

Claude MOOG
Director of Research at CNRS
Fellow of the IEEE
Corresponding Member of the Mexican Academy of Sciences

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I. SUMMARY

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Current Position

2000 – present: Director of Research at CNRS.

Education

Doctorat d’Etat (Nantes- France), 1987,
Ph.D in Automatic Control (Nantes-France), 1981,
M.Sc Automatic Control (Besançon - France), 1978

Teaching activities

Nonlinear control systems. For engineering students and international M.Sc students.
Teaching in France, USA, Italy and Poland.

Research interest

- Theory of nonlinear systems,
- control of walking robots
- applications to biologic systems.

Career

Directeur de Recherche CNRS/ Chargé de recherche CNRS, since 1983,
Assistant professor at Ecole Centrale de Lyon 1981-1983.
Invited professor at the University of Michigan (Ann Arbor), CINVESTAV (Mexico)

Professional activities:

Head of the “nonlinear systems” rsearch team of IRCCyN (1992 -1999), head of the
“conrol” group at IRCCyN, from 2006 to 2013.
2002 – 2016: In charge of the “doctoral studies” at IRCCyN.

Supervision of thesis:

1 Doctorat d’Etat,
21 PhD students
17 Masters students

Summary of Publications:

International Journals 76
Books 4
International conferences: over 150

Awards:

Fellow member of the IEEE

Corresponding Member of the Mexican Academy of Sciences

Impact factor (evaluated in June 2017 from [ISI Web of Science](#)) :

Total number of papers, ref. Web of Science, Np	Total number of citations Nc,tot	Number of citations per paper Nc,tot/Np	H factor
126	1319	10.47	19

Other relevant informations

- Member of the 2016 CDC Best Student Paper Award (BSPA) committee
- Associate Editor for "IEEE Transactions on Automatic Control" November 2006 – Dec. 2016.
- Associate Editor for "Systems and Control Letters" from January 2004 to 2014.
- Associate Editor for "IMA Journal of Mathematical Control and Information" from January 2008 to 2015.
- Member of the editorial committee of the Estonian Academy of Science
- President of an IEEE co-sponsored Conference, Conférence International Francophone d'Automatique 2002, <http://www.irccyn.ec-nantes.fr/cifa/>

Member of several International Program Committees of international conferences:

- IFAC World Congress à Toulouse, France. <https://www.ifac2017.org/IPC>
- IEEE MED 2016 , Athens, Greece. http://med2016.org/?page_id=2
- IFAC ROCOND'15 , Bratislava, Slovakia. <http://www.rocond15.sk/>
- IEEE MED 2014 , Palermo, Italy. <http://www.unipa.it/med14/organization.php>
- IEEE CCCA'12 , Marseille. <http://nkms.free.fr/WebCCCA/ccca12/international%20committee.html>
- IFAC SSSC'10 , Ancona, <http://leibniz.dii.gi.univpm.it/SSSC10/>
- IFAC NOLCOS 2010 à Bologne, <http://www.nolcos2010.unibo.it/ipc.html>
- 14th Mediterranean Conference on Control and Automation MED06
- 9th Int. Conf. on Mechatronics Technology, Kuala Lumpur, Malaysia, 2005 <http://www.jfps.jp/ICMT2005.pdf>
- 3rd International Conference on control theory and applications, Pretoria, South Africa, 2001.
- IEEE congress "Control Systems and Applications", Trieste, 1998
- 7th IFAC Symposium on Nonlinear Control Systems, Pretoria, South Africa, 2007,
- IFAC, 2nd African Control Conference, Durban, South Africa, 2006,
- 6th Workshop on Time Delay Systems, L'Aquila, Italy, 2006.
- IFAC Congress "Systems Structure and Control", Prague, 2001
- 3rd IFAC Workshop "Linear Time Delay Systems", Ancona, Italy, 2000
- IFAC Conf. "Control Systems Design", Bratislava, 2000
- IFAC congress "New Trends in Design of Control Systems", Bratislava, 1997.

- 3rd International Workshop, NEW COMPUTER TECHNOLOGIES IN CONTROL SYSTEMS,1996, Pereslavl-Zalessky, Russia

International responsibilities:

- Head of several cooperation programs with the USA, Mexico, South Africa, China, UK, Italy...
- Member of the International Program Committee for several leading conferences (IFAC, ...)
- International Expert for research programs or teaching staff (for Canada, Turkey, South Africa, Mexico, Belgium)

II. SELECTED PUBLICATIONS

A : International journals

- [1] C. MOOG, "Comments on Decentralized Controller with Online Interaction Trajectory Improvement", Proc. IEE Part D, 128, 4, 1981, p. 162.
- [2] C.H. MOOG and J.E.R. CURY, "Comments on Localization of Disturbances and Output Decomposition in Decentralized Linear Multivariable Systems", Int. J. Contr., 34, 6, 1981, pp. 1221-1223.
- [3] J.E.R. CURY, P. GUERCHET and C.H. MOOG, "Disturbance Decoupling Problem in Decentralized Linear Multivariable Systems", Int. J. Contr., 35, 6, 1982, pp. 957-964.
- [4] P. GUERCHET, C.H. MOOG and J.E.R. CURY, "Computation of a Decentralized Disturbance Decoupling Control for a Distillation Column", Int. J. Syst. Sci., 14, 1, 1983, pp. 75-85.
- [5] J. Descusse et C. Moog. Decoupling with Dynamic Compensation for Strong Invertible Affine Non Linear Systems. International Journal of Control, 1985, 42, (6). Pages:1387--1398.
- [6] J. Descusse et C. Moog. Dynamic Decoupling for Right-Invertible Nonlinear Systems. Systems and Control Letters, Mars, 1987, 8, (4). Pages:345--349.
- [7] C.H. Moog et J.W. Grizzle. Découplage Non Linéaire vu de l'Algèbre Linéaire. Comptes Rendus Acad. Sciences Paris, Ser. I, 1988, 307, Pages:497--500.
- [8] G. Conte, C.H. Moog et A.M. Perdon. Un Théorème sur la Représentation Entrée-Sortie d'un Système Non Linéaire. Comptes Rendus Acad. Sciences Paris, Ser. I, 1988, 307, Pages:363--366.
- [9] A. Glumineau et C. Moog. Essential Orders and Nonlinear Decoupling. International Journal of Control, 1989, 50, (5). Pages:1825--1834.
- [10] M.D. Di Benedetto, J.W. Grizzle et C. Moog. Rank Invariants for Nonlinear Systems. SIAM Journal of Control and Optimization, 1989, 27, (3). Pages:658--672.
- [11] C. Moog, A.M. Perdon et G. Conte. Model Matching and Factorization for Nonlinear Systems : a Structural Approach. SIAM Journal of Control and Optimization, 1991, 29, (4). Pages:769--785.
- [12] A. Glumineau et C. Moog. Nonlinear Morgan's Problem : Case of $(p+1)$ Inputs and p Outputs. IEEE Transactions on Automatic Control, Juillet, 1992, 37, (7). Pages:1067--1072.

- [13] G. Conte, A.M. Perdon et C. Moog. The Differential Field Associated to a General Analytic Nonlinear Dynamical System. *IEEE Transactions on Automatic Control*, Juillet, 1993, 38, (7). Pages:1120--1124.
- [14] A. Glumineau, M. Hamy, C. Lanier et C. Moog. Robust Control of a Brushless Servo Motor via Sliding Modes Techniques. *International Journal on Control*, 1993, 58, Pages:979--990.
- [15] A.M. Perdon, Y.F. Zheng, C. Moog et G. Conte. Disturbance Decoupling for Nonlinear Systems : a Unified Approach. *Kybernetika*, 1993, 29, Pages:479--484. [ref:3007].
- [16] M.D. Di Benedetto, A. Glumineau et C.H. Moog. Découplage Entrée-Sortie des Systèmes Non Linéaires par Retour Dynamique Pur. *Comptes Rendus Acad. Sciences Paris, Ser. I*, 1993, 316, Pages:101--106.
- [17] Y. Aït-Amirat, S. Diop et C.H. Moog. Un Nouvel Algorithme de Structure. *Comptes Rendus Acad. Sciences Paris, Ser. I*, 1993, 317, Pages:103--108.
- [18] M.D. Di Benedetto, A. Glumineau et C. Moog. The Nonlinear Interactor and its Application to Input-Output Decoupling. *IEEE Transactions on Automatic Control*, Juin, 1994, 39, (6). Pages:1246--1250.
- [19] R. Castro-Linares et C.H. Moog. Structure Invariance for Uncertain Nonlinear Systems. *IEEE Transactions on Automatic Control*, 1994, 39, (10). Pages:127--132.
- [20] Y. Aoustin, C. Chevallereau, A. Glumineau et C. Moog. "Experimental Results for the End-effector Control of a Single Flexible Robotic Arm". *IEEE Transactions on Control Systems Technology*, 1994, 2, (4). Pages:371-381.
- [21] E. Aranda-Bricaire, C.H. Moog et J.B. Pomet. A Linear Algebraic Framework for Dynamic Feedback Linearization. *IEEE Transactions on Automatic Control*, Janvier, 1995, 40, (1). Pages:127--132.
- [22] R. Andiarti et C.H. Moog. Controllability and optimization in the aeroassisted orbital transfer. *AIAA Journal of Guidance, Control and Dynamics*, 1995, 18, Pages:911--913.
- [23] A. Glumineau, C.H. Moog et F. Plestan. New algebro-geometric conditions for the linearization by input-output injection. *IEEE Transactions on Automatic Control*, Avril, 1996, 41, (4). Pages:598--603.
- [24] E. Aranda-Bricaire, U. Kotta et C.H. Moog. Linearization of discrete-time systems. *SIAM Journal of Control and Optimization*, 1996, 34, (6). Pages:1999--2023.
- [25] R. Andiarti et C.H. Moog. Output feedback disturbance decoupling in nonlinear systems. *IEEE Transactions on Automatic Control*, Novembre, 1996, 41, (11). Pages:1683--1689.

- [26] H.J.C. Huijberts, C.H. Moog et R. Andiarti. Generalized controlled invariance for nonlinear systems. *SIAM Journal of Control and Optimization*, 1997, 35, Pages:953--979.
- [27] C.H. Moog, A.M. Perdon et G. Conte. Canonical Decomposition of Non-linear Systems. *Automatica*, 1997, 33, Pages:1561--1565.
- [28] C. Moog. Nonlinear Decoupling and Structure at Infinity. *Mathematics of Control, Signals, and Systems*, 1998, 1, (3). Pages:257--268.
- [29] X. Xia et C. Moog. Disturbance decoupling by measurement feedback for SISO nonlinear systems. *IEEE Transactions on Automatic Control*, 1999, 44, (7). Pages:1425-1429.
- [30] H.J.C. Huijberts, C. Moog et R. Pothin. Input-output decoupling of nonlinear systems by static measurement feedback. *Systems and Control Letters*, 2000, 39, Pages:109-114.
- [31] C. Moog, R. Castro-Linares, M. Velasco-Villa et L.A. Marquez-Martinez. The Disturbance Decoupling Problem for Time-Delay Nonlinear Systems. *IEEE Transactions on Automatic Control*, 2000, 45, (2). Pages:305-309.
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- [33] L.A. Marquez-Martinez et C. Moog. Trajectory tracking control for nonlinear time-delay systems. *Kybernetika*, 2001, 37, Pages:370-380.
- [34] X. Xia, C. Moog et R. Pothin. Extended output injection and output feedback input-output linearization. *Electronics Letters*, 2002, 38, Pages:200-202.
- [35] X. Xia, L.A. Marquez-Martinez, P. Zagalak et C. Moog. Analysis of nonlinear time-delay systems using modules over non-commutative rings. *Automatica*, Septembre, 2002, 38, (9). Pages:1549-1555.
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- [42] J.W. Grizzle, C.H. Moog et C. Chevallereau. Nonlinear Control of Mechanical Systems with an Unactuated Cyclic Variable. *IEEE Transactions on Automatic Control*, May 2005, Pages:559 - 576. VOL. 50. [10.1109/TAC.2005.847057](https://doi.org/10.1109/TAC.2005.847057)
- [43] M. Di Loreto, L. Boillereaux, G. Conte, G. Giuliani et C. Moog. Experimentation of Melting Kinetics Control in a Convective Food Thawing Process. *IEEE Transactions on Control Systems Technology*, 2005, Pages:826-831. Vol. 13, 5.
- [44] J. Zhang, X. Xia et C. Moog. Parameter Identifiability of Nonlinear Systems with Time-Delay. *IEEE Transactions on Automatic Control*, 2006, 51, Pages:371 - 375.
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- [50] M. J. Mhaweji, C. Brunet-Francois, R. Fonteneau, D. Ernst, V. Ferre, G.B Stan, F. Raffi et C.H. Moog. Apoptosis characterizes immunological failure of HIV

infected patients. *Control Engineering Practice*, vol. 17, n° 7, 2009, pp. 798-804.

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- [52] J.F. Zhang, C.H. Moog, et X. Xia, Realization of multivariable nonlinear systems via the approaches of differential forms and differential algebra, *Kybernetika*, vol. 46, N° 5 (2010) pp. 799-830.
- [53] A. Garate-Garcia, L.A. Marquez-Martinez et C.H. Moog, Equivalence of linear time-delay systems, *IEEE Transactions on Automatic Control*, **56**, 3 (2011), pp. 666-670.
- [54] C. Califano, L.A. Marquez-Martinez et C.H. Moog, Extended Lie brackets for nonlinear time-delay systems, *IEEE Transactions on Automatic Control*, **56**, 9 (2011), pp. 2213-2218.
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<http://dx.doi.org/10.1016/j.amc.2012.01.071>
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<http://dx.doi.org/10.1016/j.sysconle.2012.11.023>
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<http://dx.doi.org/10.1016/j.automat.2013.03.001>
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<http://dx.doi.org/10.1016/j.bspc.2014.03.008>
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- [64] N. Magdelaine, L. Chaillous, I. Guilhem, J.Y. Poirier, M. Krempf, C.H. Moog and E. Le Carpentier, A Long-term Model of the Glucose-Insulin Dynamics of Type I Diabetes, *IEEE Transactions on Biomedical Engineering*, vol. 62, pp. 1546-1552, 2015, DOI: [10.1109/TBME.2015.2394239](https://doi.org/10.1109/TBME.2015.2394239)
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<http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7015573>
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Systems Science, 48, 15, (2017), pp. 3267-3278.
<http://dx.doi.org/10.1080/00207721.2017.1381893>

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- [83] Ü. Kotta, C.H. Moog and M. Tönso, Remarks on realization of time-varying systems, Proc. Estonian Academy of Sciences, (2018), 67, to appear.

B : Books

- [1] G. Conte, C. Moog et A.M. Perdon. Nonlinear Control Systems: An Algebraic Setting. Springer Verlag, 1999, Londres, Grande-Bretagne, 242, Lecture Notes in Control and Information Sciences.
- [2] G. Conte, C. Moog et A.M. Perdon. Riadenie nelinearnych systemov : algebricky pristup. Slovenska technik univerzita v Bratislave, 2001, Bratislava, Slovaquie, ISBN 80-227-1490-9.
- [3] G. Conte, C.H. Moog et A.M. Perdon. Algebraic Methods for Nonlinear Control Systems. Springer, 2nd edition, 2007, Londres, Grande-Bretagne, Communications and Control Engineering, <http://www.springer.com/1-84628-594-1>
- [4] G. Conte, C.H. Moog et A.M. Perdon. 非线性控制系统的代数方法, Algebraic Methods for Nonlinear Control Systems. Science Press, 2013, Beijing, China, ISBN 978-7-03-038121-7, http://www.sciencep.com/t_single.php?id=34212

Br : Licence

- [1] N. Magdelaine, C.H. Moog, P.S. Rivadeneira, L. Chaillous, M. Krempf, Artificial Pancreas, US Provisional, N° US **62/407,723**, 13 octobre 2016.