CURRICULUM VITAE of
Frank Maria CALLIER

November 2012

Formerly with:
Department of Mathematics
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1 Personal Data

Born at Antwerp (Belgium) on November 27 1942. Belgian Citizen.
Parents: Callier Pierre (deceased 1990) and Mazurelle Marie-Jeanne (deceased 1967).
Married to De Sloovere Nicole (teacher; retired), Knokke (Belgium) 28.03.69.
Children: Ann (born 27.10.73) and Mike (born 18.06.75).
Languages: fluent in Dutch, French, English (all spoken and written), and German (spoken).
Hobbies: Reading (biographies, history), Classical Music (listening and playing the recorder), Traveling and Walking.

2 Education

1. Department of Electrical Engineering and Computer Sciences, University of California at Berkeley, U.S.A., September 1969-June 1972.
   - Ph.D. Degree - June 1972. (direction: Prof. C.A. Desoer)
   - M.Sc. Degree - December 1970. (Grade: A).
   Specialization : Control and System Theory.
   M.Sc. Report : "Instability Analysis by Functional Analysis".
   Ph.D. Thesis : "On the Input-Output Properties of Convolution Feedback Systems".
   - Graduate Fellowship of the Belgian American Educational Foundation, September 1969-August 1970.
   - Teaching Assistant, October 1970-June 1971; Research Assistant : October 1971- June 1972.
   - "Aspirant" with the Belgian National Fund for Scientific Research, October 1971-September 1973.

2. Swiss Federal Institute of Technology, Zürich, Switzerland, 1966-1967.
   Postgraduate Certificate in Nuclear Engineering - October 1967.
   Report : "Computation of the Conversion Ratio of a Thermal Thorium Breeder".

3. State University of Ghent, Belgium, 1961-1966.
   Diploma of Electrical Engineering - July 1966.
   Thesis : "Study of the Transient Behavior of Some Components of a Flight-Simulator by an Analog Computer".
   Grade : A (= "Grote Onderscheiding").

3   Experience

1. Facultés Universitaires Notre-Dame de la Paix à Namur (FUNDP),
   "Professeur Emérite" : February 2008-present.
   Department of Mathematics, September 1974- January 2008 :
   - "Professeur Ordinaire" : September 1986- January 2008.
   - "Professeur" : September 1980-August 1986.
   - "Chargé de Cours" (without tenure : September 1974-August 1976; with
   tenure : September 1976-August 1980).
   - Instructor of courses in Functional Analysis (1974-1980), Measure and In-
   tegration, Topology, Optimal Control and Systems, Graph Theory, Optimal
   Feedback Control Systems, Semigroup Theory (1991-2007).
   Does research in Systems (multivariable feedback systems, linear-quadratic
   optimal systems, spectral factorization, distributed parameter systems:
   frequency-domain and state-space approach, unbounded observation and
   control) and has done research in Optimization (speed of convergence of
   certain optimization algorithms).
   - President of the Commission of Doctorates of the Faculty of Sciences (1988-
   1990).
   - Head of the Department of Mathematics (1992-1994).
   - FUNDP Respondent for the "DEA (Diplôme d'Etudes Approfondies)
   Inter-Universitaire en Mathématiques" (1998 - 2000).

2. Laboratory of Automatic Control, State University of Ghent, Belgium, July
   1973-August 1974 : "Qualified Researcher" with the Belgian National Fund
   for Scientific Research, effective October 1973 : did research in Multivariable
   Feedback Systems.

3. University of California at Berkeley, U.S.A., Department of Electrical Engi-
   neering and Computer Sciences, academic year 1972-1973 : "Acting Assistant
   Professor".
   In charge of courses of circuit and system theory (equivalent to a Belgian
   yearly assignment of 150 hours). Did research in the properties and the sta-
   bility of multivariable and distributed parameter systems. Introduced a new
   course on multivariable feedback systems.

4. Laboratory of Automatic Control, State University of Ghent, Belgium, Oc-
   tober 1968-August 1969 : "Assistant". Repetitor in automatic control and
   cinematics and dynamics of machine-components.
   Worked on projects carried out by the laboratory : analog simulation of dy-
   namic systems, digital computations of short-wave telecommunications (the
   latter for the Belgian Telegraphy and Telephony Administration).

5. Belgian Army, September 1967-September 1968. Assigned to the Center of Military Studies, NBC - Warfare Section, in Vilvoorde (Belgium). Participated in the study and control of the atmosphere of NATO-bunkers in Belgium. Participated in the study of gasmask-testing machines.

4 Publications

4.1 Books :

1. "Multivariable Feedback Systems", (with C.A. DESOER), Springer Verlag, New York, 275 pp., August 1982.

2. "Linear System Theory" (with C.A. DESOER), Springer Verlag, New York, 509 pp., 1991.

4.2 Chapters in books :

1. "The Infinite Horizon and the Receding Horizon LQ-Problems with Partial Stabilization Constrains" (with J.L. WILLEMS), Chapter 9 in "The Riccati Equation", S. Bittanti, A.J. Laub, J.C. Willems (eds.), Springer Verlag, Berlin, pp. 243-262, 1991.

4.3 Papers in refereed journals with C.A. Desoer :

2. "Convolution Feedback Systems", SIAM Journal on Control 10, 4, pp. 737-746, 1972.

3. "Discrete-Time Convolution Feedback Systems", International Journal of Control 16, 3, pp. 567-575, 1972.

4. "A Graphical Test for Checking the Stability of a Linear Time-Invariant Feedback System", IEEE Transactions on Automatic Control Vol. AC-17, pp. 773-780, 1972.

5. "Comment on 'A Feedback Model for Active n-Port Networks Derived from a Concept of Port Orientation'", IEEE Transactions on Circuit Theory Vol. CT-20, pp. 88-89, 1973.

6. "Necessary and Sufficient Conditions for Stability of n-Input n-Output Convolution Feedback Systems with a Finite Number of Unstable Poles", IEEE Transactions on Automatic Control Vol. AC-18, pp. 295-298, 1973.

7. "L_2-Stability and L_2-Instability of Linear Time-Invariant Distributed Feedback Systems Perturbed by a Small Delay in the Loop", (with J.F. BARMAN), IEEE Transactions on Automatic Control Vol. AC-18, 5, pp. 479-494, 1973.

8. "L_p-Stability ($1 \leq p \leq \infty$) of Multivariable Nonlinear Time-Varying Feedback Systems that are Open-Loop Unstable", International Journal of Control Vol. 19, pp. 65-72, 1974.

9. "On Simplifying a Graphical Stability Criterion for Linear Distributed Feedback Systems", IEEE Transactions on Automatic Control Vol. AC-21, pp. 128-129, 1976.

10. "Open-Loop Unstable Convolution Feedback Systems with Dynamical Feedbacks", Automatica Vol. 12, pp. 507-518, 1976.

11. "Input-Output Stability Theory of Interconnected Systems Using Decomposition Techniques", (with W.S. CHAN), IEEE Transactions on Circuits and Systems Vol. CAS-23, pp. 714-729, 1976, (Special Issue on Large Scale Networks and Systems).

12. "Robustness of Stability Conditions for Linear Time-Invariant Feedback Systems", (with W.S. CHAN), IEEE Transactions on Automatic Control Vol. AC-22, pp. 586-590, 1977.

13. "Input-Output Stability of Interconnected Systems Using Decompositions : An Improved Formulation", (with W.S. CHAN), IEEE Transactions on Automatic Control Vol. AC-23, pp. 150-163, 1978, (Special Issue on Large Scale Systems and Decentralized Control).

14. "An Algebra of Transfer Functions of Distributed Linear Time-Invariant Systems", IEEE Transactions on Circuits and Systems Vol. CAS-25, pp. 651-662, September 1978, (Special Issue on the Mathematical Foundations of System Theory); correction : IEEE Transactions on Circuits and Systems Vol. CAS-26, p. 360, 1979.

15. "Stabilization, Tracking and Disturbance Rejection in Multivariable Convolution Systems", Annales de la Société Scientifique de Bruxelles Vol. 94, pp. 7-51, 1980.

16. "Simplifications and Clarifications on the Paper 'An Algebra of Transfer Functions of Distributed Linear Time-Invariant Systems'", IEEE Transactions on Circuits and Systems Vol. CAS-27, pp. 320-323, 1980.

17. "Dynamic Interpretation of Poles and Transmission Zeros for Distributed Multivariable Systems", (with V.H.L. CHENG), IEEE Transactions on Circuits and Systems Vol. CAS-26, pp. 300-306, 1981.

4.4   Other papers in refereed journals and books:

18. "Necessary and Sufficient Conditions for the Complete Controllability and Observability of Systems in Series Using the Coprime Factorization of a Rational Matrix", (with C.D. NAHUM), IEEE Transactions on Circuits and Systems, Vol. CAS-22, pp. 90-95, 1975.

19. "On the Stability of n-Input n-Output Feedback Systems with Dynamical Feedback", Automatica, Vol. 11, pp. 85-91, 1975.

20. "On the Input-Output Stability of Convolution Feedback Systems : A Comparison Between the Scalar and Multivariable Case", Regelungstechnik, Vol. 23, pp. 393-398, 1975.

21. "On the Accelerating Property of an Algorithm for Function Minimization without Calculating Derivatives", (with Ph.L. TOINT), Journal of Optimization Theory and Applications (JOTA), Vol. 23, pp. 531-547, December 1977; correction : JOTA, Vol. 26, pp. 465-467, 1978.

22. "On the Uniform Nonsingularity of Matrices of Search Directions and the Rate of Convergence in Minimization Algorithms", (with Ph.L. TOINT), JOTA, Vol. 23, pp. 511-529, 1977.

23. "On the Controllability and Observability of Linear Lumped Time-Invariant n -Ports : Hermite Normal Form versus Smith Canonical Form", (with P.P. CIVALLERI), Alta Frequenza, Vol. XLVII, pp. 52-58, 1978.

24. "Comments on 'The Multivariable Servomechanism Problem from the Input-Output Viewpoint'", IEEE Transactions on Automatic Control, Vol. AC-23, p. 509, 1978.

25. "On the Characterization of a Minimal Order Robust Servocompensator", International Journal of Control, Vol. 30, pp. 379-385, 1979.

26. "Criterion for the Convergence of the Solution of the Riccati Differential Equation", (with J.L. WILLEMS), IEEE Transactions on Automatic Control, Vol. AC-26, pp. 1232-1242, 1981.

27. "The Tracking and Disturbance Rejection Problem for Distributed-Parameter Systems", (with P.M.G. FERREIRA), IEEE Transactions on Automatic Control, Vol. AC-27, pp. 478-481, 1982.

28. "Large Finite Horizon and Infinite Horizon Optimal Control Problems", (with J.L. WILLEMS), Optimal Control, Vol. 4, pp. 31-45, 1983.

29. "Partially Stable LQ-Optimal Control by Spectral Factorization", International Journal of Control, Vol. 39, pp. 523-539, 1984.

30. "On Polynomial Matrix Spectral Factorization by Symmetric Extraction", IEEE Transactions on Automatic Control, Vol. AC-30, pp. 453-464, 1985.

31. "On Diagonally Weighted Conformal Mapping", (with J. WINKIN), IEEE Transactions on Circuits and Systems, Vol. CAS-32, pp. 1178-1181, 1985.

32. "Distributed System Transfer Functions of Exponential Order", (with J. WINKIN), International Journal of Control, vol. 43, n 5, pp. 1353-1373, 1986.

33. "The Spectral Factorization Problem for SISO Distributed Systems" (with J. WINKIN), in "Modelling, Robustness, and Sensitivity Reduction in Control Systems", R.F. Curtain (ed.), pp. 463-489, Springer Verlag, Berlin, NATO ASI Series, Series F, Vol. 34, 1988.

34. "Spectral Factorization and LQ-Optimal Regulation for Multivariable Distributed Systems", (with J. WINKIN), International Journal of Control, Vol. 52, No 1, pp. 55-75, 1990.

35. "Divergence of the Stationary Kalman Filter for Correct and for Incorrect Noise Variances" (with J.L. WILLEMS), IMA Journal of Mathematical Control and Information, vol. 9, pp. 47-54, 1992.

36. "LQ-optimal Control of Infinite-Dimensional Systems by Spectral Factorization" (with J. WINKIN), Automatica, Vol. 28, pp. 757-770, 1992.

37. "Infinite-Dimensional System Tranfer Functions" (with J. WINKIN), in "Analysis and Optimization of Systems : State and Frequency-Domain Approaches to Infinite-Dimensional Systems" R.F. Curtain, A. Bensoussan and J.L. Lions (eds.), Lecture Notes in Control and Information Sciences, Vol. 185, Springer Verlag, Berlin, pp. 72-101, 1993.

38. "Admissible Controls and Attainable States for a Class of Nonlinear Systems with General Constraints" (with M.E. ACCHAB and V.E. WERTZ), International Journal of Robust and Nonlinear Control, Vol. 4, pp. 267-288, 1994.

39. "Convergence of the Time-Invariant Riccati Differential Equation and LQ-Problem : Mechanisms of Attraction" (with J. WINKIN and J.L. WILLEMS) , International Journal of Control, Vol. 59, pp. 983-1000, 1994.

40. "Convergence of the Time-Invariant Riccati Differential Equation towards its Strong Solution" (with J. WINKIN), Journal of Mathematical Analysis and Applications, Vol. 192, pp. 230-257, 1995.

41. "On the Non-Negative Self-Adjoint Solutions of the Operator Riccati Equation for Infinite-Dimensional Linear Systems" (with L. DUMORTIER and J. WINKIN), Integral Equations and Operator Theory, Vol. 22, pp. 162-195, 1995.

42. "Admissible Observation Operators, Semigroup Criteria of Admissibility" (with P. GRABOWSKI), Integral Equations and Operator Theory, Vol. 25, pp. 182-198, 1996.

43. "On Output-Stabizability and Detectability of Discrete-Time LQ-Optimal Control Systems", in "Three Decades of Algebraic System Theory",dedicated to Paul Fuhrmann on the occasion of his sixtieth birthday, U. Helmke D. Prätzel-Wolters and E. Zerz (eds.), B.G. Teubner Verlag, Stuttgart, pp. 45-55, 1997.

44. "Partially Stabilizing LQ-Optimal Control for Stabizable Semigroup Systems" (with L. DUMORTIER), Integral Equations and Operator Theory, Vol. 32, pp. 119-151, 1998.

45. "Admissible Observation Operators. Duality of Observation and Control using Factorizations" (with P. GRABOWSKI), Dynamics of Continuous, Discrete and Impulsive Systems, Vol. 6, pp. 87-119, 1999.

46. "Spectral Factorization of a Spectral Density with Arbitrary Delays" (with J. WINKIN), in "Open Problems in Mathematical Systems and Control theory", V.D. Blondel, E.D. Sontag, M. Vidyasagar and J.C.Willems (eds.), Springer-Verlag, London, Chapter 17, pp. 79-82, 1999.

47. "The Spectral Factorization Problem for Distributed Parameter Systems" (with J. WINKIN), Integral Equations and Operator Theory, Vol. 34, pp. 270-292, 1999.

48. "Boundary Control Systems in Factor Form: Transfer Functions and Input-Output Maps" (with P. GRABOWSKI), Integral Equations and Operator Theory, Vol. 41, pp. 1-37, 2001.

49. "Circle Criterion and Boundary Control Systems in Factor Form: Input-Output Approach" (with P. GRABOWSKI), International Journal of Applied Mathematics and Computer Science, Vol. 11, pp. 1387-1403, 2001.

50. "Spectral Factorization by Symmetric Extraction for Distributed Parameter Systems" (with J. WINKIN, B. JACOB, and J.R. PARTINGTON), SIAM Journal on Control and Optimization, Vol. 43, pp. 1435–1466, 2005.

51. "Proper Feedback Compensators for a Strictly Proper Plant by Polynomial Equations" (with F. KRAFFER), International Journal of Applied Mathematics and Computer Sciences, Vol. 15, pp. 493–507, 2005.

52. "On the Circle Criterion for Boundary Control Systems in Factor Form: Lyapunov Stability and Lur'e Equations" (with P. GRABOWSKI), ESAIM: COCV, Vol. 12, pp. 169–197, 2006 ; corrigendum, ibidem, Vol.15, pp.741-744, 2009.

53. "Lur'e Feedback Systems with Unbounded Control and Observation : Well-posedness and Stability using Nonlinear Semigroups" (with P. GRABOWSKI), Nonlinear Analysis, Vol. 74,pp.3065-3085, 2011.

4.5   Minicourse Publication :

53. "On the Linear Time-Invariant Robust Servomechanism Problem", Journal A, Vol. 24, pp. 59-63, 1983, (presented at the Benelux Meeting on Systems and Control, 1983).

4.6   Book Reviews :

54. M. Vidyasagar, "Control System Synthesis: a Factorization Approach" (MIT Press 1985) , Automatica, Vol. 22, pp. 500-501, 1986.

55. J. W. Polderman and J.C. Willems,"Introduction to Mathematical Systems Theory: a Behavioral Approach" (Springer Verlag 1998), International Journal of Robust and Nonlinear Control, Vol. 12, pp. 489-493, 2002.

56. B. Brogliato, R. Lozano, B. Maschke, and O. Egeland, "Dissipative Systems Analysis and Control: Theory and Applications (2nd Edition), (Springer Verlag, London : U.K., 2007), IEEE Transactions on Automatic Control, Vol. 52, pp.1357–1358, 2007.

4.7   0bituary :

57. "Obituary Charles A. Desoer 1926-2010", Automatica, Vol.47, pp.429-430, 2011.

4.8   Conference Papers :

1. "Recent Results in Convolution Feedback Systems" (with C.A. DESOER), 5th Asilomar Conference on Circuits and Systems, Asilomar CA, pp. 252-255, 1971.

2. "Recent Results Concerning a Graphical Test for Checking the Stability of a Linear Time-Invariant System" (with C.A. DESOER), Joint Automatic Control Conference, San Francisco CA, Conference preprint volume, pp. 401-405, 1972.

3. "Results Concerning the Complete Controllability and Observability of Systems in Series Using the Coprime Decomposition of a Rational Matrix" (with C.D. NAHUM), IEEE International Symposium on Circuits and Systems, San Francisco, pp. 249-253, 1974.

4. "A Stability Theorem Concerning Open-Loop Unstable Convolution Feedback Systems" (with C.A. DESOER), 6th IFAC World Congress Preprints, Boston, Part ID, pp. 44.2.1- 44.2.7, 1975.

5. "Stability Theory of Interconnected Systems, Part I : Arbitrary Interconnections" (with C.A. DESOER and W.S. CHAN), IEEE International Symposium on Circuits and Systems, Munich, pp. 382-385, 1976.

6. "Recent Results on the Accelerating Property of an Algorithm for Function Minimization Without Calculating Derivatives" (with Ph.L. TOINT), International Mathematical Programming Symposium, Budapest, pp. 369-375, 1976.

7. "Robustness of Stability Conditions for Linear Time-Invariant Feedback Systems" (with C.A. DESOER and W.S. CHAN), Joint Automatic Control Conference, San Francisco CA, pp. 601-607, 1977.

8. "On an Algebra of Transfer Functions of Distributed Linear Time-Invariant Systems" (with C.A. DESOER), European Conference on Circuit Theory and Design, Lausanne, pp. 103-105, 1978.

9. "Stabilization, Tracking and Disturbance Rejection in Linear Multivariable Distributed Systems" (with C.A. DESOER), IEEE Conference on Decision and Control, San Diego CA, pp. 513-514, 1979.

10. "On the Characterization of a Minimal Order Robust Servocompensator", IEEE Conference on Decision and Control, San Diego CA, pp. 21-24, 1979.

11. "Matrix Fraction Representation Theory for Convolution Systems" (with C.A. DESOER), 4th International Symposium on the Mathematical Theory of Networks and Systems (MTNS), Delft, pp. 297-302, 1979.

12. "Dynamic Properties of Poles and Transmission Zeros for Distributed Multivariable Systems", (with V.H.L. CHENG and C.A. DESOER), European Conference on Circuit Theory and Design, Warsaw, 2, pp. 174-179, 1980.

13. "Recent Progress in the Algebraic Approach to Distributed Systems Problems" (with V.H.L. CHENG et C.A. DESOER), IEEE International Conference on Circuits and Computers, Port Chester NY, pp. 434-436, 1980.

14. "Report on a Convergence Criterion of the Solution of the Riccati Differential Equation" (with J.L. WILLEMS), European Conference on Circuit Theory and Design, The Hague, pp. 526-530, 1981.

15. "Relations Between Large Finite Horizon and Infinite Horizon LQ-Optimal Control Problems" (with J.L. WILLEMS), IEEE International Symposium on Circuits and Systems, Rome, pp. 923-926, 1982.

16. "On Solving Partially Stable LQ-Optimal Control by Spectral Factorization", 1983 American Control Conference, San Francisco CA, pp. 1008-1010, 1983.

17. "On Symmetric Extraction Polynomial Matrix Spectral Factorization", 6th International Conference on the Analysis and Optimization of Systems, Nice, June 1984, in "Analysis and Optimization of Systems", A. Bensoussan and J.L. Lions, ed., Lecture Notes in Control and Information Sciences 62, pp. 291-301, Springer Verlag, 1984.

18. "Transfer Functions of Exponential Order of Distributed Systems" (with J. WINKIN), 7th International Symposium on the Mathematical Theory of Networks and Systems (MTNS), Stockholm, June 1985, in "Frequency

Domain and State Space Methods for Linear Systems", C.I. Byrnes and A. Lindquist, eds., pp. 341-345, North Holland, 1986.

19. "On Getting a Polynomial Matrix Row-Column-Reduced" (with D. WILFART), 10th IFAC World Congress on Automatic Control Preprints, Munich, Vol. 9, pp. 28-33, August 1987.

20. "On Spectral Factorization for Multivariable Distributed Systems : A Connection with the Operator Riccati Equation" (with J. WINKIN), 27th IEEE Conference on Decision and Control, Austin (Texas), December 1988, pp. 2509-2516, (due to late arrival not in Proceedings, page numbers officially recognized by the IEEE, copy available from authors), 1988.

21. "Convergence Properties of the Riccati Differential Equation and the Receding Horizon LQ-Problem" (with J.L. WILLEMS), Workshop on the Riccati Equation in Control, Systems and Signals, Como (Italy), pp. 28-33, 1989.

22. "Recent Advances on Spectral Factorization and LQ-Optimal Regulation for Multivariable Distributed Systems" (invited paper), Proceedings of the 9th International MTNS Symposium, Kobe (Japan), June 1991, H. Kimura and S. Kodama eds., Mita Press, Tokyo, Vol. I, pp. 83-90, 1992.

23. "On the Computation of an LQ-Optimal Gain by Approximate Spectral Factorization" (with J. WINKIN). Proceedings of the 9th International MTNS Symposium Kobe (Japan), June 1991, H. Kimura and S. Kodama eds., Mita Press, Tokyo, Vol. I, pp. 133-138, 1992.

24. "On the Exponential Convergence of the Time-Invariant Matrix Riccati Differential Equation" (with J. WINKIN), Proceedings of the 31st IEEE Conference on Decision and Control, Tucson AZ, Vol. 2, pp. 1536-1537, 1992.

25. "Control of a Class of Nonlinear Systems with General Constraints" (with M.E. ACCHAB and V.E. WERTZ), Proceedings of the 31st IEEE Conference on Decision and Control, Tucson AZ, Vol. 4, pp. 3410-3411, 1992.

26. "Finite Dimensional Approximation and Robust Controller Design for Semigroup Systems" (with S.Q. ZHU), Proceedings of the 31st IEEE Conference on Decision and Control, Tucson AZ, pp. 3512-3513, 1992.

27. "On the Convergence of the Control Riccati Differential Equation for Stabilizable Systems" (with J. WINKIN), Proceedings of the 10th International MTNS Symposium, Regensburg (Germany), August 1993, in "Systems and Networks: Mathematical Theory and Applications: Volume II", U. Helmke, R. Mennicken and J. Saurer (eds.), Mathematical Research, Vol. 79, Akademie Verlag, Berlin, pp. 89-90, 1994.

28. "On the Asymptotic Behavior of the Projection Riccati Differential Equation" (with J. WINKIN), Proceedings of the 33rd IEEE Conference on Decision and Control, Lake Buena Vista FL, Vol. 2, pp. 1519-1526, 1994.

29. "Classification of the Non-Negative Self-Adjoint Solutions of the Operator Riccati Equation for Infinite-Dimensional Systems" (with L. DUMORTIER and J. WINKIN), Proceedings of the 3rd European Control Conference, Rome (Italy), Vol. 4, pp. 2896-2898, 1995.

30. "Linear-Quadratic Optimal Control wit Partial Stabilization for Stabilizable Semigroup Systems" (with L. DUMORTIER), 13th IFAC World Congress Preprints, San Francisco CA, Vol. C, pp. 265-270, 1996.

31. "Mechanisms of Convergence of the Riccati Differential Equation for Linear Time-Invariant Systems: An Overview" (with J. WINKIN), Proceedings of the 4th European Control Conference , Brussels, CDrom, 5 pages, 1997.

32. " Duality of Observation and Control using Factorizations" (with P. GRABOWSKI), Proceedings of the MMAR (Methods and Models in Automation and Robots) 97 Symposium, Miedzyzdroje (Poland), pp. 27-34, 1997.

33. "Spectral factorization for distributed parameter systems" (with J. WINKIN), Proceedings of the 36th Conference on Decision and Control, San Diego CA, pp. 4406-4408, 1997.

34. "On the Computation of a Partially Stabilizing LQ-Optimal Gain by Approximate Spectral Factorization" (with L. DUMORTIER), in " Mathematical Theory of Networks and Systems" , A. Beghi, L. Finesso, and G. Picci (eds), Proceedings of the 1998 Symposium on the Mathematical Theory of Networks and Systems (MTNS), Il Poligrafo, Padova (Italy), pp. 105-108, 1999.

35. "Boundary Control Systems in Factor Form: Transfer Functions and Input-Output maps" (with P. GRABOWSKI), Proceedings of the MMAR 98 Symposium, Miedzyzdroje (Poland), pp 23-32, 1998.

36. "The Spectral Factorization Problem for Spectral Densities with Arbitrary Delays" (with J. WINKIN), Proceedings of the MMAR 98 Symposium, Miedzyzdroje (Poland), pp. 35-36, 1998.

37. " On Spectral Factorization for Distributed Parameter Systems" (with J. WINKIN), Proceedings of the 38th Conference on Decision and Control (CDC), Phoenix AZ, pp. 1112-1117, 1999.

38. "Spectral Factorization by Symmetric Extraction for Distributed Parameter Systems" (with J. WINKIN), Proceedings of the MTNS 2000 Symposium, Perpignan (France), CDrom, 4 pages, 2000.

39. "On the Circle Criterion for Boundary Control Systems in Factor Form: Input-Output Approach" (with P. GRABOWSKI), Proceedings of the MTNS 2000 Symposium, Perpignan (France), CDrom, 5 pages, 2000.

40. " Proper Compensators for a Strictly Proper Plant by Solving Polynomial Equations" (invited paper), Proceedings of the MMAR 2000 Symposium, Miedzyzdroje (Poland), pp. 55-59, 2000.

41. "Lur'e Feedback Systems with Boundary Control in Factor Form: State-Space Lyapunov approach" (with P. GRABOWSKI), Proceedings of the MMAR 2000 Symposium, Miedzyzdroje (Poland), pp. 69-74, 2000.

42. "Polynomial Equations Giving a Proper Feedback Compensator for a Strictly Proper Plant", 1st IFAC Symposium on System Structure and Control Preprints, Prague (Czech Republic), CDrom, 6 pages, 2001.

43. "Spectral Factorization by Symmetric Extraction for Semigroup State-Space Systems" (with J. WINKIN), Proceedings of the 41st Conference on Decision and Control (CDC), Las Vegas NV, pp. 4599-4604, 2002.

44. "Spectral Factorization by Symmetric Extraction for a Vibrating String with Low Damping" (with J. WINKIN), Proceedings of the 42nd Conference on Decision and Control (CDC), Maui Hawai, pp. 1654-1659, 2003.

45. "On the Circle Criterion for Feedback Systems with both Unbounded Control and Observation" (with P. GRABOWSKI), Proceedings of the 45th Conference on Decision and Control (CDC), San Diego CA, pp. 753-759, 2006.

46. "Well-posed Lur'e Feedback Systems with Unbounded Control and Observation" (with P. GRABOWSKI), Proceedings of the MMAR 2006 Symposium, Miedzyzdroje (Poland), pp. 111-116, 2006.

4.9   Lecture Notes :

1. "Notes de Cours de Topologie", Librairie des Sciences FUNDP, Namur, 2006.

2. "Notes de Cours de Mesure et d' Intégration", Librairie des Sciences FUNDP, Namur, 2006.

3. "Lecture Notes on Semigroup Theory", see http://perso.fundp.ac.be/~fcallier/ and http://www.ia.agh.edu.pl/~pgrab/main.xml, 2005

5   Last Research Interests

5.1   Spectral Factorization for Multivariable Distributed Parameter Systems

(with J. WINKIN, Department of Mathematics, FUNDP, Namur; J. PARTING-TON University of Leeds, School of Mathematics, and B. JACOB University of Dortmund, Department of Mathematics, 2002-2004)

Keywords: Infinite-dimensional state-space Systems: spectral factorization, distributed parameter systems, symmetric extraction, Riccati equation, LQ-optimal control.

Description: Study of spectral factors (existence) for multivariable distributed parameter systems. Analysis and numerical experiments for the symmetric extraction method of spectral factorization for such systems (scalar case).

Publications:

- "Spectral Factorization by Symmetric Extraction for Distributed Parameter Systems" , SIAM Journal on Control and Optimization, Vol. 43, pp. 1435–1466, 2005.

- "Spectral Factorization by Symmetric Extraction for a Vibrating String with Low Damping" , Proceedings of the 42nd Conference on Decision and Control (CDC), Maui Hawai, pp. 1654-1659, 2003.

- "Spectral Factorization by Symmetric Extraction for Semigroup State-Space Systems", Proceedings of the 41st Conference on Decision and Control (CDC), Las Vegas NV, pp. 4599-4604, 2002.

- "Spectral Factorization of a Spectral Density with Arbitrary Delays", in "Open problems in Mathematical Systems and Control Theory", V.D. Blondel, E.D. Sontag, M. Vidyasagar and J.C. Willems (eds.), Springer-Verlag, London, Chapter 17, pp. 79-82, 1999.

- "The Spectral Factorization Problem for Distributed Parameter Systems", Integral Equations and Operator Theory, Vol. 34, pp. 270-292, 1999.

5.2 Infinite-Dimensional Systems with Unbounded Observation and Control Operators

(with P. GRABOWSKI, Stanislas Staszic Technical University (AGH),
Institute of Automatics, Krakow, Poland)

Keywords: Infinite-dimensional state-space Systems : semigroup systems, observation operator, control operator, admissibility, operator Lyapunov and Riccati equation, circle criterion.

Description: Study of infinite-dimensional semigroup state-space systems with unbounded observation and control operators. Study of boundary control systems described by a differential equation in factor form. Study of the circle criterion for such systems, by the input-output and state-space approaches.

Publications:

- "On the Circle Criterion for Feedback Systems with both Unbounded Control and Observation" , Proceedings of the 45th Conference on Decision and Control (CDC), San Diego CA, pp. 753-759, 2006.

- "Well-posed Lur'e Feedback Systems with Unbounded Control and Observation" , Proceedings of the MMAR 2006 Symposium, Miedzyzdroje (Poland), pp. 111-116, 2006.

- "On the Circle Criterion for Boundary Control Systems in Factor Form: Lyapunov Stability and Lur'e Equations", ESAIM: COCV, Vol. 12, pp. 169–197, 2006.

- "On the Circle Criterion for Boundary Control Systems in Factor Form: Lyapunov Stability and Lur'e Equations", Report 2002/05, Dept. of Mathematics, FUNDP, Namur (Belgium), 28 pages, 2002.

- "Circle Criterion and Boundary Control Systems in Factor Form: Input-Output Approach", International Journal of Applied Mathematics and Computer Science, Vol. 11, pp. 1387-1403, 2001.

- "Boundary Control Systems in Factor Form: Transfer Functions and Input-Output Maps", Integral Equations and Operator Theory, Vol. 41, pp. 1-37, 2001.

5.3 Feedback Systems with Polynomial Matrix Descriptions

(with F. KRAFFER, Institute of Information Theory and Automation, Prague (Czech Republic, 2002-2005)
Keywords: Finite-dimensional systems, linear time-invariant feedback systems, polynomial matrix descriptions and methods.

Description: Analysis and design of feedback systems described by polynomial matrices. Closed-loop system design with compensator described by a proper transfer matrix.

Publications:

- "Proper Feedback Compensators for a Strictly Proper Plant by Polynomial Equations" (with F. KRAFFER), International Journal of Applied Mathematics and Computer Sciences, Vol. 15, pp. 493–507, 2005.

- "Polynomial Equations Giving a Proper Feedback Compensator for a Strictly Proper Plant", 1st IFAC Symposium on System Structure and Control Preprints, Prague (Czech Republic), CDrom, 6 pages, 2001.

- "Proper Compensators for a Strictly Proper Plant by Solving Polynomial Equations" (invited paper), Proceedings of the MMAR 2000 Symposium, Miedzyzdroje (Poland), pp. 55-59, 2000.

6   Professional Honors and Achievements

F.M. Callier

1. is the coauthor of 2 books with Prof. C.A. Desoer viz.
   1) "Multivariable Feedback Systems", Springer Verlag 1982, New York, 1982 ("... It is hard to think of a better way of learning many of the essential features of multivariable feedback problems than by carefully studying this book ...", A.G.J. MacFarlane in Automatica, Vol. 20, p. 487, 1984), and
   2) "Linear System Theory", Springer Verlag, New York, 1991, ("This is a textbook very well suited to a final year undergraduate course for applied mathematicians and also to post-graduate students", D.J. Bell, in International Journal of Electrical Engineering Education, Vol. 30, 1993, no. 2).

2. is moreover the author or coauthor of 95 publications in control (and optimization), viz. a) 1 chapter in a book, b) 51 papers in refereed journals and books, c) 1 minicourse publication, d) 3 book reviews, e) 46 refereed conference papers, and f) 3 sets of lecture notes.
   See also http://www.emis.de:80/ZMATH/en/full.html using "Callier, F*"; or http://www.ams.org/mathscinet using "Callier".

3. is listed in e.g. "Who's Who in the World", Marquis Publications, Chicago, 20th Edition, 2003.

4. was invited six times as a visiting research scientist by Professor C.A. Desoer at the Electronics Research Laboratory, (summers of 1975, 1977, 1979, 1984, 1986; winter and spring 1980-1981).

5. was visiting associate professor at the Department of Electrical Engineering and Computer Sciences of the University of California at Berkeley winter trimester 1980-1981.

6. was invited for short scientific visits to e.g.
   a) Institute of Information Theory and Automation,
   Prague (Czech Republic), (Dr. F. Kraffer, Dr. P. Zagalak), (August 2002);
   b) Mathematical Research Institute, Oberwolfach (Germany)
   (Profs. F. Allgöwer and H. Kwakernaak), (February 2002);
   c) University of Twente, Enschede (The Netherlands),
   (Profs. H. Zwart and R.F. Curtain), (July 2001, June 1997);
   d) University of Bath , Bath, U.K., (Prof. H. Logemann), (April 1996).

7. was elected Fellow of the Institute of Electrical and Electronics Engineers (IEEE, New York) in November 1986 for contributions to multivariable feedback system theory.

8. was awarded a "1979 Honorable Mention Paper Award" by the IEEE Control Systems Society for his contribution to : "Input-Output Stability of Interconnected Systems Using Decompositions : An Improved Formulation", IEEE Transactions on Automatic Control AC-23, pp. 150-163, 1978 (coauthors : W.S. Chan and C.A. Desoer).

9. was Associate Editor at Large of the IEEE Transactions on Automatic Control (2005-2007); was Associate Editor of the IEEE Transactions on Automatic Control (2001-2003), Automatica (1995-1999), Systems and Control Letters (1984-1990); moreover he was a reviewer for journals in control and optimization : IEEE Transactions on Automatic Control and on Circuits and Systems, Automatica, SIAM Journal on Control and Optimization, International Journal of Control, European Journal of Control, Journal of Optimization Theory and Applications, ...; for these activities he was elected Outstanding Reviewer Automatica in 2000 and 2002, and was honored as an Outstanding Associate Editor for the IEEE Transactions on Automatic Control on his sixtieth birthday in 2002.

10. directed the doctorates of L. Dumortier (1992-1998: control),
J. Winkin (1983-1989: control), and Ph. Toint (1974-1978: optimization).

11. was invited more than 10 times as a member of the jury for doctorates in system theory and optimization in Belgium (Brussels, Namur, Liège, Ghent, Leuven, Louvain-la-Neuve) and the Netherlands (Delft, Groningen and Eindhoven).

12. was invited as member of the Program Committee, Session Chairman or Session Organizer of international meetings, e.g.
a) IEEE Conference on Decision and Control, Las Vegas NV, 2002, (Chairman); Phoenix AZ, 1999 (Program Committee);
b) MMAR Symposium, Miedzyzdroje (Poland), 1998, 1999, 2000 (Program Committee)
c) European Control Conference, Groningen, 1993 (Program Committee)
d) International Symposium on the Mathematical Theory of Networks and Systems, Delft, 1979, Kobe, 1991 (Program Committee);
e) IFAC World Congress, Munich, 1987 (Program Committee);
f) European Conference on Circuit Theory and Design, The Hague, 1981, (Session Organizer).

13. was elected to give a minicourse on robust servomechanisms at the 1983 Benelux Meeting on Systems and Control, Oostduinkerke, 1983.

14. was invited as a guest speaker at the MMAR 2000 Symposium, Miedzyzdroje (PL), the 1991 MTNS, Kobe (JP), and the 1986 C.N.R.S. Colloquium on the structural properties of Linear Multivariable Systems, Paris.

15. was a guest speaker on the sixtieth birthday of Professors R.F. Curtain (The Netherlands), (Groningen, 2001), R. Gorez (Belgium), (Louvain-la-Neuve, 1999), and P. A. Fuhrmann (Israel), (Kaiserslautern (Germany), 1997).

16. was invited to give a course in Semigroup Theory at the Department of Mathematics, University of El Jadida, Morocco, January 2001, and at the Department of Applied Mathematics, Stanislas Staszic Technical University (AGH), Krakow, Poland, 2004.

17. was the organizer with Prof. G. Campion (Louvain-la-Neuve, Belgium) resp. with Prof. R. Gorez (Louvain-la-Neuve, Belgium) of the 1997 and 1985 Benelux Meetings on Systems and Control in Belgium.

18. was honored by the reproduction of some of his papers in a book :
a) "A Graphical Test for Checking the Stability of a Linear Time-Invariant Feedback System", (coauthor : C.A. Desoer), IEEE Trans. Auto. Control, AC-17, pp. 773-780, December 1972;
b) "On Simplifying a Graphical Stability Criterion for Linear Distributed Feedback Systems", (coauthor : C.A. Desoer), IEEE Trans. Auto. Control, AC-21, pp. 128-129, February 1976;
were reproduced in the book : "Frequency Response Methods in Control Systems", IEEE Press, New York, A.G.J. MacFarlane (Ed.), 1979.

19. was honored by references to his work in books :
- M. Haase, "Functional Calculus of Sectorial Operators", book manuscript, 2005, Birkhäuser Verlag, Basel, to appear;
- J.C. Oostveen, "Strongly Stabilizable Distributed Parameter Systems", SIAM Frontiers in Applied Mathematics, 2000;
- R.F. Curtain and H.J. Zwart, "Introduction to Infinite-Dimensional Linear Systems Theory", Springer Verlag, New York, 1995;
- R.F. Curtain, "A Synthesis of Time and Frequency Domain Methods for the Control of Infinite-Dimensional Systems", Chapter 5 in "Control and Estimation of Distributed Parameter Systems", H.T. Banks (ed.), SIAM, Frontiers in Applied Mathematics, Vol. 11, 1992;
- M. Vidyasagar, "Control Systems Synthesis : A Factorization Approach", MIT Press, Cambridge MA, 1985;
- T. Kailath, "Linear Systems", Prentice Hall, Englewood Cliffs, New Jersey, 1980;
- C.A. Desoer, M. Vidyasagar, "Feedback Systems : Input-Output Properties", Academic Press, New York, 1974;
- H.H. Rosenbrock, "Computer-Aided Control System Design", Academic Press, London, 1974.

20. was a partner in the Belgian Inter-University Pole of Attraction no. 17, "Modélisation, Simulation et Commande de Systèmes Complexes" (1991-1996) (Project directors : Profs. M. Gevers and G. Bastin (Université Catholique de Louvain)).

21. was a participant to the EEC Action for Science and Technology with Central and Eastern European Countries (Research Residence of Dr. P. Grabowski, Krakow, Poland, at Namur, February-April 1993).

22. was awarded a research grant for the period 1997-2001 funded by the French speaking community of Belgium, by the Facultés Universitaires Notre-Dame de la Paix (Namur, Belgium).

23. was awarded a sabbatical grant for the period January-June 2004 by the Belgian National Fund of Scientific Research (FNRS), during which he stayed at the Institute of Automatics, Stanislas Staszic University of Technology (AGH), Krakow, Poland, (Prof. P. Grabowski) and at the School of Mathematics, University of Leeds, Leeds, U.K., (Prof. J. Partington).

24. was made Life Fellow of the Institute of Electrical and Electronics Engineers (IEEE, New York) in 2008.

7 Memberships

IEEE Control Systems Society (New-York).
BAEF (Brussels, New-York) (Belgian American Educational Foundation).
KVIV (Antwerp) (Royal Society of Flemish Engineers).

8 Reference Persons 2003

- Prof. A.N. Michel, Department of Electrical Engineering, University of Notre Dame, Notre Dame IN, U.S.A.

- Prof. A.L. Tits, Department of Electrical Engineering, University of Maryland, College Park MD, U.S.A.

- Prof. P.A. Fuhrmann, Department of Mathematics, Ben-Gourion Universtity of the Negev, Beer-Sheva, Israel.

- Prof. H. Kwakernaak, Departement of Applied Mathematics, University of Twente, The Netherlands.

- Prof. R.F. Curtain, Mathematics Institute, University of Groningen, The Netherlands.

- Prof. J.C. Willems, Department of Electrical Engineering, Catholic University of Leuven, Belgium.