

1st IASI-IRIB Workshop on

Mathematical methods in life sciences: theory and applications

Scientific Committee: Alessandro Borri, Laura D'Orsi, Simona Panunzi, Andrea De Gaetano

Local Arrangement and Organization Chair: Laura D'Orsi

Scientific Coordinator: Alessandro Borri

October 16th – 17th, 2023

CNR - National Research Council of Italy
Piazzale Aldo Moro, 7 - 00185 Rome, Italy

Starting time 01:00 PM (Oct. 16th, 2023)

Ending time 04:00 PM (Oct. 17th, 2023)

Monday, October 16 – [link streaming](#)

1.00 PM **Welcome lunch**

1.45 PM **Opening**

Dr. Giovanni Felici - Director of CNR-IASI, Rome, Italy

2.00 PM – 4.00 PM **Technical Session 1**

4.00 PM **Coffee break**

4.30 PM – 6.00 PM **Technical Session 2**

Tuesday, October 17 – [link streaming](#)

9.30 AM – 11.30 AM **Technical Session 3**

11.30 AM **Coffee break**

12.00 PM – 1.30 PM **Keynote Lecture**

Closed-loop control of anesthesia: a help for the anesthesiologists

Prof. Antonio Visioli, University of Brescia, Brescia, Italy

1.30 PM **Lunch**

2.30 PM **Open discussion**

Chairs: Prof. Daniele Gui – Catholic University of the Sacred Heart, Rome, Italy

Dr. Alessandro Borri – CNR-IASI, L'Aquila, Italy

3.30 PM **Closing remarks**

Prof. Andrea De Gaetano, Director of CNR-IRIB, Palermo, Italy



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Monday, October 16

1.00 PM **Welcome lunch**

1.45 PM **Opening** - Dr. Giovanni Felici - Director of CNR-IASI, Rome, Italy

2.00 PM – 4.00 PM **Technical Session 1**

2.00 PM Prof. Andrea De Gaetano, Director of CNR-IRIB, Palermo, Italy

What is a model?

2.30 PM Prof. Alberto Bersani, University of Rome “La Sapienza”, Rome, Italy

Stochastic differential modeling of oscillatory biological mechanisms: the circadian rhythm model in Drosophila

3.00 PM Prof. Filippo Cacace, Campus Bio-Medico University of Rome, Rome, Italy

Learning causal models of dynamical systems from noisy data

3.30 PM Prof. Costanzo Manes, University of L'Aquila, L'Aquila, Italy

Adaptive Reduction of Mixture Models in the Composite Transportation Dissimilarity framework

4.00 PM **Coffee break**

4.30 PM – 6.00 PM **Technical Session 2**

4.30 PM Prof. Ilona Nagy, Budapest University of Technology & Economics, Budapest, Hungary

Qualitative study of a simplified longitudinal model of Type 2 Diabetes Mellitus progression

5.00 PM Dr. Daniel Kiss, Obuda University, Budapest, Hungary

Social influence in individual trajectories of well-being and disease: a simulation study for Type 2 Diabetes Mellitus

5.30 PM Dr. Claudio Gaz, Kingston University, London, UK

An MPC-based controller for restoring euglycemia in T2DM patients



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Tuesday, October 17

9.30 AM – 11.30 AM **Technical Session 3**

9.30 AM Dr. Giuseppe Pontrelli, CNR-IAC, Rome, Italy

Modelling smart drug delivery with functionally graded materials

10.00 AM Dr. Federico Papa, CNR-IASI, Rome, Italy

Alternative approaches in the modelling and control of tumour growth and treatment

10.30 AM Dr. Fabrizio Padula, Curtin University, Perth, Australia

Preliminary results on the regulation of ventilator support in protective assisted ventilation

11.00 AM Dr. Laura D'Orsi, CNR-IASI Biomathematics Laboratory, Rome, Italy

From mechanics to gas exchange: the hard job of controlling a ventilator

11.30 AM **Coffee break**

12.00 PM **Keynote Lecture** - Prof. Antonio Visioli, University of Brescia, Brescia, Italy

Closed-loop control of anesthesia: a help for the anesthesiologists

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