

**Centro Interdipartimentale di Matematica per la Tecnologia  
(CIMAT)  
A. M. Anile  
Università degli Studi di Catania**

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**ADVANCE IN MATHEMATICS FOR TECHNOLOGY 2017  
(AMATH 2017)**

*Catania, October 9-11 2017*

*Villa Citelli*

Programme

**CIMAT**

CENTRO INTERDIPARTIMENTALE DI MATEMATICA  
PER LA TECNOLOGIA "A. M. ANILE"

Monday October 9

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**8:30-13:00 Registration**

**9:00- 9:30 Welcome and salutations**

9:30-10:30 Plenary speaker: **Luis Bonilla**, Universidad Carlos III de Madrid

*Understanding angiogenesis through modeling and asymptotics*

10:30-11:00 Invited speaker: Tommaso Ruggeri, University of Bologna

*Rational Extended Thermodynamics of Rarefied Polyatomic Gas and Interplay with Kinetic Theory.*

**11:00-11:30 coffee break**

11:30-12:00 Invited speaker: Andrea Sacchetti, University of Modena-Reggio Emilia

*Nonlinear models and bifurcation trees in Quantum Mechanics*

12:00-12:30 Invited speaker: Alessandro Teta, University of Rome La sapienza

*Efimov effect in a fermionic three-particle system*

12:30 – 13:00 Invited speaker: Paolo Bordone, University of Modena-Reggio Emilia

*Quantum walks on a bidimensional lattice in the presence of a magnetic field*

**13:00-15:00 lunch break**

15:00-16:00 Plenary speaker: **Luca Formaggia**, Politecnico di Milano

*Modelling of liquid packaging systems, an example of technological transfer*

16:00-16:30 Invited speaker: Giuseppe Dattoli, ENEA Rome

*Laser, Accelerator Physics, Fusion...Is there any interesting problem for mathematicians?*

16:30-17:00 Invited speaker: Carlo De Falco, Politecnico di Milano

*Multiscale Numerical Models For Industrial Applications*

17:00-17:30 Invited speaker: Antonino La Magna, IMM-CNR Catania

*Integration of ab-initio and mathematical models for material science applications*

17:30-18:00 Invited speaker: Maria Stella Mongiovi

*title tba*

18:00-18:20 Speaker: Stavros Avgerinos, University of Catania

*Numerical methods for multi scale hyperbolic problems, with application to multi fluid and sedimentation.*

***18:20 Award of the Anile prize***

***19:00 welcome cocktail, and theatrical performance***

Tuesday October 10

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9:00-10:00 Plenary speaker: **Florian Méhats**, Université of Rennes 1

*Highly oscillatory problems: application of averaging techniques to a uniformly accurate numerical method*

10:00-10:30 Invited speaker: Fabio Bagarello, University of Palermo

*Mathematical aspects of two models of non-Hermitian Graphene*

10:30-11:00 Invited speaker: Omar Morandi, University of Florence

*Quantum motion with trajectories: a variational method*

**11:00-11:30 coffee break**

11:30 -12:00 Invited speaker: Alfio Borzi, University of Wuerzburg

*Formulation and analysis of a piecewise-deterministic Liouville transport problem*

12:00 -12:30 Invited speaker: Giovanni Mascali, University of Calabria

*Thermoelectric properties of semiconductors*

12:30 -13:00 Invited speaker: Marco Coco, University of Catania

*An electron-phonon transport model in suspended monolayer graphene including all the phonon branches*

**13:00-15:00 lunch break**

15:00-16:00 Plenary speaker: **Luca Heltai**, SISSA Trieste

*Unconventional frameworks for the numerical solution of fluid-structure interaction problems*

16:00-16:30 Invited speaker: Marco Sammartino, University of Palermo

*Analytic solutions of the 2D Navier-Stokes equations with concentrated vorticity*

16:30-17:00 Invited speaker: Maria Groppi, University of Parma

*Kinetic relaxation models for gas mixtures: theory and numerics*

**17:00-17:30 coffee break**

17:30-18:00 Invited speaker: Francesco Salvarani, University of Pavia

*Cross diffusion equations for non-isothermal gaseous mixtures*

18:00-18:30 Invited speaker: Silvia Lorenzani, Politecnico di Milano

*Analysis of gas rarefaction effects in Micro-Electro-Mechanical-Systems (MEMS) devices on the basis of the Boltzmann equation*

18:30-18:50 Speaker: Liliana Luca, University of Catania

*Comparing linear and nonlinear hydrodynamical models for charge transport in graphene based on the Maximum Entropy Principle*

18:50-19:10 Speaker: Giovanni Nastasi, University of Catania

*High-field mobility in graphene on substrate with a proper inclusion of the Pauli exclusion principle*

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**20:30 social dinner**

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Wednesday morning October 11

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9:00-10:00 Plenary speaker: **Jan Haskovec**, King Abdullah University of Science and Technology, Saudi Arabia

*Discrete and continuum modeling of biological network formation*

10:00-11:00 Plenary speaker: **Giuseppe Saccomandi**, University of Perugia

*The role of material behavior in the performances of electroactive polymer energy harvesters*

**11:00-11:30 coffee break**

11:30 -12:00 Invited speaker: Franco Oliveri, University of Messina

*Continua with non-local constitutive laws: exploitation of entropy inequality*

12:00 -12:30 Invited speaker: Vito Antonio Cimmelli, University of Basilicata

*Heat flux rectification in graded  $Si_c Ge_{1-c}$*

12:30 -13:00 Invited speaker: Alfio Grillo, Politecnico di Torino

*Salinity-driven flow in fractured porous media: full-dimensional versus low-dimensional models*

**13:00 Closing ceremony**