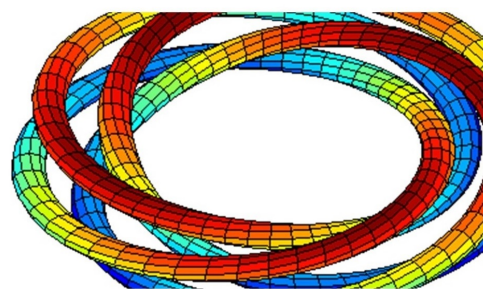


SIMAI 2014



# Program

**SIMAI**  
SOCIETÀ ITALIANA DI MATEMATICA  
APPLICATA E INDUSTRIALE

**Hotel Villa Diodoro, Taormina - Sicily, Italy**

**July 7-10, 2014**

# **PROGRAM**

# Monday 7 July

10:00 – 12:30 Registration

13:45 – 14:15 Welcome party

14:15 – 14:30 Opening

**Monday 7 July, 14:30-19:00**

**14:30-15:30 Plenary Lecture**

**Vito Latora**

*New trends in complex networks: temporal networks*

15:30-16:00 Coffee break

**Mini-symposia Session 16:00-19:00**

**Main Conference Room - Ettore Majorana Room : MS 10**

Marco Discacciati and Christian Vergara

**Numerical methods for coupled problems**

16:00 Nicola Bellomo:

*Coupling Micro-Scale Dynamics to Collective Behaviors: The Case of Living, hence Complex, Systems*

16:30 Marco Discacciati, Paola Gervasio and Alfio Quarteroni:

*Interface Control Domain Decomposition (ICDD) Method for Stokes Darcy coupling*

17:00 Edie Miglio and Mattia Penati:

*Multiscale model of rift dynamics*

17:30 Luca Gerardo-Giorda and Marco Discacciati:

*Optimized partitioned procedures for the Stokes-Darcy coupled problem*

18:00 Alessandro Colombo, Francesco Bassi, Lorenzo Botti, Nicoletta Franchina, Francesco Carlo Massa, Antonio Ghidoni and Stefano Rebay:

*An implicit high-order Discontinuous Galerkin solver for hybrid RANS-LES simulations*

18:30 Giacomo Gigante and Christian Vergara:

*Analysis and optimization of the generalized Schwarz method for elliptic problems with application to fluid-structure interaction*

**Conference Room 1 – Luigi Pirandello Room : MS 28**

Carlotta Giannelli and Carla Manni

**From computer aided geometric design to industrial CAD modeling and simulations**

16:00 Serena Morigi:

*3D interaction and sketch-based surface modeling*

16:30 David Grossmann

*Geometric Modeling for Turbine Engine Design*

17:00 Maria Lucia Sampoli

*Algebraic-Geometric Structures for Rational Camera Motions*

17:30 John Evans, Michael Scott, Derek Thomas and Rafael Vazquez:

*Compatible discretizations based on hierarchical splines*

**Contributed Session 18:00-19:00**

18:00 Raffaele D'Ambrosio.

*Long-term structure-preserving numerical methods for Hamiltonian problems in Physics and Medicine*

18:30 Paola Brianzi, Fabio Di Benedetto, Andrea Di Stefano, Claudio Estatico and Luca Surace:

*Irregularization accelerates iterative regularization*

**Conference Room 2 – Salvatore Quasimodo Room : MS 12**

Maria Alessandra Ragusa, Annamaria Barbagallo

**Variational inequalities, immune systems and local minimizers of functionals**

16:00 Annamaria Barbagallo, Antonino Maugeri and Maria Alessandra Ragusa:

*Duality theory for dynamic vaccination games*

- 16:30 Annamaria Barbagallo, Paolo Mauro  
*Inverse variational inequalities and applications to an economic equilibrium problem*
- 17:00 Francesco Pappalardo, Filippo Castiglione, Carlo Bianca, Giulia Russo, Marzio Pennisi and Santo Motta:  
*Multiscale modelling of living systems: a mathematical and computational Perspective*
- 17:30 Annamaria Barbagallo, Patrizia Daniele, Mariagrazia Lorino, Antonino Maugeri and Cristina Mirabella:  
*General Financial Equilibrium Problem with Memory Term and Adaptive Constraints*
- 18:00 Marianna Ruggieri and Maria Paola Speciale:  
*Approximate symmetries of Differential equations*
- 18:30 Laura Scrimali:  
*A bilevel model of the continuous-time optimal pollution emission price problem*

### **Conference Room 3 – Vincenzo Bellini Room : MS 25**

Mariantonia Cotronei, Elisa Francomano and Francesca Pitolli

#### **Signal and image processing techniques, and applications**

- 16:00 Micol Amar, Daniele Andreucci and Roberto Gianni:  
*Linear and nonlinear models for electrical conduction in biological tissues*
- 16:30 Diego Agrò, Gabriele Adamo, Maurizio Pinto, Riccardo Canicattì, Alessandro Tomasino, Antonino Parisi, Salvatore Stivala, Antonio Giordano, Costantino Giaconia and Alessandro Busacca:  
*Design of a portable (CW) fNIRS embedded system*
- 17:00 Guido Ala, Gregory Fasshauer, Elisa Francomano, Salvatore Ganci and Michael McCourt:  
*Beyond the BEM Solution of the M/EEG Forward Problem: a Meshfree Approach*
- 17:30 Alessandro Calamuneri, Simona De Salvo, Angelo Quartarone, Placido Bramanti and Lilla Bonanno:  
*Wavelet packet as diagnostic tool: an EEG study*
- 18:00 Annalisa Pascarella:  
*A BeamFormer for source localization in ElectroCorticoGraphy*
- 18:30 Sara Sommariva and Alberto Sorrentino:  
*A Semi-Analytic Bayesian Approach for Multiple Static Dipoles Estimation from a Time Series of MEG Data*

### **Conference Room 4 – Giovanni Verga Room : MS 1**

Luisa D'Amore

#### **Data Assimilation: an ill posed inverse problem. Numerical topics and Applications**

- 16:00 Luisa D'Amore, Almerico Murli, Rossella Arcucci and Luisa Carracciuolo.  
*A Scalable Algorithm for Three Dimensional Variational Data Assimilation*
- 16:30 Luca Bertagna, Huanhuan Yang and Alessandro Veneziani:  
*Variational Data assimilation in Computational Hemodynamics: Applications to Parameter Estimation*
- 17:00 Claudia Zoccarato, Domenico Baù, Massimiliano Ferronato, Giuseppe Gambolati, Carlo Janna and Pietro Teatini:  
*Data Assimilation of Anthropogenic Land Subsidence for the Compressibility Calibration in Productive Hydrocarbon Reservoirs*
- 17:30 Amos Lawless, Nancy Nichols, Stephen Haben and Adam El-Said:  
*Conditioning of Incremental Variational Data Assimilation*
- 18:00 Nadia Pinardi, Marina Tonani, Jenny Pistoia, Michelangelo Mariani, Alessandro Grandi, Srdjan Dobricic, Christopher K. Wikle, Ralph F. Milliff and Mark L. Berliner:  
*Variational Ocean Data Assimilation for the Mediterranean Forecasting System*

### **Contributed Session 16:00-19:00**

#### **Belvedere Room – Archimede Room.**

- 16:00 Ivan Spisso, Aldo Rona and Sergio Pirozzoli:  
*Development of a family of cost-optimized prefactored high-order compact schemes for low-speed aeroacoustics*
- 16:30 Pierluigi Vellucci and Giorgio Riccardi  
*Vortex merging in relativistic flows*
- 17:00 Enrico De Bernardis and Giorgio Riccardi  
*Bubble dynamics and related acoustics*
- 17:30 Giorgio Riccardi:  
*The interaction of a uniform vortex with a pointwise one*
- 18:00 Melania Carfagna and Alfio Grillo  
*Numerical Simulations of Self-Induced Thermodiffusion in Porous Media*
- 18:30 Alfio Grillo and Melania Carfagna:  
*Considerations On Thermodiffusion In Higher Order Binary Fluids*

19:30-21:30 **CONCERT**

# Tuesday 8 July

Tuesday 8 July, 9:00-12:30

9:00-10:00 Plenary Lecture

**Lorenzo Pareschi**

*Breaking the Boltzmann complexity*

10:00-10:30 Coffee break

**Mini-symposia Session 10:30-12:30**

**Main Conference Room - Ettore Majorana Room : MS 16**

Ezio Di Costanzo, Maria Grazia Notarangelo, Giuseppe Pontrelli, Alberto Bersani, Paolo Freguglia, Luigi Frunzo, Roberto Natalini and Luigi Preziosi

**GASVA minisymposium on Mathematical Modelling in Environmental and Life Sciences**

10:30 Pierluigi Vellucci and Alberto Maria Bersani:

*Time Scale Separation, Normal Modes and Quasi-Steady State Approximations in Enzyme Kinetics*

11:00 Alberto Maria Bersani, Alessandro Borri, Francesco Carravetta, Gabriella Mavelli and Pasquale Palumbo:

*Quasi Steady-State Approximations (QSSAs) in the CME-based stochastic framework*

11:30 Giuseppe Pontrelli:

*A semi-analytical study in transdermal drug delivery systems*

12:00 Maria Grazia Notarangelo and Roberto Natalini:

*A Multidomain Mathematical Model about the Intracellular Transport of Naked DNA Plasmids*

**Conference Room 1 – Luigi Pirandello Room : MS 9**

Maurizio Imbesi and Paola Lea Staglianò

**New perspectives on applicabilities in graph theory**

10:30 Mario Versaci:

*Graphs & Neuro-Fuzzy Approaches to Solve Inverse Problems in Non Destructing Testing and Evaluation*

11:00 Maurizio Imbesi, Monica La Barbiera and Paola Lea Staglianò:

*On Ideals Associated to Complete Bipartite Graphs*

11:30 Anna Maria Stanganelli:

*Graphs of paths and applications*

12:00 Maurizio Imbesi, Monica La Barbiera

*Vertex covering optimization in Veronese bi-type graph ideals*

**Conference Room 2 – Salvatore Quasimodo Room : MS 3**

Marco Donatelli and Marco Prato.

**Numerical methods for inverse problems and image processing**

(chair Marco Donatelli)

10:30 Flavia Lenti, Claudio Estatico, Serge Gratton and David Titley-Peloquin:

*Conjugate Gradient method for p-norm minimization*

11:00 Silvia Gazzola, Paolo Novati and Maria Rosaria Russo:

*Adaptive choice of the regularization parameter and matrix for the Arnoldi-Tikhonov methods*

11:30 Teresa Laudadio, Anca Croitor Sava, Diana Sima, Alan Wright, Arend Heerschap, Nicola Mastronardi and Sabine Van Huffel:

*Unsupervised tissue segmentation and classification of three-dimensional 3T prostate MRSI data by hierarchical non-negative matrix factorization for automatic tumour detection and visualisation*

12:00 Gaetano Zanghirati, Riccardo Zanella, Federica Porta and Luca Zanni:

*Optimization methods for large-scale deconvolution on HPC architectures with applications in Microscopy*

**Conference Room 3 – Vincenzo Bellini Room : MS 31**

Giovanni Naldi

**High order schemes for nonlinear evolutionary Partial Differential Equations**

- 10:30 Sebastiano Boscarino, Giovanni Russo:  
*High order semi-implicit schemes for evolutionary non linear partial differential equations and applications*
- 11:00 Giacomo Albi:  
*Implicit-Explicit Runge-Kutta schemes for optimal control problems and applications to hyperbolic system with relaxation*
- 11:30 Lorenzo Pareschi:  
*High order exponential schemes for nonlinear Fokker-Planck equations*
- 12:00 Giovanni Naldi and Fausto Cavalli:  
*Time integration schemes for semidiscrete approximation of multiscale hyperbolic systems*

**Conference Room 4 – Giovanni Verga Room : MS 19**

Joern Sesterhenn

**Particle Laden Turbulent Shear Layers**

- 10:30 Paolo Gualtieri, Francesco Battista, Francesco Picano and Carlo Massimo Casciola:  
*Exact regularized point particle method for particle-laden flows in the two - way coupling regime: application to turbulent free shear flows*
- 11:00 Matteo Cerminara, Tomaso Esposti Ongaro and Luigi Berselli:  
*High-performance computing for Volcanic ash plumes: turbulence, heat transfer and particle dynamics.*
- 11:30 Arne Heinrich, Flavia Cavalcanti Miranda and Jörn Sesterhenn:  
*On the importance of modeling the fluid acceleration term in a particle laden, compressible turbulent boundary layer*
- 12:00 Barbara Milici, Mauro De Marchis, Gaetano Sardina and Enrico Napoli:  
*Particle statistics in turbulent channel flows with wall-roughness.*

**Belvedere Room – Archimede Room: MS 11**

Paola F. Antonietti, Ilario Mazzieri and Alfio Quarteroni

**Computational models for natural hazards and extreme events simulation**

- 10:30 Giovanni Russo and Armando Coco:  
*A finite-difference ghost-point method for elliptic equations with application to Cauchy-Navier equations*
- 10:55 Augusto Neri, Tomaso Esposti Ongaro and Mattia De' Michieli Vitturi:  
*Assessing volcanic hazard by using multiphase flow simulations*
- 11:20 Giovanni Tumolo and Luca Bonaventura:  
*An accurate and efficient DG framework for adaptive numerical weather prediction*
- 11:45 Marco Stupazzini:  
*Lessons learnt from recent earthquakes and the importance of 3D physical modeling in insurance and (re)insurance market*
- 12:10 Ilario Mazzieri, Paola F. Antonietti and Alfio Quarteroni:  
*Numerical-based deterministic methods for earthquake risk analysis in large urban areas*

12:30- 12:45 **Main Conference Room - Ettore Majorana Room**

**Ivan Spisso**

*L'infrastruttura del CINECA: i servizi offerti alla ricerca accademica e industriale*

12:45- 14:30 Lunch

**Tuesday 8 July, 14:30-19:00**

**14:30-15:30 Plenary Lecture**

**Fabio Pellaccini**

*Computational Concerns in Appearance Reproduction*

15:30-16:00 Coffee break

**Mini-symposia Session 16:00-19:00**

**Main Conference Room - Ettore Majorana Room : MS 10**

Marco Discacciati and Christian Vergara

**Numerical methods for coupled problems**

- 16:00 Daniele Boffi, Nicola Cavallini and Lucia Gastaldi:  
*Finite elements for Immersed Boundary Method*
- 16:30 Daniel Balzani, Simone Deparis, Simon Fausten, Davide Forti, Alexander Heinlein, Axel Klawonn, Oliver Rheinbach, Alfio Quarteroni and Jorg Schroder:  
*Fluid-Structure-Interaction in Hemodynamics using Nonlinear, Anisotropic Hyperelastic Wall Models*
- 17:00 Ana Alonso, Enrico Bertolazzi, Riccardo Ghiloni and Alberto Valli:  
*A novel implementation of the H-based formulation of the eddy current model*
- 17:30 Fabrizio Del Bianco, Piero Colli Franzone, Simone Scacchi and Lorenzo Fassina:  
*Electromechanical modelling and in silico analysis of a rat cardiac Syncytium*
- 18:00 Steffen Basting, Annalisa Quaini, Suncica Canic and Roland Glowinski:  
*A hybrid level set/front tracking approach for fluid-structure interaction with large structural displacements*
- 18:30 Simone Palamara, Domenico Catanzariti, Maurizio Centonze, Elena Faggiano, Fabio Nobile, Alfio Quarteroni and Christian Vergara.  
*Patient-specific model of the electrical activity in the heart: generation of Purkinje networks driven by clinical measurements*

**Conference Room 1 – Luigi Pirandello Room : MS 6**

Rosanna Utano and Monica La Barbiera

**New developments and applications of Groebner bases**

- 16:00 Monica La Barbiera and Maurizio Imbesi:  
*Applications of Groebner bases to simple graphs*
- 16:30 Gaetana Restuccia and Rosanna Utano:  
*Graphs of paths and associated monomial algebras*
- 17:00 Vittoria Bonanzinga and Shalom Eliahou:  
*Which Principal Borel ideals are Gotzmann?*
- 17:30 Gioia Failla:  
*Algebraic and geometric models for business*
- 18:00 Gaetana Restuccia:  
*On the Birkhoff model for ranking problems*
- 18:30 Vincenzo Iorfida:  
*Simplicial complexes, convex polytopes and art*

**Conference Room 2 – Salvatore Quasimodo Room : MS 17**

Lorenzo Pareschi and Gabriella Puppo

**Numerical methods and models for multiscale kinetic equations**

- 16:00 Stephane Brull:  
*Derivation of BGK models for gas mixtures*
- 16:30 Maria Groppi and Giampiero Spiga:  
*Kinetic relaxation models for reacting gas mixtures*
- 17:00 Marlies Pirner, Christian Klingenberg and Gabriella Puppo:  
*A kinetic BGK model for a multi-component mixture*

- 17:30 Giuseppe Stracquadanio, Maria Groppi and Giovanni Russo:  
*High Order Semi-Lagrangian Schemes for the BGK Model*
- 18:00 Giannpietro Ghiroldi, Domenico Bruno and Aldo Frezzotti:  
*Oxygen transport properties estimation by DSMC-CT simulations*
- 18:30 Giacomo Albi and Lorenzo Pareschi:  
*Binary interaction algorithms for the simulation of self-organized systems*

**Conference Room 3 – Vincenzo Bellini Room : MS 25**

Mariantonia Cotronei, Elisa Francomano and Francesca Pitolli

**Signal and image processing techniques, and applications**

- 16:00 Francesca Pitolli:  
*Magnetic Tomography by Random Spatial Sampling*
- 16:30 Sandra Carillo, Mauro Lo Schiavo and Cornelia Schiebold:  
*Baecklund Charts: commutative versus non-commutative Equation Hierarchie*
- 17:00 Mario Versaci:  
*Image Contrast Enhancement by means of Fuzzy Techniques*
- 17:30 Roberto Cavorotto, Alessandra De Rossi, Hanli Qiao and Bernhard Quatember:  
*Topology preservation of radial basis functions for image registration*
- 18:00 Milvia Rossini:  
*On the problem of recovering non regular surfaces from gridded data*
- 18:30 Danilo Costarelli and Gianluca Vinti:  
*Appications of sampling Kantorovich operators to image processing*

**Conference Room 4 – Giovanni Verga Room: MS 7**

Marina Dolfin and Andrea Tosin

**Complex Systems (SisCo-SIMAI Activity Group)**

- 16:00 Marina Dolfin and Mirosław Lachowicz  
*Modeling altruism and selfishness in welfare dynamics*
- 16:30 Juan Pablo Agnelli, Francesca Colasuonno and Damian Knopoff:  
*A Kinetic Model of Crowd Evacuation from Bounded Domains*
- 17:00 Gabriella Bretti, Maya Briani and Emiliano Cristiani:  
*An Easy-to-Use Approach for Simulating Traffic Flow on Networks*
- 17:30 Elena De Angelis:  
*On a Model of Darwinian Dynamics and Competition between Tumor and Immune Cells*
- 18:00 Silvana De Lillo:  
*On the Modeling Learning Dynamics of Large Living Systems*
- 18:30 Paolo Freguglia:  
*Some remarks on the risk driving index definition: mathematical models*

**Contributed Session 16:00-19:00**

***Belvedere Room – Archimede Room.***

- 16:00 Laura Prati:  
*A Supermodular Generalized Nash Equilibrium Problem for power allocation in Cognitive Radio systems*
- 16:30 Francesca Bonizzoni and Fabio Nobile:  
*Tensor Train Approximation of the First Moment Equation for the Lognormal Darcy Problem*
- 17:00 Viola Pettinati, Davide Ambrosi and Pasquale Ciarletta:  
*Active stress as a local regulator of global size in morphogenesis*
- 17:30 Manolo Venturin:  
*Uncertainty quantification analysis in engineering design*
- 18:00 Simone Brugiapaglia, Stefano Micheletti and Simona Perotto:  
*Compressed solving: a model reduction technique for PDEs based on compressed sensing*
- 18:30 Giancarlo Consolo:  
*Analytical and numerical characterization of the spin-wave properties emitted in a spintronic nano-waveguide*



# Wednesday 9 July

Wednesday 9 July, 9:00-12:30

9:00-10:00 **Plenary Lecture**

**Fabio Nobile**

*Sampling and collocation methods for PDEs with random data*

10:00-10:30 Coffee break

**Mini-simposia Session** 10:30-12:30

**Main Conference Room - Ettore Majorana Room : MS 16**

Ezio Di Costanzo, Maria Grazia Notarangelo, Giuseppe Pontrelli, Alberto Bersani, Paolo Freguglia, Luigi Frunzo, Roberto Natalini and Luigi Preziosi

**GASVA minisymposium on Mathematical Modelling in Environmental and Life Sciences**

- 10:30 Ezio Di Costanzo, Roberto Natalini and Luigi Preziosi:  
*A hybrid mathematical model for self-organizing cells in the zebrafish lateral line primordium*
- 11:00 Paolo Freguglia and Armando Bazzani:  
*Ago-Antagonist Theory in Darwinian Evolution*
- 11:30 Berardino D'Acunto, Luigi Frunzo and Maria Rosaria Mattei:  
*Numerical modelling of initial formation in multispecies biofilms*
- 12:00 Luca Bruno, Davide Fransos and Luigi Preziosi:  
*Wind-Blown Sand: An Erosion-Transport-Sedimentation-Sliding Model*

**Conference Room 1 – Luigi Pirandello Room : MS 24**

Gaetana Gambino, Maria Carmela Lombardo and Vincenzo Sciacca

**Coherent Structures and Nonlinear Waves**

- 10:30 Giuseppe Coclite:  
*Systems with moving boundaries*
- 10:55 Francesco Paparella:  
*Coherent structures and large-scale instabilities in fingering convection*
- 11:20 Benedetto Bozzini, Deborah Lacitignola and Ivonne Sgura:  
*Oscillating Turing patterns and spiral wave behavior in a mathematical model for alloy electrodeposition*
- 11:45 Giovanni De Matteis:  
*Second-grade nematic fluids and nematoacoustics*
- 12:10 Elvira Barbera and Francesca Brini:  
*Heat Transfer problems in Extended Thermodynamics*

**Conference Room 2 – Salvatore Quasimodo Room : MS 3**

Marco Donatelli and Marco Prato.

**Numerical methods for inverse problems and image processing**

(chair Marco Prato)

- 10:30 Laura Antonelli, Valentina De Simone and Daniela di Serafino:  
*On the application of spectral projected gradient methods in image segmentation*
- 11:00 Stefania Bellavia and Benedetta Morini:  
*Levenberg-Marquardt and Adaptive Quadratic Regularized methods for ill-posed nonlinear systems*
- 11:30 Germana Landi:  
*A method for constrained L1/TV image denoising*
- 12:00 Alessandro Benfenati and Valeria Ruggiero:  
*Inexact Bregman Regularization for astronomical images corrupted by Poisson noise*

**Conference Room 3 – Vincenzo Bellini Room : MS 8**

Michele Piana

**Mathematical Models and Computational Methods in Biomedicine**

- 10:30 Federico Benvenuto and Housseem Haddar:  
*A Small Angle X-ray Scattering Technique for Determining Nano-scale Particle Size Distributions*
- 11:00 Alberto Sorrentino, Gianvittorio Luria and Riccardo Aramini:  
*Sequential Monte Carlo Samplers for the determination of neural activity from neurophysiological data*
- 11:30 Anna Maria Massone, Cristina Campi, Annalisa Perasso, Mauro Carlo Beltrametti and Michele Piana:  
*The Hough Transform and a Novel Prognostic Index for Chronic Leukemia*
- 12:00 Michele Piana, Sara Garbarino, Fabrice Delbary, Valentina Vivaldi and Giacomo Caviglia:  
*Compartmental Models for Nuclear Medicine Data: an Inverse Problems Perspective*

**Conference Room 4 – Giovanni Verga Room : MS 20**

Marco Di Francesco

**Discrete and continuous models for pedestrian movements**

- 10:30 Nicola Bellomo:  
*Modeling Crowd Dynamics within the Framework of FPT7 Projects*
- 11:00 Debora Amadori, Paola Goatin and Massimiliano Rosini:  
*Existence of weak solutions for Hughes' model of pedestrian flows*
- 11:30 Jose Carrillo, Stephan Martin and Marie-Therese Wolfram:  
*On the Hughes model for pedestrian flows: including local effects*
- 12:00 Martin Burger, Marco Di Francesco, Peter A. Markowich and Marie-Therese Wolfram:  
*Mean field games with nonlinear mobilities in pedestrian dynamics*

**Belvedere Room – Archimede Room: MS 13**

Rosanna Manzo, Vincenzo Vespri, Maria Pia D'Arienzo and Cristian Tacelli

**Modeling, simulation and optimization of complex systems using Partial Differential Equations**

- 10:30 Martina Mazzanti, Viola Pungetti and Vincenzo Vespri:  
*A problem of train scheduling on the rail line Verona-Monaco of Bavaria*
- 11:00 Ciro D'Apice, Carmine De Nicola and Rosanna Manzo:  
*Optimization of the input flow of a supply chain*
- 11:30 Radu C. Cascaval, Ciro D'Apice, Maria Pia D'Arienzo and Rosanna Manzo:  
*Flow Optimization in Vascular Networks*
- 12:00 Anna Canale, Abdelaziz Rhandi and Cristian Tacelli:  
*Kernel estimates for Schrödinger type operators with unbounded diffusion and potential terms*

12:30- 14:30 Lunch

**Wednesday 9 July, 14:30-19:00**

14:30-15:30 **Plenary Lecture**

**Andrea Tosin**

*From Individuals to Collectivity: Multiscale Methods for Living Complex Systems*

15:30-16:00 Coffee break

**Main Conference Room - Ettore Majorana Room:**

16:00-18:00 *Giovani e Impresa*

18:00-19:00 *Assemblea dei Soci*

20:30-23:00 *Social Dinner*

# Thursday 10 July

Thursday 10 July, 9:00-12:30

9:00-10:00 Plenary Lecture

**Adriana Garroni**  
*Variational models for dislocations*

10:00-10:30 Coffee break

**Mini-symposia Session 10:30-12:30**

**Main Conference Room - Ettore Majorana Room : MS 36**

Maurizio Falcone and Roberto Ferretti

**Recent advances on the theory and applications of Semi-Lagrangian methods**

- 10:30 Elisabetta Carlini and Francisco Silva:  
*A Semi-Lagrangian scheme for a degenerate second order Mean Field Game system*
- 10:55 Luca Bonaventura and Roberto Ferretti:  
*Semi-Lagrangian methods for parabolic problems in divergence form*
- 11:20 Silvia Tozza:  
*Semi-Lagrangian approximation schemes for non-Lambertian Shape-from-Shading models*
- 11:45 Simone Cacace, Emiliano Cristiani and Maurizio Falcone:  
*Fast Semi-Lagrangian Schemes for Hamilton-Jacobi-Bellman Equations*
- 12:10 Giovanni Tumolo and Luca Bonaventura:  
*Experiments on adaptive semi-Lagrangian advection in a DG framework*

**Conference Room 1 - Luigi Pirandello Room : MS 23**

Stefano Bianchini and Giuseppe Coclite

**Models and applications of the theory of conservation laws**

- 10:30 Gianluca Crippa, Carlotta Donadello and Laura Spinolo:  
*Initial-boundary value problems for transport equations with rough coefficients*
- 11:00 Marco Di Francesco and Massimiliano D. Rosini:  
*Rigorous derivation of the Lighthill-Whitham-Richards model from the follow-the-leader model as many particle limit*
- 11:30 Maria Carmela Lombardo and Marco Sammartino:  
*Navier-Stokes equations with incompatible data in the zero viscosity limit*
- 12:00 Sara Daneri:  
*Dissipative continuous Hoelder equations*

**Conference Room 2 - Salvatore Quasimodo Room : MS 18**

Lorenzo Rosasco and Silvia Villa

**The mathematics of learning from data**

- 10:30 Massimiliano Pontil  
*Spectral  $k$ -Support Norm Regularization*
- 11:00 Francesca Odone, Lorenzo Rosasco, Alessandro Rudi, Alessandro Toigo and Ernesto De Vito.  
*Learning a set by kernel methods*
- 11:30 Carlo Ciliberto, Youssef Mroueh, Tomaso Poggio and Lorenzo Rosasco:  
*A Unifying Framework for Multi-task Learning*
- 12:00 Silvia Villa:  
*Stochastic proximal methods*

### **Conference Room 3 – Vincenzo Bellini Room : MS 7**

Marina Dolfín and Andrea Tosin

#### **Complex Systems (SisCo-SIMAI Activity Group)**

- 10:30 Matteo Semplice, Gabriella Puppo and Giuseppe Visconti:  
*A 2-population kinetic model for vehicular traffic*
- 11:00 Luisa Fermo and Andrea Tosin:  
*A kinetic approach to traffic flow on road networks*
- 11:30 Giacomo Albi, Michael Herty and Lorenzo Pareschi:  
*Kinetic description of optimal control problems and applications to consensus modeling*
- 11:00 Simone Fagioli:  
*Nonlocal interaction equations with two species*

### **Conference Room 4 – Giovanni Verga Room : MS 20**

Marco Di Francesco

#### **Discrete and continuous models for pedestrian movements**

- 10:30 Massimiliano D. Rosini:  
*On the CR model and its applications at the bottlenecks*
- 11:00 Boris Andreianov, Carlotta Donadello, Ulrich Razafison and Massimiliano Rosini:  
*Crowd Dynamics and Conservation Laws with Non--local Point Constraints and Capacity Drop. Theory and Numerical Simulations.*
- 11:30 Emiliano Cristiani, Fabio Simone Priuli and Andrea Tosin:  
*Modeling rationality to control self-organization of crowds*
- 12:00 Monika Twarogowska:  
*Macroscopic modelling and simulations of crowd dynamics*

### **Belvedere Room – Archimede Room: MS 21**

21 Valeria Artale, Cristina Milazzo and Angela Ricciardello

#### **Mathematical Applications funded by the European Union**

- 10:30 Artale Valeria, Cristina Milazzo, Angela Ricciardello and Andrea Alaimo:  
*Kore Hexacopter*
- 11:00 Gabriele Freni and Mauro De Marchis:  
*A Mathematical Dynamic Numerical Model for Energy Recovery in Water Distribution Network, Using Pump as Turbine*
- 11:30 Andrea Alaimo, Antonio Esposito and Giovanni Pipitone:  
*upGraded RENEwable ENergy system project*
- 12:00 Giorgio M. Grasso and Alessio Plebe:  
*IPSE Project: Real Time Multi-View Video Tracking of People in Industrial Environments*

### **Main Conference Room - Ettore Majorana Room**

12:30- 13:00 *Closing Discussion*

## Notes

