation in H^2 by diagonalization of Toeplitz operators, *Integral Equations and Operator Theory*, vol. 45, 269-299, 2003.
- [28] (with A. Ben Abda, F. Ben Hassen and J. Leblond) Recovery of pointwise sources or small inclusions in 2D domains and rational approximation, *Inverse Problems*, vol. 21(1), 51-74, 2005.
- [29] (with R. Küstner and V. Totik) Zero distribution via orthogonality, *Annales de l'Institut Fourier*, vol. 55(5), 1455-1499, 2005.
- [30] (with F. Mandrea, E.B. Saff and F. Wielonsky) 2-D inverse problems for the Laplacian: A meromorphic approximation approach, *J. de Mathématiques Pures et Appl.*, vol. 86, pp. 1-41, 2006.
- [31] A remark on uniqueness of best rational approximations of degree 1 in L^2 of the circle, *Elec. Trans.on Numerical Anal.*, vol. 25, pp 54-66, 2006.
- [32] (with J. Leblond and J.P. Marmorat) Inverse source problem in a 3-D ball from meromorphic approximation on 2-D slices, *Elec. Trans.on Numerical Anal.*, vol. 25, pp 41-53, 2006.
- [33] (with M. Chyba and J.B. Pomet) A Grobman-Hartman theorem for control systems, *J. Dyn. Differential Eqs.*, vol. 19, pp 75-107, 2007.
- [34] (with P. Enqvist and A. Gombani and M. Olivi) Minimal symmetric Darlington synthesis, *Math. of Control, Signal & Syst*, vol. 4, pp. 283-311, 2007.
- [35] (with M. Yattselev) Multipoint Padé approximations to complex Cauchy transforms with polar singularities, *J. Approx. Theory*, vol. 156, pp. 187-211, 2009.
- [36] (with M. Yattselev) Meromorphic approximations for complex Cauchy transforms with polar singularities, *Mat. Sb.*, 200 (9), pp. 3-40, 2009.
- [37] (with M. Yattselev) Convergent interpolation to Cauchy integrals over analytic arcs, *Found. Comp. Math.*, 9 (6), pp. 675–715, 2009.
- [38] (with V. Peller and F. Nazarov) Analytic approximation of matrix functions in L^p , *J. Approx. Theory*, 158, pp. 242–278, 2009.

- [39] (with J.B. Pomet) On the local linearization of control systems, *J. Dynamical & Control Systems*, vol. 15 (4), pp. 471–536, 2009.
 - [40] (with B. Atfeh, J. Leblond and J.R. Partington) Bounded extremal and Cauchy-Laplace problems on the sphere and shell, *J. Fourier Anal. & Appl*, Volume 16, Issue 2 (2010), Page 177.
 - [41] (with M. Yattselev) Convergent Interpolation to Cauchy Integrals over Analytic Arcs with Jacobi-Type Weights, *Int. Math. Res. Notices* (2010) Vol. 22, pp. 4211-4275, first published online March 4, 2010 doi:10.1093/imrn/rnq026
 - [42] (with J. Leblond and S. Rigat and E. Russ) Hardy spaces of the conjugate Beltrami equation. Article title: Hardy spaces of the conjugate Beltrami equation, *Journal of Functional Analysis*, Volume 259, Issue 2, 15 July 2010, Pages 384-427 DOI : 10.1016/j.jfa.2010.04.004
 - [43] (with S. Kupin and M. Olivi and V. Lunot) Multipoint Schur algorithm and orthogonal rational functions: convergence properties, *Journal d'Analyse*, vol. 112, pp. 207–255, 2011.
 - [44] (with M. Yattselev and H. Stahl) Weighted extremal domains and rational approximation, *Advances in Maths*, vol. 229, pp. 357–407, 2012.
 - [45] (with E.B. Saff and N. Stylianopoulos) On Finite-Term Recurrence Relations for Bergman and Szegő Polynomials, *Comput. Methods Funct. Theory*, vol. 12(2), 393-402.
 - [46] (with M. Yattselev) Padé approximants to certain elliptic-type functions, *Jour. d'Analyse*, vol. 121(1), pp. 31–86, 2013.
 - [47] (with E. Andrade-Lima, D. Hardin, E.B. Saff and B. Weiss) Characterizing kernels of operators related to thin plate magnetizations via generalizations of Hodge decompositions, *Inverse Problems*, vol. 29, 2013, doi:10.1088/0266-5611/29/1/015004.
 - [48] (with Y. Fischer and J. Leblond) Dirichlet/Neumann problems and Hardy classes for the planar conductivity equation, *Complex variables and Elliptic Equations*, vol. 59(4), 504–538, 2014.
 - [49] (with E. Andrade-Lima, D. Hardin, E.B. Saff and B. Weiss) Fast Inversion of Magnetic Field Maps of Unidirectional Planar Geological Magnetization, *Journal of Geophysical Research - Solid Earth*, vol. 118(6), 2723–2752, 2013.
 - [50] (with A. Borichev and S. Chaabi) Pseudo-holomorphic functions at the critical exponent, *Journal of European Math. Soc.*, vol. 18 (9), pp. 1919–1960, 2016.
 - [51] (with S. Chevillard and Q. Tao) Minimax principle and lower bounds in H^2 -rational approximation, *Journal of Approximation Theory*, vol.206, pp. 17-47, 2016.
 - [52] (with J. Leblond and L. Bourgeois) Uniqueness results for Inverse Robin Problems with Bounded Coefficient, *Journal of Functional Analysis* 270, 2508–2542, 2016.
- 53 (with M. Olivi and F. Seyfert) Boundary Nevanlinna-Pick interpolation with prescribed peak points, application to impedance matching. *To appear* in the *SIAM Journal on Mathematical Analysis*.
- (with D. Pei and Q. Tao) Hardy-Hodge Decomposition of Vector Fields in \mathbf{R}^n . *To appear* in *Trans. of Amer. Math. Soc.*

Submitted Papers

- (with J. Leblond and F. Seyfert) Constrained extremal problems in H^2 and Carleman's formulas.
- (with C. Gerhards) On the Recovery of Core and Crustal Components of Geomagnetic Potential Fields.

Notes in the *Compte Rendus de l'Académie des Sciences*

- [1] Un théorème de factorisation et son application à la représentation des systèmes cycliques causaux, C. R. Acad. Sc. Paris, t. 295, 27 sept. 82, Série I-223.
- [2] Sur la réalisation de Nerode des systèmes multiindiciels, C. R. Acad. Sc. Paris, t. 301, série I, n. 14, 1985.

Conference Proceedings (refereed)

- [1] Représentation des Systèmes Linéaires Stationnaires Causaux Cycliques. Application à l'Approximation L^2 , in Proc. 5^e Conférence Internationale sur l'Analyse et l'Optimisation des Systèmes, Versailles, décembre 82.
- [2] (with S. Steer) Sur l'identification des systèmes cycliques, C. R. 6^e Conférence Internationale sur l'Analyse et l'Optimisation des Systèmes. Nice, juin 84. Springer Lecture notes in control and information sciences. J. L. Lions and A. Bensoussan Eds.
- [3] (with S. Steer) Rosencher type equations for L^2 approximation of linear constant systems, Proc. 24th C.D.C., Fort Lauderdale, dec. 85.
- [4] (avec J. Grimm) Sur un certain type de problèmes combinatoires, in *Analyse non standard et représentation du réel*, M. Diener et C. Lobry Eds, C.N.R.S. (Paris) et O.P.U. (Alger) 1985.
- [5] On discrete n-dimensional linear constant systems in Frequency Domain and State Space Methods for Linear Systems, C. I. Byrnes and A. Lindquist Eds., Elsevier Science Publishers B.V. 1986.
- [6] (with J. Grimm) Une structure différentielle pour les systèmes implicites, C. R. 7^e Conférence Internationale sur l'Analyse et l'Optimisation des Systèmes, Nice, juin 86. Springer Lecture notes in control and information sciences. J. L. Lions and A. Bensoussan Eds.
- [7] Recent and New Results in Rational L^2 Approximation, in *Modelling, Robustness and Sensitivity Reduction in Control Systems*, R.F. Curtain Ed., Nato ASI Series Vol.F34, Springer-Verlag, 1987.
- [8] (with M. Olivi) New tools in rational L^2 approximation, Proc. of the 8th IFAC Symposium on Identification and System Parameter Estimation, vol. 2, Beijing, 1988.
- [9] (with M. Olivi and F. Wielonsky) Asymptotic properties in rational l^2 -approximation, Proc. of the 9th Intern. Conf. on Analysis and Optimization of Systems, Antibes, lect. notes in control and information sciences 144:477-486, Springer Verlag, Berlin, 1990.
- [10] Interpolation and Fourier coefficients in the Hardy space H^2 , Proc. of MTNS-89, M.A. Kaashoek, J. H. Van Schuppen, A. C. M. Ran eds, Birkhauser 1990.
- [11] On the topological structure of inner functions and its use in identification, in *Analysis of Controlled Dynamical Systems*, B. Bonnard, B. Bride, J. P. Gauthier, I. Kupka eds, Birkhauser 1991.

- [12] (with M. Olivi) Inner-unstable factorization of stable transfer-functions, in *Modeling, Estimation, and Control of Systems with Uncertainty*, G. B. Di Masi, A. Gombani, A. B. Kurzhanski eds, Birkhauser 1991.
- [13] (with M. Olivi) On the identification of near-rational transfer functions, Proc. 1st ECC, I.D. Landau Eds, CNRS 1991.
- [14] On the well-posedness of rational approximation and the identification of linear dynamical systems, in Proc. of the MTNS 91, H. Kimura and S. Kodama eds, MITA Press, Osaka, 1992.
- [15] (with J. Leblond) Identification harmonique et traces des classes de Hardy sur un arc de cercle, to appear in the Proc. of the Conf. for the sixtieth birthday of J. Cea, Sophia Antipolis, 1992.
- [16] (with D. Alpay and J. Leblond) Some extremal problems linked with identification from partial frequency data, in Proc. 10th Int. Conf. on Analysis and Optimization of Systems, Antibes June 1992.
- [17] (with J. Leblond) On robust identification from partial frequency data, in Proc. 2nd ECC, J. W. Nieuwenhuis, C. Praagman, H. L. Trentelman eds, ECCA, 1993.
- [18] (with A. Gombani) A parametrization of external spectral factors, Proc. 10th IFAC Symp. on System Identification, Copenhagen 94.
- [19] L. Baratchart, J. Leblond, J.R. Partington, N. Torkhani *Robust identification from partial frequency data* Proc. of the 33d CDC, Orlando, 94.
- [20] L. Baratchart, J. Leblond, N. Torkhani *Best bounded H^2 extension of partial frequency data*, Proc. of the 3d ECC, Roma, 95.
- [21] L. Baratchart, J. Leblond, J.R. Partington *Problems of Adamjan-Arov-Krein type on subsets of the circle and minimal norm extensions*, Proc. of the 4th ECC, Brussels, 97.
- [22] L. Baratchart *Rational and Meromorphic Approximation in L^p of the Circle: System-Theoretic Motivations, Critical Points and Error Rates*, in Proc. of the conference Computational Methods in Function Theory, Nicosia, 1997, World Scientific Publishing Co, N. Papamichael, S. Ruscheweyh, E.B. Saff Eds.
- [22] L. Baratchart, M. Chyba, J.B. Pomet *On the differentiability of feedback linearization and the Hartman-Grobman theorem for control systems*, Proc. of the 38th IEEE Conf. on Decision and Control, Phoenix, pp 1617-1622, 1999.
- [23] L. Baratchart, V. Prokhorov, E.B. Saff *On Hankel operators associated with Markov functions*, Proc. of the International Workshop on Operator Theory and its Applications, Bordeaux, 2000.
- [24] L. Baratchart, M. Olivi, A. Gombani *Parameter Determination For Surface Acoustic Wave Filters*, Proc. of the 39th IEEE Conf. on Decision and Control, Sydney, pp 2011-2016, 2000.
- [25] L. Baratchart, R. Küstner *Pole Behaviour in Identification*, Proc. of the 39th IEEE Conf. on Decision and Control, Sydney, pp 2001-2004, 2000.
- [26] Laurent Baratchart, Monique Chyba, Jean-Baptiste Pomet. *Topological versus Smooth Linearization of Control Systems*, Proc. of the conference Contemporary Trends in Non-Linear Geometric Control Theory and its Applications, Mexico City, 2000, Honor of V. Jurdjevic 60th birthday, World Scientific Publishing Co, A. Anzaldo-Meneses, B. Bonnard, J.P. Gauthier, F. Monroy-Perez Eds.,2001.

- [27] F. Seyfert, L. Baratchart, J.P. Marmorat, S. Bila, J. Sombrin. *Extraction of coupling parameters for microwave filters: determination of a stable rational model from scattering data*, Proc. IMS, 2003.
 - [28] David Avanesoff, Laurent Baratchart, Jean-Baptiste Pomet, On the integrability of the equations of "flat outputs" of control systems, Proc. AMAM (Applied Math. & Applic. of Math.), Nice 2003.
 - [29] M. Clerc, B. Atfeh, J. Leblond, L. Baratchart, J.P. Marmorat, T. Papadopoulo, J. Partington. The Cauchy problem applied to cortical imaging: comparison of a boundary element and a bounded extremal problem., *Brain Topography, C.M.D. Brandeis*, T. Koenig ed., 18 (2), Springer Science and Business media B.V., 2005.
 - [30] L. Baratchart. *On the H^2 Rational Approximation of Markov Matrix-Valued Functions*, in Proc. 17th Symposium on Mathematical Theory of Networks and Systems (MTNS), Kyoto, Japan, pp. 180-182, 2006.
 - [31] L. Baratchart. *Constrained Analytic Approximation of Mixed Type on Subsets of the Circle*, in Proc. 17th Symposium on Mathematical Theory of Networks and Systems (MTNS), Kyoto, Japan, pp. 1450-1453, 2006.
 - [32] (with M. Yattselev) Asymptotic uniqueness of best rational approximants to complex Cauchy transforms in L^2 of the circle, in *Recent Trends in Orthogonal Polynomials and Approximation Theory*, Contemporary Mathematics, vol. 507, Amer. Math. Soc., Providence, RI, 2010, pp. 87-111.
 - [33] (with L. Golinskii and S. Kupin) Orthogonal rational functions and nonstationary stochastic processes: a Szegő theory, in Proc. 19th Symposium on Mathematical Theory of Networks and Systems (MTNS), Budapest, Hungary, 2010.
 - [34] (with M. Yattselev) Convergent interpolation to Cauchy integrals, in Proc. 19th Symposium on Mathematical Theory of Networks and Systems (MTNS), Budapest, Hungary, 2010.
 - [35] Rational and meromorphic approximation to functions with branchpoints, in *Recent Trends in Analysis*, A. Borichev, K. Davidson, S. Kupin, G. Pisier, F. Vasilescu and V. Vasyunin, eds., Theta series in advanced Mathematics.
 - [36] (with M. Olivi and F. Seyfert) Generalized Nevanlinna-Pick interpolation on the boundary. Application to impedance matching, in Proc. 21-st Symposium on Mathematical Theory of Networks and Systems (MTNS), Groningen, The Netherlands, 2014.
- 37 (with M. Caenepeel and Y. Rollain) On harmonic identification of Wiener-Hammerstein systems, in Proc. I2MTC 2015.
- 38 (with S. Chevillard and J. Leblond) Silent and equivalent magnetizations on thin plates, to appear in Proc. of *Conference on harmonic and functional analysis, operator theory and applications*, Theta series in Advanced Mathematics.
- 39 (with M. Olivi and F. Seyfert) A unified approach to Nevanlinna-Pick interpolation problems, in Proc. 22-st Symposium on Mathematical Theory of Networks and Systems (MTNS), Minneapolis, USA, 2016.

Reports

- [1] Approche Polynomiale des Systèmes Linéaires Stationnaires Causaux. Application à la Représentation Cyclique, Rapport de Recherche I.N.R.I.A. n. 143, juillet 82.

- [2] (avec J. Leblond et J. Partington) Hardy Approximation to L^p functions on subsets of the circle, Rapport de Recherche I.N.R.I.A. n. 2377, Octobre 94.
- [3] (avec J. Leblond, J. Partington, et N. Torkhani) Robust identification in the disc algebra from band-limited data, Rapport de Recherche I.N.R.I.A. n. 2488, Février 95.
- [4] (avec M. Berthod et L. Pottier) Optimization of positive generalized polynomials under l^p constraints, Rapport de Recherche I.N.R.I.A. n. 2750, Décembre 95.
- [5] (avec E. Saff et F. Wielonsky) A criterion for uniqueness of a critical point in H_2 rational approximation, Rapport de Recherche I.N.R.I.A. n. 2869, Avril 96.
- [6] (avec M. Olivi) Critical points and Error rank in best H_2 matrix rational approximation of fixed Mc-Millan degree, Rapport de Recherche I.N.R.I.A. n. 2970, Septembre 96.
- [7] (avec P. Enqvist, A. Gombani, et M. Olivi) Surface Acoustic Wave Filters, Unitary Extensions and Schur Analysis, Report 44, 2002/2003, Mittag-Leffler Institute.
- [8] (avec M. Chyba et J.B. Pomet) On the Grobman-Hartman theorem for control systems, Rapport de Recherche INRIA 5040, 2003.
- [9] (avec D. Avanesoff et J.B. Pomet) Sur l'intégrabilité (très) formelle d'une partie des équations de la platitude des systèmes de contrôle, Rapport de recherche INRIA 5045, 2003.
- [10] (avec J. Leblond et F. Seyfert) Constrained extremal problems in the Hardy space H_2 and Carleman's formulas, Rapport de recherche INRIA 7087, 2009.