KIOS
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Room B211, Building ΧΩΔ02, University of Cyprus

KIOS Distinguished Lecture Series

Alessandro Astolfi
Professor, Imperial College London, UK

Moments of Nonlinear Systems: From Model Reduction to Identification and Circuits Theory

LECTURE ABSTRACT

The notion of moment for linear systems is generalized to nonlinear, possibly time-delay, systems and to general classes of signal generators (i.e. interpolation points). It is shown that this notion provides a powerful tool for the solution of model reduction problems, for the identification of reduced order model from input-output data and for the analysis of power electronic circuits. In particular, it is shown that moments yield a generalization of the so-called phasor transform to circuits with power electronics components.

BRIEF BIO

Alessandro Astolfi was born in Rome, Italy, in 1967. He received the Laurea cum Laude in Electronic Engineering from the University of Rome "La Sapienza" in 1991, the M.Sc. degree in Information Theory from ETH-Zürich in 1995, the Ph.D. degree with Medal of Honour with a thesis on "Discontinuous stabilization of nonholonomic systems" from ETH-Zürich in 1995, and the Ph.D. degree for his work on nonlinear robust control from the University of Rome "La Sapienza" in 1996. Since 1996 he has been with the Department of Electrical and Electronic Engineering, Imperial College London, where he is currently Professor of Nonlinear Control Theory and Head of the Control and Power Group. From 1998 to 2003 he was also an Associate Professor in the Department of Electronics and Information of the Politecnico of Milano. Since 2005 he has also been a Professor at the Dipartimento di Ingegneria Civile e Ingegneria Informatica of the University of Rome "Tor Vergata". He was Visiting Lecturer in "Nonlinear Control" in several universities, including ETH-Zurich (1995–1996); the Terza University of Rome (1996); Rice University (1999); Kepler University (2000); SUPELEC (2001). His research interests include control theory, with emphasis for the problems of discontinuous stabilization, robust and adaptive control, observer design, game theory, geometric control and model reduction, and control applications, with emphasis for the control of electromechanical systems, power systems, and Hamiltonian systems. He is Editor-in-Chief of the IEEE Trans. on Automatic Control (2018--). He served as Editor-in-Chief for the European Journal of Control (2013-2017) and Deputy Editor-in-Chief for Annual Reviews in Control (2013-2016). He was Associate Editor for several jounals, including the IEEE Trans. on Automatic Control (2004-2011), Automatica (2002-2017), and the European Journal of Control (1999-2013). Dr. Astolfi is Fellow of IFAC (2017), a Member of the Academia Europaea (2016), Fellow of the IEEE (2009) and Fellow of the IET (2005).

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