

Lecture
“A Bird’s-Eye View of Switching Systems in Application”

DIMES - University of Calabria, Seminar Room, building 42c – 5th floor

November 18, 2026

11.00-12.00 CEST

[Seminar Teams link](#)

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Abstract:

In the seminar I will give a personal scientific perspective on switching systems: how a mathematical idea develops into a general methodology for understanding and controlling systems that operate in different modes. The unifying question could be: how can we understand, analyse, and control a dynamical system whose behaviour changes over time? That question is broad enough for an interdisciplinary audience, but sufficiently precise to preserve the scientific depth of the subject. Five applications will be discussed, directly connected to my research record, covering different investigation fields, from railway automation and energy-efficient transportation to mechanical systems and vibration control, from electric vehicles and distributed energy management to biological systems and collective behaviour in social networks.

Bio:



Patrizio Colaneri received the Laurea degree in Electrical Engineering from the Politecnico di Milano in the AA 1979/1980, and the Ph.D. degree (Dottorato di Ricerca) in Automatic Control from the Italian Ministry of Education and research in 1988. The Laurea thesis was awarded by the Quazza prize (1981). He worked in industry (Elettromeccanica Parizzi) from 1982 to 1984, researcher at CNR (National Research Council) from 1984 to 1992, and Associated Professor at Politecnico from 1992 to 2000. Since 2000 he is Full Professor of Automatica at Politecnico di Milano, Italy. He served as head of the Ph.D school on ICT from 2007 to 2009. He held visiting positions at the University of Maryland (sabbatical leave funded by a CNR-NATO fellowship), at the Hamilton Institute of the National University of Ireland (sabbatical leave), and at the Institute for Design and Control of Mechatronic Systems of Johannes Kepler University in Linz (Austria). He served IFAC, IEEE

CSS and EUCA, in many capacities in journals and conferences. In particular, he was: Associate Editor of Automatica for six years (certificate of outstanding service), Senior Editor of IEEE TAC for 8 years, Senior Editor of the IFAC journal Non Linear Analysis: Hybrid Systems for six year, IFAC TC chair, CC chair, member of the IFAC Technical Board for 16 years, and Chair of the Italian NMO (National Member Organization) for IFAC from 2017 to 2023, member of the council of EUCA (European Control Association).

He is a Fellow of IFAC and IEEE and received the certificate of outstanding service of IFAC.

His main theoretical interests are in the areas of periodic systems and control, robust filtering and control, switching control, compartmental models, modeling of epidemic diseases, opinion dynamics and Markov processes. His main applications are in power systems and railway automation.

He authored/co-authored more than 300 papers (140 in international journals), seven books (three in Italian), one patent.