

## Poster Session

### Post-Doc researchers

**Dr. Luca Gentili**, CASY, DEIS, University of Bologna, Italy, "*Disturbance Rejection in the Control of a Maglev Artificial Heart*"

**Dr. Laura Lorefice, Dr. Barbara Pralio**, DIASP, Politecnico di Torino, Italy, "*Robust Control Design of Mini-UAVs: The MH1000 Platform*"

**Dr. Alessandro Macchelli**, CASY, DEIS, University of Bologna, Italy, "*Port-based modelling, simulation and control in robotics. The port Hamiltonian framework*"

**Dr. Marcello Montanari**, CASY, DEIS, University of Bologna, Italy, "*Speed sensorless control of induction motors: an adaptive control perspective*"

**Dr. Andrea Paoli**, CASY, DEIS, University of Bologna, Italy, "*A New Algorithm for Diagnosability Analysis of a Class of Hierarchical State Machines*"

**Dr. Andrea Tilli**, CASY, DEIS, University of Bologna, Italy, "*Internal model principle and internal dynamics in power electronics*"

### Ph.D. students

**Marta Capiluppi**, CASY, DEIS, University of Bologna, Italy, "*Functional analysis of distributed systems using structural graphs*"

**Gianluca Lucente**, CASY, DEIS, University of Bologna, Italy, "*Modelling and Control of an Electromechanical Valve Actuator for a Camless Compressor*"

**Roberto Naldi**, CASY, DEIS, University of Bologna, Italy, "*A reduced complexity ducted-fan MAV: physical principles and control design*"

**Gianluca Palli, Dr. Luigi Biagiotti**, CASY, DEIS, University of Bologna, Italy, "*Modeling and control of compliant robotic systems*", (co-authored by Prof. Claudio Melchiorri)

## Workshop Chairs

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# ALMA MATER STUDIORUM UNIVERSITÀ DI BOLOGNA

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## Special CASY Workshop

on

## Advances in Control Theory and Applications



May, 22-26, 2006

University of Bologna  
Residential Centre of Bertinoro,  
FC, Italy

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DEIS - Dipartimento di Elettronica,  
Informatica e Sistemistica

# WELCOME

CASY, the Center of Research on Complex Automated Systems, DEIS-University of Bologna, welcomes all the distinguished speakers who accepted our invitation to share, for a full week, interactions, discussions and exchanges of ideas on few selected topics in control area.

As highlighted by the title, the focus of this workshop (which hopefully is the first of a continuing series) is on theoretical and conceptual problems inspired and motivated by challenging applications as well as on applications whose development requires the use of a rigorous formalism and theory. We wish the meeting could become a source of inspiration for new application-driven theoretical developments as well as for new effective solutions to advanced applications which are still looking for a suitable theoretical support.

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# SCOPE

The idea is to organize an high-quality scientific meeting gathering theory- and application-oriented researchers working in multidisciplinary fields. Our ambitious goal is to have a workshop qualifying not as the “ump-teenth” meeting where to present papers with “last results” but rather an occasion to discuss, in a un-formal and familiar framework, about our discipline, to share ideas/problems, to present case-studies, to show the limitations/potentialities of existing/emerging theories, to facilitate cross-fertilization between different theoretical/applicative areas. In our vision the natural outcome of the workshop should be the identification of new theoretical developments and research directions motivated by relevant applicative problems which are still looking for a theoretical support and effective rigorous solutions to advanced applications.

This goal should be achieved by gathering an invited balanced participation between theory-oriented scholars who have shown a specific interest towards advanced applications and more application-oriented researchers who like to tackle their problems in a rigorous theoretical framework.

# LIST of INVITED TALKS

**Frank Allgower**, University of Stuttgart, Germany, “*A New Dissipation Inequality for the Minimum Phase Property of Nonlinear Systems - A Computational Semialgebraic Perspective*”

**Prof. Karl Åström**, Lund Institute of Technology, Sweden, “*Event-Based Estimation and Control*”

**Prof. Tamer Başar**, University of Illinois, Urbana, USA, “*Sensing and Control with Limited Transmissions*”

**Prof. Marco Campi**, Università di Brescia, Italy, “*The Scenario Approach: Robust Optimization in Systems and Control*”

**Prof. Tryphon Georgiou**, University of Minnesota, USA, “*Spectral analysis and entropy principles in the absence of a time-arrow*”

**Prof. Alessandro Giua**, Università di Cagliari, Italy, “*A System Theory View of Petri Nets*”

**Prof. Lino Guzzella**, ETH Zentrum, Zürich, Switzerland, “*Automobiles and Control Systems – A Never-Ending “Love Story”*”

**Prof. Arthur Krener**, University of California, Davis, USA, “*Model Reduction for Linear and Nonlinear Control Systems*”

**Prof. Stéphane Lafortune**, University of Michigan, USA, “*From Decentralized to Distributed Control of Partially-Observed Discrete-Event Systems: A Critical Review of the State of the Art*”

**Prof. Lorenzo Marconi**, Università di Bologna, Italy, “*Asymptotic and uniform practical output regulation for nonlinear systems*”

**Prof. Manfred Morari**, Swiss Federal Institute of Technology, Zürich, Switzerland, “*Control of Hybrid Systems: Theory, Computation and Applications*”

**Prof. Steve Morse**, Yale University, USA, “*Reaching a Consensus in a Dynamically Changing Environment*”

**Prof. Anibal Ollero**, University of Seville, Spain, “*Motion Control OF Autonomous Vehicles: Unstable Systems and Environment Perception in the Loop*”

**Prof. Laurent Praly**, Ecole des Mines de Paris, France, “*A survey on output nonlinear feedback*”

**Prof. Anders Rantzer**, Lund Institute of Technology, Sweden, “*On opportunities in distributed control theory*”

**Prof. Giorgio Rizzoni**, Ohio State University, USA, “*Modeling for model-based control: some thoughts on mathematical models of automotive powertrains and their application to control development*”

**Prof. Carlo Rossi**, Università di Bologna, Italy, “*Issues in digital control of high-performance power converters*”

**Prof. Kurt Schlacher**, Johannes Kepler University of Linz, Austria, “*PCHD-Systems, from the Lumped to the Distributed Parameter Case*”

**Prof. Bruno Siciliano**, Università di Napoli Federico II, Italy, “*Force and Visual Control for Physical Human-Robot Interaction*”

**Prof. Marcel Staroswiecki**, Université de Sciences et Technologies de Lille, France, “*Structural analysis of fault tolerant observability and monitorability*”

**Prof. Andrew Teel**, University of California Santa Barbara, USA. “*Robust hybrid control systems*”

**Prof. Roberto Tempo**, Politecnico di Torino, Italy, “*Worst-Case and Probabilistic Models of Uncertainty: Benefits and Pitfalls*”

**Prof. Arjan van der Schaft**, University of Groningen, the Netherlands, “*Network Modeling and Control of Physical Systems*”

**Prof. Yutaka Yamamoto**, Kyoto University, Japan, “*Sampled-Data Control and New Applications to Signal Processing: Beyond the Shannon Paradigm*”

**Prof. Sandro Zampieri**, Università di Padova, Italy, “*Communication constraints in the state agreement problem*”