Jean-Pierre RICHARD

Full Professor
Centrale Lille, France

CS 20048 - 59651 Villeneuve d'Ascq Cedex
mail: jean-pierre.richard@centralelille.fr
web: http://researchers.lille.inria.fr/~jrichard
links: GoogleScholar / HAL archives-ouvertes

Biography

Education & Career – Jean-Pierre Richard was born in Montpellier (France) in 1956. In 1979 he received the Engineer's Degree from Centrale Lille (French "Grande Ecole", IDN at this time). From the University of Lille he received successively the M.Sc. in Electronics (1979), the Ph.D. in Automatic Control (1981) and the D.Sc. in Physical Sciences (1984). After starting his research and teaching activities in 1979, he joined the faculty at Centrale Lille in 1981 as an Assistant Professor and moved there up to full Professor in 1989. Since 2010 he is a Professor "Classe Exceptionnelle 2" (which is the highest university position in France). Since 1993, he is awarded the French bonus for advising and research excellence (top 20% under a national competition reconducted every 4 years, *aka* PEDR/PES in French).

Teaching – His personal teachings cover a fairly wide field, ranging from mathematics and control sciences to more epistemological issues as complexity and systems modelling. From 2000 to 2003, he heads the M.Sc. in Control of the University of Lille jointly with Centrale Lille. Since 2003, he is in charge of a training program for student-engineers in their final year, devoted to research careers. He co-authored 9 monographs (in French) aimed at students in mathematics and control sciences, one of them is available online (more than 110 000 downloads).

Research – His personal research is in the theory and applications of complex dynamical systems, in particular those with time delays which he started to study in 1991. More precisely, he is interested in the theoretical aspects of stability, control, observation, identification of these functional (infinite dimensional) systems, as well as their applications to networked control systems, remote and collaborative control, robotics for transportation, aeronautics, flow control, biology... He has advised 32 defended PhDs and promoted 7 HDR (accreditation to supervise research, the highest degree in the French university system). About half of those supervised PhD now belong to the French university system (including 7 at Professor level). He is credited with a list of over 390 scientific works, including 89 papers in international journals, 36 in collective books, 186 in international conferences, 1 patent, 5 editions of special issues devoted to time delay systems, 1 monograph on stability domains for nonlinear systems (CRC press). A selection of papers is given below in this document, and an exhaustive list can be found on his web pages and links above.

Outreach – Jean-Pierre Richard was invited as a plenary speaker in 3 international conferences (IEEE in 1998 and 2015, and IFAC in 2000) and as a lecturer in about 30 International Schools and Institutes. He was a member in more than 100 PhD and DSc./HDR committees (France, Belgium, Morocco, Mexico, Netherlands, Sweden, Tunisia) as well as invited lecturer by the Hassan II University of Casablanca (Morocco), the Tulane University in New Orleans (USA), the Ecole Nationale d'Ingénieurs de Tunis (Tunisia), the CICESE Ensenada (Mexico), the KTH Stockholm (Sweden) and the KU Leuven (Belgium). At the national level, he served as a coordinator for the evaluation seminar of the INRIA theme "Optimization and control of dynamic systems" (2017).

Research team leader – From 1995 to 2020 he was invested in the leading of various research groups, initiated in 1995 when he created the team *SyNeR* (French acronym for "Systems with Nonlinear and Retarded effects") in the CNRS laboratory LAGIS UMR 8219, which team he has been heading until 2010. Jointly, from 2006 he started research activities with INRIA (the French Institute for Research in Computers Appl. Math. and Control

Sciences), serving as permanent head (vice-head) of the INRIA project-team *ALIEN* leaded by Michel Fliess (2006-2010), then leading (2011-2017) the project-team *NON-A* "Non-Asymptotic estimation for on-line systems". From 2015 to 2019, he was in charge of the research group (about 60 people) "Control and scientific Computing" of the CRIStAL (CNRS UMR 9189, research Center in Informatics, Signal and Automatic control in Lille). Since 2018, he is a member of CRIStAL lab in the joint INRIA/CNRS team *VALSE*, leaded by Denis Efimov.

Management of networks & grants – From 2017 to 2020 he is the French PI for the European Commission program H2020 UCoCoS involving Centrale Lille, KU Leuven and TU/Eindhoven. Previously, he was the General Chairman of the GRAISyHM (1996-2012), French acronym for Research Federation in Integrated Automation and Man-Machine Systems, grouping about 260 researchers from 11 Institutes of North France. This research federation is sponsored by the Region Council Hauts de France since November 1996, by the French Ministry of Research on 2006-2010 and by the Ministry of Foreign Affairs for 2007-2010. He was also in charge of a network devoted to Time-delay systems supported by the French CNRS (1999-2001), headed a national program entitled "Automatic Control and Communication Networks" co-sponsored by the French Ministry of Research and the CNRS (2001-2003), took part to a NSF-CNRS program "Delay Systems" (2002-2004), co-chaired a Multidisciplinary CNRS Thematic Network devoted to "Control Systems and Communication Networks" (2003-2005) and was the general manager of a research grant on Automation, Optimization and Man-Machine Systems for Transport sponsored by the European Community, the French Government and the Region Hauts de France (2000-2008).

International – Jean-Pierre Richard has served as a chairperson of 4 international IEEE or IFAC conferences, participated in more than 55 IPCs of IEEE/IFAC/IFIP international conferences (including 20 as associate editor). He belongs to the EUCA Conference Editorial Board since 2015 (in connection with the yearly European Control Conference). He is a referee for control journals and conferences and, from 2000 to 2012 he was a member of the editorial board of the Int. J. of Systems Science (Taylor & Francis).

Committees & expertise activities – He served/serves as an expert for international institutions (Belgium, Israel, Mexico, Sweden, Tunisia, USA) as well as for various French agencies (Ministry of Higher Education and Research, CNRS, ANR National Agency for Research, AERES evaluation agency…), and participated to various committees: the Expert Committee "Control systems" of the CNRS (2005-2009), the Scientific Council of ENSEA Cergy (2009-2016, Governing Board of the national research network "MACS" (CNRS, Modelling, Analysis and Control of dynamical Systems)(2001-2005, 2009-2013) and the Scientific Committee of its research group ARC on control and communication networks (2009-2017), the Projects Bureau of the INRIA Research Center in Lille (2007-2016), as well as various Recruiting Committees (Centrale Lille, Univ. Valenciennes, Univ. Nantes/Centrale Nantes, Grenoble-INP). From 1994 to 2020 he was an elected member of the Scientific Council of Centrale Lille.

Societies & awards – Elected as a Member of the Russian Academy of Nonlinear Sciences (1996), Senior Member IEEE (1998) and Senior Member of the SEE (2003), member of the IFAC Technical Committees Linear Systems (1998-present) and Networked Systems (2005-present), one of his papers on time delay systems was awarded the "Automatica best survey paper prize" for the period 2002-2005. In the same area, he has been awarded 4 "Highly cited article" for papers from 1999 to 2004. In 2005, he received an IEEE SMC Outstanding Award for the organisation of the international conference CIFA2004, Tunisia (IEEE-CNRS) and the French "Palmes Académiques" (national decoration for academic excellence).

A selection of journal papers

(blue = links to pdf)

Dissipativity-based framework for stability analysis of aperiodically sampled nonlinear systems with time-varying delay
J. THOMAS, C. FITER, L. HETEL, N. VAN DE WOUW, J.P. RICHARD — Automatica 2021

Frequency-domain stability conditions for asynchronously sampled decentralized LTI systems
J. THOMAS, C. FITER, L. HETEL, N. VAN DE WOUW, J.P. RICHARD — Automatica 2021

Distributed observers with time-varying delays
H. SILM, R. USHIROBIRA, D. EFIMOV, E. FRIDMAN, J.P. RICHARD, W. MICHIELS — IEEE TAC 2021

Homogeneity of neutral systems and accelerated stabilization of a double integrator by measurement of its position.
D. EFIMOV, E. FRIDMAN, W. PERRUQUETTI, J.P. RICHARD. — Automatica 2020

Interval observer design and control of uncertain non-homogeneous heat equations. *(regular)*
T. KHARKOVSKAIA, D. EFIMOV, E. FRIDMAN, A. POLYAKOV, J.P. RICHARD. — Automatica 2020

A Sliding Mode Controller for a model of flow separation in boundary layers.
T. SANCHEZ, A. POLYAKOV, J.P. RICHARD. — IJRNC 2019

A note on distributed finite-time observers.
H. SILM, R. USHIROBIRA, D. EFIMOV, J.P. RICHARD, W. MICHIELS. — IEEE TAC 2019

Design of interval observers and controls for PDEs using finite-element approximation.
T. KHARKOVSKAIA, D. EFIMOV, A. POLYAKOV, J.P. RICHARD — Automatica 2018

SISO model-based control of separated flows: Sliding mode and optimal control approaches.
M. FEINGESICHT, A. POLYAKOV, F. KERHERVE, J.P. RICHARD. — IJRNC 2017

Recent developments on the stability of systems with aperiodic sampling: An overview. *(survey)*
L. HETEL, C. FITER, H. OMRAN, A. SEURET, E. FRIDMAN, J.P. RICHARD, S.I. NICULESCU. — Automatica 2017

Linear interval observers under delayed measurements and delay-dependent positivity.
D. EFIMOV, E. FRIDMAN, A. POLYAKOV, W. PERRUQUETTI, J.P. RICHARD. — Automatica 2016

Stability analysis of some classes of input-affine nonlinear systems with aperiodic sampled-data control.
H. OMRAN, L. HETEL, M. PETRECZKY, J.P. RICHARD, F. LAMNABHI-LAGARRIGUE. — Automatica 2016

Delayed sliding mode control.
D. EFIMOV, A. POLYAKOV, L. FRIDMAN, W. PERRUQUETTI, J.P. RICHARD. — Automatica 2016

Weighted homogeneity for time-delay systems: Finite-time and independent of delay stability.
D. EFIMOV, A. POLYAKOV, W. PERRUQUETTI, J.P. RICHARD. — IEEE TAC 2016

Implicit Lyapunov-Krasovskii functionals for stability analysis and control design of time delay systems.
A. POLYAKOV, D. EFIMOV, W. PERRUQUETTI, J.P. RICHARD. — IEEE TAC 2015

Unknown input observer for linear time-delay systems.
G. ZHENG, F.J. BEJARANO, W. PERRUQUETTI, J.P. RICHARD. — Automatica 2015

A robust stability framework for time-varying sampling.
C. FITER, L. HETEL, W. PERRUQUETTI, J.P. RICHARD. — Automatica 2015

Comments on finite-time stability of time-delay systems.
D. EFIMOV, A. POLYAKOV, E.FRIDMAN, W. PERRUQUETTI, J.P. RICHARD — Automatica 2014

Development of homogeneity concept for time-delay systems.
D. EFIMOV, W. PERRUQUETTI, J.P. RICHARD. — SIAM JCO 2014

Output stabilization of time-varying input delay systems using interval observation technique.
A.POLYAKOV, D. EFIMOV, W. PERRUQUETTI, J.P. RICHARD. — Automatica 2013

A state dependent sampling for linear state feedback.
C. FITER, L. HETEL, W. PERRUQUETTI, J.P. RICHARD. — Automatica 2012

A switched system approach to exponential stabilization through communication network.
A. KRUSZEWSKI, W.J. JIANG, E. FRIDMAN, J.P. RICHARD, A.TOGUYENI. — IEEE TCST 2012

On observation of time-delay systems with unknown inputs.
G. ZHENG, J.P. BARBOT, D. BOUTAT, T. FLOQUET, J.P. RICHARD. — IEEE TAC 2011

Discrete and intersample analysis of systems with aperiodic sampling.
L. HETEL, A. KRUSZEWSKI, W. PERRUQUETTI, J.P. RICHARD. — IEEE TAC 2011

Multivariate numerical differentiation.
S. RIACHY, M. MBOUP, J.P. RICHARD. — JCAM 2011

Delay-dependent sampled-data control based on delay estimates.
L. HETEL, J. DAAFOUZ, J.P. RICHARD, M. JUNGERS. — Syst & Ctrl Let. 2011

Parameters estimation of systems with delayed and structured entries.
L. BELKOURA, J.P. RICHARD, M. FLIESS. — Automatica 2009

Second order sliding mode control of underactuated mechanical systems - Parts I & II.
S. RIACHY, Y. ORLOV, T. FLOQUET, R. SANTIESTEBAN, J.P. RICHARD. — IJRNC 2008

Design of a pressure control system with dead band and time delay.
J. ANTHONIS, A. SEURET, J.P. RICHARD, H. RAMON. — IEEE TCST 2007

Robust sampled-data stabilization of linear systems: An input delay approach.
E. FRIDMAN, A. SEURET, J.P. RICHARD. — Automatica 2004

Time Delay Systems: An overview of some recent advances and open problems. *(survey)*
J.P. RICHARD. — Automatica 2003

Robust control of systems with variable delay: A sliding mode control design via LMI.

F. GOUAISBAUT, M. DAMBRINE, J.P. RICHARD. S&C.Letters 2002

Stability of some linear systems with delay.
V.B. KOLMANOVSKII, J.P. RICHARD. IEEE TAC 1999

Stability of perturbed systems with time-varying delay.
GOUBET-BARTHOLOMEUS A., DAMBRINE M., RICHARD J.P. S&C Letters 1997