

# PASQUALE PALUMBO

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## BIOGRAPHICAL SKETCH

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**Pasquale Palumbo** was born in Pescara, Italy *18 December 1970*  
He lives in Milan, Italy

**National Research Council (CNR)** *2000-2019*  
Institute of Systems Analysis and Computer Science “Antonio Ruberti” (IASI-CNR), Rome, Italy  
IASI-CNR post-doc *2000-2005*  
IASI-CNR Researcher *2005-2019*

**University of Milano-Bicocca, Italy** *since 2019*  
Department of Biotechnologies and Biosciences (BtBs)  
Associate Professor of Automatic Control (ING/INF-04)

## EDUCATION

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**National Scientific Qualification (Italian ASN) as Associate Professor** *February 2014*  
Scientific Research Sector (SSD) 09/G1 - AUTOMATICA

**University of L’Aquila, Italy** *February 2000*  
Ph.D in Electrical Engineering  
“Il controllo per strutture flessibili” (*Control for flexible systems*)

**University of L’Aquila, Italy** *December 1995*  
Qualification to the profession of Engineer *120/120*

**University of L’Aquila, Italy** *20 July 1995*  
Laurea Degree in Electrical Engineering *110/110 (cum laude)*  
“Filtraggio polinomiale per sistemi lineari non gaussiani tempo-discreti”  
(*Polynomial filtering for linear, non-Gaussian, discrete-time systems*)

## AFFILIATIONS

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**IASI-CNR Research Associate** *since 2019*

**Italian Society of Biochemistry and Molecular Biology (SIB)** *since 2019*

**Obuda University, Budapest, Hungary**  
Honorary Professor *since 2018*

**IEEE Control Systems Society (CSS)** *since 2016*  
Technical Committee on Healthcare and Medical Systems  
Technical Committee on Systems Biology

**Italian Association of Researchers in Automatic Control (SIDRA)** *since 2007*

## RESEARCH ACTIVITY

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Scientific activity involves both methodological (*mathematical control theory*) and application (*mathematical modeling and control in biology and medicine*) items. Main present research lines are detailed below.

### **Polynomial methods for real-time state estimation and control of nonlinear systems**

Filtering and control of nonlinear, non-Gaussian systems: discrete-time systems, continuous-time systems (stochastic differential equations), continuous-discrete systems (stochastic differential equations endowed with discrete measurements). Carleman approximation of nonlinear stochastic systems.

### **Modeling the glucose-insulin system**

Delay Differential Equations models of the Intra-Venous Glucose Tolerance Test (IVGTT). Models of diabetes progression. Pulsatile insulin secretion models. Models of energy homeostasis involving glucose, insulin and ghrelin.

### **Artificial Pancreas**

Synthesis of model-based, closed-loop control laws aiming at regulating the blood glucose concentration within a safety region, in spite of the many exogenous disturbances affecting the glucose homeostasis. Special focus on Type 2 Diabetes Mellitus patients.

### **Systems Biology**

Molecular models of the G1/S transition for the budding yeast *Saccharomyces cerevisiae*. Integrated models of metabolism, growth and cycle. Mathematical models for transcription networks. Stochastic Hybrid Systems and Chemical Master Equations. Chemical Reaction Networks: noise propagation in biomolecular networks.

### **Tumor growth control**

Model-based antiangiogenic tumor therapy.

Past research lines include modeling and control of flexible structures, filtering of descriptor systems, realization of positive systems, higher order methods for the solution of nonlinear equations, state observers, mobile robot localization, filtering in telecommunication systems, roll-motion control for sea-surface vehicles, smart grid protection.

## **HONORS AND AWARDS**

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**Honorary Professor Award**, Obuda University 2018

**Editor's Award of the IET Systems Biology Journal** for the year 2018 as co-author of: A. Borri, P. Palumbo, A. Singh, *Impact of negative feedback in metabolic noise propagation*, IET Systems Biology, Vol.10, pp. 179-186, 2016 2018

**SYBIO Award** (15k euros) for the year 2016 as co-author of: P. Palumbo, M. Vanoni, V. Cusi-mano, S. Busti, F. Marano, C. Manes, L. Alberghina, *Whi5 phosphorylation embedded in the G1/S network dynamically controls critical cell size and cell fate*, Nature Communications, 7:11372, doi: 10.1038/ncomms11372, 2016 2016

**Editor's Award of the Kybernetika Journal** for the year 2013 as co-author of: F. Carravetta, P. Palumbo, P. Pepe, *Memoryless solution to the optimal control problem for linear systems with delayed input*, Kybernetika, Vol.49(4), 568-589, 2013 2013

## **DIRECTION OF/PARTICIPATION TO RESEARCH GROUPS**

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**Scientific coordinator** of "Post-genomic data analysis and molecular circuits modeling" Lab (Laboratorio Integrato Dipartimentale, LID), Department of Excellence, University of Milano-Bicocca since 2019

**Coordinator** for the Operating Agreement between IASI-CNR and Center of Excellence DEWS (Design methodologies of Embedded controllers, Wireless interconnect and Systems-on-chip) Coordination and promotion of scientific activity in the Biomedical Applications area 2019

**IASI-CNR coordinator** for SYSBIO.IT - Centre of Systems Biology, SysBioNet - Italian Roadmap for ESFRI Research Infrastructure, funded by MIUR 2012-2019  
Supervisor of 3 post-doc researchers

**Coordinator** of IASI-CNR research module for *Optimization and Mathematical Modeling in Biology* Commission INT.P02.003 *Computational Biology* 2011-2015

**Member** of IASI-CNR research unit on *Advanced experimental data analysis for microfluidic dynamics* PRIN 2009 *Integration of Strategies for an Innovative Control of Microfluidic Systems and applicative validity* 2011-2012

## RESEARCH COLLABORATIONS

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**PRESENT:** **University of L'Aquila, Italy** (Nonlinear filtering and control, Artificial Pancreas), **Campus Bio-Medico University of Rome, Italy** (Nonlinear filtering, Systems Biology, Tumor growth control), **National Research Council (CNR), Rome, Italy** (Mathematical control theory, Systems & Synthetic Biology, Tumor growth control), **Obuda University, Budapest, Hungary** (Artificial Pancreas), **Vrije University, Amsterdam, The Netherlands** (Systems Biology), **University of Delaware, Newark, US** (Systems & Synthetic Biology)

**PAST:** **University of Copenhagen, Denmark** (Modeling of the glucose-insulin system), **Axiosis Sprl, Bousval, Belgium** (Modeling of the glucose-insulin system), **Lilly Services S.A., Mont-Saint-Guibert, Belgium** (Pharmacokinetics), **University of Mahidol, Bangkok, Thailand** (Modeling of the glucose-insulin system), **Hanoi Institute of Mathematics, Vietnam** (Modeling of the glucose-insulin system), **Catholic University of the Sacred Heart, Rome, Italy** (Pharmacokinetics), **Lilly Research Laboratories, Indianapolis, Indiana, US** (Modeling of the glucose-insulin system), **La Sapienza, University of Rome** (Systems Biology, Modeling of the glucose-insulin system), **University of Louisville, Kentucky, US** (Modeling of the glucose-insulin system), **Tor Vergata, University of Rome, Italy** (Mobile robot localization), **Ghent University** (Systems Biology), **National Institute of Health** (Systems Biology), **National Institute for Nuclear Physics** (Uncertain systems identification), **Selex Communication** (Nonlinear filtering), **Inria Rhône Alpes, ST. Ismier Cedex, France** (Mobile robot localization)

## TEACHING ACTIVITY, UNIVERSITY OF MILANO-BICOCCA, ITALY

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**Bioinformatic Methodologies**, Master Degree in Industrial Biotechnologies AA 2019/20  
**Linear Algebra and Geometry**, Laurea Degree in Computer Science AA 2019/20

## PAST TEACHING ACTIVITY (ACADEMIA)

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**University of L'Aquila** *L'Aquila, Italy, 1998-2019*

- Contract professor of **Systems Biology (6 CFU)**,  
Master Degree in Mathematical Engineering *AA 2010/11 - 2018/19*
- Contract professor of **Systems Biology (9 CFU)**,  
Master Degree in Mathematical Engineering *AA 2008/09 - 2009/10*
- Contract professor of **Systems Theory (6 CFU)**,  
Degree in Computer and Systems Engineering *AA 2003/04 - 2006/07*
- Contract professor of **Automatic Control (6 CFU)**,  
Degree in Computer and Systems Engineering *AA 2002/03*
- Contract professor of **Probability and Statistics (3 CFU)**,  
Degree in Civil Engineering *AA 2001/02*

- Contract professor of **Probability (120 hours)**,  
Degree in Civil and Environmental Engineering AA 2000/01
- Tutor of **Systems Theory**,  
Degree in Electronics Engineering AA 1999/2000
- Co-supervisor of 1 **Ph.D thesis** in Information Engineering and Computer Science 2014-17
- Supervisor (co-supervisor) of 22 (1) **Master theses** in Mathematical Engineering 2012-19
- Supervisor of 8 **Master theses** in Computer and Systems Engineering 2008-15
- Supervisor (co-supervisor) of 5 (32) **5-years theses** in Electronics Engineering 1998-2008
- Supervisor of 42 **theses** in Computer and Systems Engineering 2005-11
- Supervisor of 1 **thesis** in Telecommunications Engineering 2010
- Co-supervisor of 1 **5-years thesis** in Electrical Engineering 2006
- Co-supervisor of 1 **thesis** in Management Engineering 2006
- Co-supervisor of 1 **thesis** in Environmental Engineering 2000

**Brno University of Technology** *Brno, Czech Republic, 2010*

- Supervisor of 1 **Master thesis** in Mechanical Engineering 2010

**Roma Tre University** *Rome, Italy, 2006-13*

- Co-supervisor of 2 **Master theses** in Management and Automation Engineering 2006-2009
- Co-supervisor of 4 **theses** in Computer Science and Engineering 2006-2013

**Campus Bio-Medico University of Rome** *Rome, Italy, 2010*

- Co-supervisor of 1 **Master theses** in Biomedical Engineering 2010

**Tor Vergata - University of Rome** *Rome, Italy, 2017-18*

- Co-supervisor of 2 **Master theses** in Control Engineering 2017-2018 2017-2018

**University of Calabria** *Arcavacata (CZ), Italy, 2009*

- Co-supervisor of 1 **Master theses** in Mathematics 2009

**University of Salento** *Lecce, Italy, 2018*

- Co-supervisor of 1 **Master theses** in Computer Engineering 2018

## **OTHER TEACHING ACTIVITIES**

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Teacher at *3rd SYSBIO.IT School on Computational Systems Biology: Mathematical models for Chemical Reaction Networks in living systems* *Rome, Italy, 2018*

Teacher at *1st SYSBIO.IT School on Computational Systems Biology: An introduction to dynamic modeling, simulation and analysis of biological systems* *Milan, Italy, 2016*

Seminars (30 hours) for the course of *Mathematical Models in Life Sciences*  
University of L'Aquila, Master degree in Mathematical Engineering AA 2010/11-2011/12

Teacher at *Systems Biology and Systems Medicine School: Precision Biotechnology and Therapies*  
*Como, Italy, 2014*

Teacher at the *Summer School on Parameter Estimation in Physiological Models*, third event of EC Marie Curie Conferences series on *Mathematical Modeling of the Human Physiological System with Biomedical Application* *Lipari (CT), Italy, 2009*

## DIDACTIC BOOKS

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P. Palumbo, “*Esercizi di Teoria dei Sistemi - II Edizione*”, Libreria Universitaria Benedetti, L’Aquila, Italy, September 2008, ISBN 978-88-87182-31-6

P. Palumbo, “*Esercizi di Teoria dei Sistemi - Parte I*”, Libreria Universitaria Benedetti, L’Aquila, Italy, September 2003, ISBN 88-87182-14-0

## EDITORIAL ACTIVITY

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Member of the Conference Editorial Board (CEB) of the IEEE Control Systems Society *since 2019*

Member of the Editorial Board of *Frontiers* *since 2019*

Review Editor for *Bioinformatics and Computational Biology*

Member of the Editorial Board of *PLoS ONE* *since 2018*

Member of the Editorial Board of *Mathematical Problems in Engineering* *since 2017*

Co-Editor of the *Mathematical Physiology* Section for the EOLSS (Encyclopedia of Life Support Systems), developed under the auspices of the UNESCO, Eolss Publishers, Paris, France *2009-2012*

Reviewer of dozens of journals including *Acta Polytechnica Hungarica*, *American Journal of Physiology*, *Applied Mathematics and Computation*, *Asian Journal of Control*, *Automatica*, *Bioinformatics*, *Biomedical Engineering*, *BMC Systems Biology*, *Bulletin of Mathematical Biology*, *Bulletin of the Malaysian Mathematical Sciences Society*, *Cell*, *Chaos Solitons and Fractals*, *Computational and Applied Mathematics*, *Control Engineering Practice*, *Current Drug Targets*, *Digital Signal Processing*, *Discrete and Continuous Dynamical Systems - Series B*, *European Journal of Control*, *Frontiers in Bioengineering and Biotechnology*, *IEEE Control Systems Letters*, *IEEE Control Systems Magazine*, *IEEE Trans. on Automatic Control*, *IEEE Trans. on Circuits and Systems*, *IEEE Trans. on Control Systems Technology*, *IEEE Trans. on Industrial Electronics*, *IEEE Trans. on Signal Processing*, *IET Control Theory and Applications*, *IMA Journal of Mathematical Control and Information*, *International Journal of Adaptive Control and Signal Processing*, *International Journal of Control*, *International Journal of Robust and Nonlinear Control*, *International Journal of Systems Science*, *Iranian Journal of Science and Technology*, *Journal of Biological Dynamics*, *Journal of Biological Systems*, *Journal of Circuits Systems and Computers*, *Journal of Mathematical Biology*, *Journal of Theoretical Biology*, *Transactions of Electrical Engineering*, *Mathematical and Computer Modelling*, *Mathematical Biosciences*, *Mathematical Biosciences and Engineering*, *Mathematical Methods in the Applied Science*, *Mathematical Problems in Engineering*, *Nature Communications*, *Nonlinear Analysis Series B: Real World Applications*, *Physiological Measurement*, *PLOS Computational Biology*, *Scientific Reports*, *Systems and Control Letters*, *Theoretical Biology and Medical Modelling* *since 1998*

## INVITED TALKS AND SEMINARS

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**Mini-Symposium in Recent Advances in Intelligent Engineering** *2018*

Obuda University, Budapest, Hungary

Invited speaker, *Model-based Closed-Loop Control for Type 2 Diabetes*

**University of Genoa, Italy** *2015*

Seminar, *The Artificial Pancreas @BioMatLab*

**XXVI Neuman Kollokvium - Hungary-Italy Bilateral Session** *2013*

Veszprem, Hungary - Invited speaker, *Insulin demand modeling in Type 2 diabetes patients*

**Workshop on Complex Living Systems: Managing Complexity, Reducing Perplexity 2011**  
Heidelberg, Germany - Invited speaker, *Networks and Circuits in Systems Biology*

## ORGANIZATION OF SCIENTIFIC EVENTS

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**Mini-Symposium co-organizer**, *Recent Trends in the Modeling and Control of the Glucose-Insulin System* July 2018

Lisbon, Portugal, 11th European Conference on Mathematical and Theoretical Biology (ECMTB)

**Mini-Symposium co-organizer**, *Mathematical Modeling in Systems Biology* July 2018

Rome, Italy, Congress of the Italian Society of Industrial and Applied Mathematics (SIMAI)

**Mini-Symposium co-organizer**, *Healthcare and Medical Systems* July 2018

Rome, Italy, Congress of the Italian Society of Industrial and Applied Mathematics (SIMAI)

**Organizer and General Chair of the Scientific Committee** May 2018

Rome, Italy, 3rd SYSBIO.IT School on Computational Systems Biology: Mathematical Models for Chemical Reaction Networks in Living Cells

**Invited Session co-organizer**, *Individualization and Optimization of Therapies* December 2017

Melbourne, Australia, 56th IEEE Conference on Decision and Control (CDC)

**Member of the Scientific Committee** June 2016

Milan, Italy, 1st SYSBIO.IT School on Computational Systems Biology: An introduction to dynamic modeling, simulation and analysis of biological systems

**Co-organizer** of *MathCell2010* December 2010

Rome, Italy, A meeting between Mathematics and Biological and Medical Sciences, about tumors, regenerating tissues, and biofilms

**Co-organizer and member of the Scientific Committee** September 2009

Lipari (CT), Italy, Summer School on Parameter Estimation in Physiological Models, 3rd Event of the EC Marie Curie Conferences series “Mathematical Modeling of the Human Physiological System with Biomedical Application

**Co-organizer and member of the Scientific Committee** September 2009

Lipari (CT), Italy, Workshop on “*Mathematical modeling of the Glucose/Insulin system*”

**Co-organizer** of Colloquia@IASI 2008-2019

Rome, Italy, monthly seminars on automatic control, operational research, computer science and their applications

**Organizer** of *Seminari di Automatica allo IASI* 2007-2008

Rome, Italy, monthly seminars on automatic control and its applications

## ACTIVITIES AND SERVICES FOR UNIVERSITIES

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**University of Milano-Bicocca** since 2015

Member of the Ph.D Committee in *Biology and Biotechnology*

**Tor Vergata, University of Rome** 2019

Member of Commission of the final examination, Ph.D in *Computer Science, Control and GeoInformation*

**Sapienza University of Rome** 2019

Referee of Ph.D thesis in *Automatic Control, Bioengineering and Operation Research*

**Sapienza University of Rome** 2018

Referee of Ph.D thesis in *Mathematical Models for Engineering, Electromagnetics and Nanosciences*

**PUBLICATIONS (85 CO-AUTHORS)**

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ISI WOS: 104 documents, 688 citations, h-index 15

SCOPUS: 120 documents, 906 citations, h-index 16

Google Scholar: 165 documents, 1302 citations, h-index 20

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**Journals indexed on ISI WOS and/or Scopus***Asterisks denote alphabetical order*

- \*A46 F. Cacace, V. Cusimano, A. Germani, P. Palumbo, M. Papi, "Optimal Continuous-Discrete Linear Filter and Moment Equations for Nonlinear Diffusions", *to appear on IEEE Transactions on Automatic Control*, accepted on Nov 2019
- \*A45 A. Borri, F. Carravetta, P. Palumbo, "Cubification of  $\sigma\pi$ -SDE and exact moment equations", *Systems & Control Letters*, Vol.136, Article ID 104602, 9 pages, 2020
- \*A44 A. Borri, P. Palumbo, A. Singh, "Time Delays in a Genetic Positive-Feedback Circuit", *IEEE Control Systems Letters*, Vol.4(1), pp.163-169, 2020 (presented at 58th IEEE Conference on Decision and Control, Nice, France, 2019)
- \*A43 F. Cacace, V. Cusimano, P. Palumbo, "Optimal impulsive control with application to antiangiogenic tumor therapy", *IEEE Transaction on Control Systems Technology*, Vol.28(1), pp.106-117, 2020
- A42 M. Di Ferdinando, P. Pepe, P. Palumbo, S. Panunzi, A. De Gaetano, "Semi-global sampled-data dynamic output feedback controller for the glucose-insulin system", *IEEE Transaction on Control Systems Technology*, Vol.28(1), pp.16-32, 2020
- \*A41 P. Palumbo, F. Papa, M. Vanoni, L. Alberghina, "A coarse-grain model of growth and cell cycle in *Saccharomyces cerevisiae*: a mathematical analysis", *Acta Polytechnica Hungarica*, Vol.16(10), pp. 205-224, 2019
- \*A40 G. Mavelli, G. Palombo, P. Palumbo, "A Stochastic Optimal Regulator for a Class of Nonlinear Systems", *Mathematical Problems in Engineering*, Vol. 2019, Article ID 9763193, 8 pages, 2019
- \*A39 F. Cacace, V. Cusimano, A. Germani, P. Palumbo, F. Papa, "Closed-loop control of tumor growth by means of anti-angiogenic administration", *Mathematical Biosciences and Engineering*, Vol.15(4), pp. 827-839, 2018
- A38 C. Manes, P. Palumbo, V. Cusimano, M. Vanoni, L. Alberghina, "Modeling biological timing and synchronization mechanisms by means of interconnections of stochastic switches", *IEEE Control Systems Letters*, Vol.2(1), pp. 19-24, 2018 (presented at 56th IEEE Conference on Decision and Control, Melbourne, Australia, 2017)
- \*A37 A. Borri, F. Cacace, A. De Gaetano, A. Germani, C. Manes, P. Palumbo, S. Panunzi, P. Pepe, "Luenberger-like observers for nonlinear time-delay systems with application to the Artificial Pancreas: the attainment of good performance", *IEEE Control Systems Magazine*, Vol.37(4), pp. 33-49, 2017
- A36 A. Borri, P. Palumbo, C. Manes, S. Panunzi, A. De Gaetano, "Sampled-data observer-based glucose control for the Artificial Pancreas", *Acta Polytechnica Hungarica*, Vol.14(1), pp. 79-94, 2017

- \*A35 F. Cacace, V. Cusimano, A. Germani, P. Palumbo, “A state predictor for continuous-time stochastic systems”, *Systems and Control Letters*, Vol.98, pp. 37-43, 2016
- \*A34 A. Borri, P. Palumbo, A. Singh, “Impact of negative feedback in metabolic noise propagation”, *IET Systems Biology*, Vol.10, pp. 179-186, 2016
- A33 P. Palumbo, M. Vanoni, V. Cusimano, S. Busti, F. Marano, C. Manes, L. Alberghina, “Whi5 phosphorylation embedded in the G1/S network dynamically controls critical cell size and cell fate”, *Nature Communications*, 7:11372, doi: 10.1038/ncomms11372, 2016.
- \*A32 A. Borri, F. Carravetta, G. Mavelli, P. Palumbo, “Block-tridiagonal state-space realization of Chemical Master Equations: a tool to compute explicit solutions”, *Journal of Computational and Applied Mathematics*, Vol.296, pp.410–426, 2016
- A31 C. Gaz, A. De Gaetano, P. Palumbo, S. Panunzi, “A unifying organ model of pancreatic insulin secretion”, *PLoS ONE*, 10(11): e0142344, 34 pagine, 2015
- A30 P. Palumbo, G. Pizzichelli, P. Pepe, S. Panunzi, A. De Gaetano, “Model-based control of plasma glycemia: tests on populations of virtual patients”, *Mathematical Biosciences*, Vol.257, pp.2–10, 2014
- A29 S. Tasdighian, L. Di Paola, M. De Ruvo, P. Paci, D. Santoni, P. Palumbo, G. Mei, A. Di Venere, A. Giuliani, “Modules identification in protein structures: the topological and geometrical solutions”, *Journal of Chemical Information and Modeling*, Vol.54, pp.159–168, 2014
- \*A28 F. Carravetta, P. Palumbo, P. Pepe, “Memoryless solution to the optimal control problem for linear systems with delayed input”, *Kybernetika*, Vol.49(4), 568–589, 2013
- A27 P. Palumbo, S. Ditlevsen, A. Bertuzzi, A. De Gaetano, “Mathematical modeling of the glucose-insulin system: a review”, *Mathematical Biosciences*, Vol.244, pp.69–81, 2013
- A26 K. Juagwon, Y. Lenbury, A. De Gaetano, P. Palumbo, “Application of modified Watanabe’s approach for reconstruction of insulin secretion rate during OGTT under non-constant fraction of hepatic insulin extraction”, *International Journal of Mathematics and Computers in Simulation*, Vol.7(3), pp.304–313, 2013
- \*A25 F. Cacace, A. Germani, P. Palumbo, “The Observer Follower Filter: a new approach to nonlinear suboptimal filtering”, *Automatica*, Vol.49(2), pp.548–553, 2013
- \*A24 F. Cacace, A. Germani, P. Palumbo, “The state observer as a tool for the estimation of gene expression”, *Journal of Mathematical Analysis and Applications*, Vol.391, pp.382–396, 2012
- A23 A. De Gaetano, A. Matone, A.M. Agnes, P. Palumbo, F. Ria, S. Magalini, “Modeling rejection immunity”, *Theoretical Biology and Medical Modelling*, Vol.9(18), 2012
- A22 P. Palumbo, P. Pepe, S. Panunzi, A. De Gaetano, “Time-delay model-based control of the glucose-insulin system, by means of a state observer”, *European Journal of Control*, Vol.18(6), pp.591–606, 2012
- A21 J. Li, M. Wang, A. De Gaetano, P. Palumbo, S. Panunzi, “The range of time delay and the global stability of the equilibrium for an IVGTT model”, *Mathematical Biosciences*, Vol.235, Issue 2, pp.128–137, 2012
- A20 L. Alberghina, G. Mavelli, G. Drovandi, P. Palumbo, S. Pessina, F. Tripodi, P. Coccetti, M. Vanoni, “Cell growth and cycle in *Saccharomyces cerevisiae*: Basic regulatory design and protein-protein interaction network”, *Biotechnology Advances*, Vol.30, Issue 1, pp.52–72, 2012
- A19 P. Palumbo, G. Mavelli, L. Farina, L. Alberghina, “Networks and Circuits in cell regulation”, *Biochemical and Biophysical Research Communications*, Vol.396, pp.881–886, 2010

- \*A18 L. Farina, A. Germani, G. Mavelli, P. Palumbo, “Identification of regulatory network motifs from gene expression data”, *Journal of Mathematical Modelling and Algorithms*, Vol.9, No.3, pp.233–245, 2010
- \*A17 G. Mavelli, P. Palumbo, “The Carleman approximation approach to solve a stochastic nonlinear control problem”, *IEEE Trans. Automatic Control*, Vol.55, No.4, pp.976–982, 2010
- \*A16 A. Germani, C. Manes, P. Palumbo, “Representation of a class of MIMO systems via internally positive realization”, *European Journal of Control*, Vol.16, No.3, pp.291–304, 2010
- A15 P. Palumbo, A. De Gaetano, “An islet population model of the endocrine pancreas”, *Journal of Mathematical Biology*, Vol.61, No.2, pp.171–205, 2010
- A14 P. Palumbo, P. Pepe, S. Panunzi, A. De Gaetano, “Robust closed-loop control of plasma glycemia: a discrete-delay model approach”, *Discrete and Continuous Dynamical Systems - Series B, Special Issue on “Mathematical Biology and Medicine”*, Vol.12, No.2, pp.455–468, 2009
- \*A13 A. Germani, C. Manes, P. Palumbo, “State estimation of stochastic systems with switching measurements: a polynomial approach”, *International Journal of Robust and Nonlinear Control, Special Issue on “Observability and observer-based control of hybrid systems”*, Vol.19, No.14, pp.1632–1655, 2009
- A12 A. De Gaetano, T. Hardy, B. Beck, E. Abu-Raddad, P. Palumbo, J. Bue-Valleskey, N. Pørksen, “Mathematical models of diabetes progression”, *American Journal of Physiology - Endocrinology and Metabolism*, Vol.295, pp.E1462–E1479, 2008
- A11 D.V. Giang, Y. Lenbury, A. De Gaetano, P. Palumbo, “Delay model of glucose-insulin systems: global stability and oscillated solutions conditional on delays”, *Journal of Mathematical Analysis and Applications*, Vol.343, pp.996–1006, 2008
- A10 P. Palumbo, U. Picchini, B. Beck, J. Van Gelder, N. Delbar, A. De Gaetano, “A general approach to the apparent permeability index”, *Journal of Pharmacokinetics and Pharmacodynamics*, Vol.35, pp.235–248, 2008
- \*A9 A. Germani, C. Manes, P. Palumbo, “Filtering of stochastic nonlinear differential systems via a Carleman approximation approach”, *IEEE Trans. on Automatic Control*, Vol.52, No.11, pp.2166–2172, 2007
- A8 S. Panunzi, P. Palumbo, A. De Gaetano, “A discrete single-delay model for the Intra-Venous Glucose Tolerance Test”, *Theoretical Biology and Medical Modelling*, Vol.4, No.35, 16 pagine, 2007
- A7 P. Palumbo, S. Panunzi, A. De Gaetano, “Qualitative behavior of a family of delay-differential models of the glucose-insulin system”, *Discrete and Continuous Dynamical Systems - Series B*, Vol.7, No.2, pp.399–424, 2007
- \*A6 A. Germani, C. Manes, P. Palumbo, P. Pepe, “A robust approximation scheme for the LQG control of an undamped flexible beam with a tip mass”, *European Journal of Control*, Vol.12, No.6, pp.635–651, 2006
- \*A5 A. Germani, C. Manes, P. Palumbo, M. Sciandrone, “A higher order method for the solution of nonlinear scalar equations”, *Journal of Optimization Theory and Applications*, Vol.131, No.3, pp.347–364, 2006
- \*A4 A. Germani, C. Manes, P. Palumbo, “Filtering for bimodal systems: the case of unknown switching statistics”, *IEEE Trans. on Circuits and Systems – I: Regular Papers*, Vol.53, No.6, pp.1266–1277, 2006
- \*A3 A. Germani, C. Manes, P. Palumbo, “Polynomial Extended Kalman Filter”, *IEEE Trans. on Automatic Control*, Vol.50, No.12, pp.2059–2064, 2005

- \*A2 A. Germani, C. Manes, P. Palumbo, “Polynomial filtering for stochastic non-Gaussian descriptor systems”, *IEEE Trans. on Circuits and Systems – I: Regular Papers*, Vol.51, No.8, pp.1561–1576, 2004
- \*A1 A. Germani, C. Manes, P. Palumbo, “Linear filtering for bilinear stochastic differential systems with unknown inputs”, *IEEE Trans. on Automatic Control*, Vol.47, No.10, pp.1726–1730, 2002

#### Other International Journals

*Asterisks denote alphabetical order*

- B2 F. Muzi, A. De Sanctis, P. Palumbo, “A new algorithm for smart grid protection based on synchronized sampling”, *International Journal of Energy and Environment*, Vol.5, Issue 4, pp.566–573, 2011
- B1 P. Palumbo, W.H. Ong-Clausen, S. Panunzi, A. De Gaetano, “Linear periodic models of subcutaneous insulin absorption: mathematical analysis”, *HERMIS Journal, Special Issue on Differential and Integral Equations in Physics, Epidemiology and Medicine: Applications and Numerics*, Vol.7, pp.60–79, 2006

#### Book Chapters indexed on ISI WOS and/or Scopus

*Asterisks denote alphabetical order*

- C3 P. Palumbo, M. Vanoni, F. Papa, S. Busti, M. Wortel, B. Teusink, L. Alberghina, “An integrated model quantitatively describing metabolism, growth and cell cycle in budding yeast”, *Artificial Life and Evolutionary Computation*, M. Pelillo et al. Editors, Communications in Computer and Information Science (CCIS book series), Springer, pp.165–180, 2018
- C2 J. Kong, S.S. Kumar, P. Palumbo, “DDE models of the glucose-insulin system: a useful tool for the artificial pancreas”, *Managing Complexity, Reducing Perplexity in Biological Systems*. M. Delitala, G. Ajomne-Marsan Eds., Springer Proceedings in Mathematics & Statistics, Vol.67, pp.109–117, 2014
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