

2nd IFAC Workshop on Control of Systems Governed by Partial Differential Equations



CPDE'16, Bertinoro, Italy – June 13-15, 2016

Hosting institution

University of Bologna

Location

Centro Residenziale Universitario, on the hilltop of Bertinoro (FC), Italy



Sponsored by

IFAC International Federation of Automatic Control, IFAC TC Distributed Parameter Systems

Co-sponsored by

IFAC TC Non Linear Control Systems

Organising Committee

IPC co-Chairs

Ralph C. Smith

North Carolina State University, USA

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University of Twente, The Netherlands

NOC co-Chairs

Alessandro Macchelli

University of Bologna, Italy

Lorenzo Marconi

University of Bologna, Italy

Important dates

Deadline for submission of regular/invited session draft papers

November 30, 2015

Deadline for submission of invited session proposals

November 30, 2015

Authors notification

February 2016

Final Paper

April 30, 2016

INVITATION

The second IFAC Workshop on Control of Systems Governed by Partial Differential Equations will be held in **Bertinoro (Italy)** from Monday to Wednesday **13-15 June 2016** at the **Centro Residenziale Universitario** of the **University of Bologna**.

The workshop will address new and state-of-the-art developments in modelling and control of distributed parameter systems and their applications. Since the control design for these systems resides at the intersection of mathematics, systems and control theory, control systems technology, computer and information science, it is essential to provide a joint forum to foster and evolve this important and emerging field of research.

CPDE'16 aims at providing this forum under the **IFAC** flagship.

SCOPE

Distributed parameter systems, which are mathematically described by partial differential equations, impose a formidable challenge in many applications coming from **classical industrial fields** as well as **emerging sectors** related to energy, transport, communication or medical science. Herein, the distributed parameter description becomes an essential ingredient of the modelling and analysis process if the spatial or property distribution of the system variables cannot be neglected. The dynamic operation of these distributed parameter systems essentially relies on the incorporation of suitable **control and estimation strategies** to influence the system dynamics, and to enlarge the dynamic operating range.

Starting from these observations, **new approaches** to the control of distributed parameter systems directly exploit the structural system properties to develop dedicated analysis and design techniques to address the spatial-temporal system dynamics.

TOPICS

The topics of the workshop will cover approaches in modelling and control of distributed parameter systems, and their applications.

This covers approaches and techniques for the **modelling, analysis, control, and observer/estimator design** for systems governed by partial differential equations and includes (but is not limited to) methods such as differential geometric and algebraic approaches, semigroup and operator theory, Lyapunov-based and back-stepping techniques, passivity and dissipativity, optimal control, controllability and observability analysis, stability theory, model reduction for control, computational methods, real-time control, actuator and sensor placement, experimental design.

In addition, **applications** are considered covering, e.g., smart and adaptive structures in mechatronics, marine systems and aerospace engineering, flow control, energy generation, distribution and storage, process intensification and process systems engineering, adaptive optics, quantum systems, distributed cooperative systems, communication, embedded actuators and sensors, traffic control and network congestion, and flexible micro-structures.

SUMMER SCHOOL

To enlarge the community of researchers working in modelling and control of distributed parameter systems, an introductory **summer school** entitled "**An introduction to modelling and control of systems governed by PDEs**" is organised before the workshop in the same location from Thursday to Sunday **9-12 June 2016**.

More information to come at the conference web site.

<http://www.cpde2016.org/>