

# XXIV National Conference on Statistical Physics and Complex Systems

in collaboration with the **Department of Physics and Astronomy** of the **University of Florence**,  
the **IMT School for Advanced Studies Lucca** and  
the **Italian National Institute for Nuclear Physics**

June 24th-26th 2019

Conference Center - Aule delle Scienze, University of Parma - Campus

## SCHEDULE FOR MONDAY, JUNE 24<sup>th</sup> 2019

09:00 - 09:30	<b>Opening</b>
09:30 - 10:10	Salvatore Miccichè - <i>Università degli Studi di Palermo</i> <b>Anagraphical relationships in Cosa Nostra network communities</b>
10:10 - 10:50	Cecilia Vernia - <i>Università di Modena e Reggio Emilia</i> <b>Inverse Problem in Mean-Field Models</b>
10:50 - 11:30	<b>Coffee Break &amp; Poster Session</b>
11:30 - 12:10	Simona Olmi - <i>Inria Sophia Antipolis Méditerranée Research Centre</i> <b>Controlling seizure propagation in large-scale brain networks</b>
12:10 - 12:30	Miguel A. Muñoz - <i>Universidad de Granada &amp; Università di Parma</i> <b>Jensen's force and the statistical mechanics of cortical asynchronous states</b>
12:30 - 12:50	Andrea Di Gioacchino - <i>Università di Milano &amp; INFN</i> <b>Exact value for the average optimal cost of bipartite traveling salesman problem in two dimensions</b>
12:50 - 14:30	<b>Lunch</b>
14:30 - 15:10	Federico Corberi - <i>Università di Salerno</i> <b>Geometrical properties of phase-ordering systems</b>
15:10 - 15:50	Luca Leuzzi - <i>CNR-NANOTEC Roma</i> <b>Statistical mechanics of light amplification in random media: an awesome mixture of nonlinearity, ergodicity-breaking, glassiness, mode-locking and energy condensation</b>
15:50 - 16:50	<b>Coffee Break &amp; Long Poster Session</b>
16:50 - 17:30	Vittorio Loreto - <i>SONY Computer Lab &amp; Sapienza Università di Roma</i> <b>Exploring the adjacent possible: play, anticipation, surprise</b>
17:30 - 17:50	Mario Nicodemi - <i>Università di Napoli "Federico II"</i> <b>Models of Polymer Physics for the 3D Structure of Chromosomes</b>
17:50 - 18:10	Tiziano Squartini - <i>Scuola IMT Alti Studi Lucca</i> <b>Detecting Mesoscale Network Structures</b>

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## SCHEDULE FOR TUESDAY, JUNE 25<sup>th</sup> 2019

09:20 - 10:00	<b>Massimo Palma</b> - <i>Università degli Studi di Palermo</i> <b>Large deviation theory of quantum jump statistics in a chiral waveguide</b>
10:00 - 10:40	<b>Pasquale Calabrese</b> - <i>SISSA-Trieste</i> <b>Entanglement and thermodynamics in non-equilibrium quantum systems</b>
10:40 - 11:20	<b>Coffee Break &amp; Poster Session</b>
11:20 - 12:00	<b>Amos Maritan</b> - <i>Università di Padova</i> <b>Optimality and Scaling in Living Systems and Ecological Communities</b>
12:00 - 13:00	<b>Ignite talks</b> <b>G. Caldarelli</b> - <i>Statistical Physics of Real World Networks</i> <b>A. Cavagna</b> - <i>Renormalization group approach to the collective behaviour of strongly correlated biological systems</i> <b>G. Gonnella</b> - <i>A journey in equilibrium and nonequilibrium statistical mechanics: from hard disks, melting and percolation transitions to active brownian particles and singular rate functions</i> <b>E. Marinari</b> - <i>Statistical Mechanics of Disordered and Complex Systems</i> <b>G. Mussardo</b> - <i>Statistical Field Theory</i> <b>A. Vulpiani</b> - <i>What I would like to understand in the next decade</i>
13:00 - 14:30	<b>Lunch</b>
14:30 - 16:00	<b>Round Table</b> - <i>"Prospettive di sviluppo della ricerca e dell'assetto dell'area di Fisica Statistica e dei Sistemi Complessi"</i> <i>P. Branchini, F.S. Cataliotti, P. Contucci, F. Illuminati, F. Monti, L. Pietronero, S. Ruffo, R. Zecchina</i>
16:00 - 16:30	<b>Coffee Break &amp; Poster Session</b>
16:30 - 18:00	<b>Società Italiana di Fisica Statistica - SIFS</b> Prima Assemblea dei Soci della SIFS e elezione della nuova Giunta Esecutiva
20:30	<b>Social dinner at "Trattoria Antichi Sapori"</b>

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## SCHEDULE FOR WEDNESDAY, JUNE 26<sup>th</sup> 2019

09:30 - 10:10	Michele Caselle - <i>Università di Torino</i> <b>Statistical Physics and Systems Biology</b>
10:10 - 10:50	Filippo Colomo - <i>INFN Firenze</i> <b>Arctic curves and limit shapes</b>
10:50 - 11:30	<b>Coffee Break &amp; Poster Session</b>
11:30 - 12:10	Andrea Puglisi - <i>ISC-CNR Roma</i> <b>Similarities between granular and active matter</b>
12:10 - 12:30	Edgar Roldan - <i>ICTP Trieste</i> <b>Martingale theory of stochastic thermodynamics</b>
12:30 - 12:50	Livio Nicola Carenza - <i>Università di Bari</i> <b>Mesoscopic Active Turbulence and Multi-Scale Control of Active Emulsion</b>
12:50 - 14:30	<b>Lunch</b>
14:30 - 15:10	Carlo Baldassi - <i>Università Bocconi - Milano</i> <b>The statistical physics of wide flat minima in neural network landscapes</b>
15:10 - 15:50	Vito Latora - <i>Queen Mary University of London &amp; Università di Catania</i> <b>Simplicial models of social contagion</b>
15:50 - 16:10	<b>Coffee Break &amp; Poster Session</b>
16:10 - 16:30	Giulia Cencetti - <i>Università di Firenze</i> <b>Turing patterns on complex networks in absence of diffusion</b>
16:30 - 16:50	Giacomo Gradenigo - <i>Sapienza Università di Roma</i> <b>Many-body Localization in the Discrete Non-Linear Schrödinger Equation: mechanism of a First-Order Transition in the Microcanonical Ensemble</b>

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## POSTER SESSION

Ihusan Adam - *Università di Firenze*

**Unravelling the topological arrangements and selected reaction parameters from global measurements of an extended neural model**

Irene Adroher-Benítez - *SISSA Trieste*

**Modelling branching polymers in different solvent conditions**

Federico Battiston - *Central European University - Budapest*

**Reactive Random Walkers on Complex Networks**

Marco Bianucci - *ISMAR-CNR*

**Optimal Fokker Planck Equation for a large class of stochastic and chaotic dynamical systems**

Davide Botto - *Politecnico di Torino*

**Unbalanced Langmuir kinetics affects TASEP dynamical transitions: mean-field theory**

Giovanni Catania - *Politecnico di Torino*

**Density Consistency on discrete graphical models**

Gloria Cecchini - *Università di Firenze*

**Tracking propagation patterns in mice before and after stroke**

Giulio Cimini - *ISC-CNR Roma*

**Fragility and anomalous susceptibility of weakly interacting networks**

Mattia Conte - *Università di Napoli "Federico II"*

**Polymer Physics captures key principles of genome folding at both population and single-cell level**

Antonio De Candia - *Università di Napoli*

**Information capacity of a network of spiking neurons**

Pierfrancesco Di Cintio - *CNR-IFAC & INFN Firenze*

**Noise, N-body chaos and the onset of radial-orbit instability**

Ivan Di Terlizzi - *Università di Padova*

**Kinetic Uncertainty Relation**

Gianfranco Durin - *Istituto Nazionale di Ricerca Metrologica*

**Earthquake-like dynamics of weakly-driven domain walls in ultrathin magnetic film**

Vittorio Erba - *Università di Milano*

**Full correlation integral estimator for Intrinsic Dimension: robustness and multiscalability**

Andrea Esposito - *Università di Napoli "Federico II"*

**Chromatin architecture code inferred by machine learning and polymer physics**

Gianmaria Falasco - *University of Luxembourg*

**Dynamics and Thermodynamics of chemical reaction networks**

Roberto Franzosi - *Istituto Nazionale di Ottica - CNR - Firenze*

**A microcanonical entropy correcting finite-size effects in small systems**

Andrea Gabrielli - *ISC-CNR Roma*

**Statistical Physics for Heterogeneous Random Networks**

Marco Gherardi - *Università di Milano*

**Machine learning of geometrically structured data**

Jacopo Grilli - *ICTP Trieste*

**A physics approach to macroecological laws across microbial communities**

Miguel Ibáñez Berganza - *Sapienza Università di Roma*

**Optimal accuracy/complexity trade-off in Maximum Entropy inference: an application to brain science**

Stefano Iubini - *Università di Padova*

**Topological sieving of rings according to their rigidity**

Antonio Lamura - *IAC-CNR Bari*

**Anchored semiflexible polymer under oscillatory shear flow**

Elena Magnanini - *Università di Bologna*

**Approximating the scaled cumulant generating function of triangles in the dense Erdős-Rényi model**

Marco Mancastropa - *Università di Parma*

**Epidemic spreading on temporal networks with burstiness**

Rossana Mastrandrea - *Scuola IMT Alti Studi Lucca*

**Functional brain network topology maps the dysfunctional substrate of cognitive processes in Schizophrenia**

Piero Olla - *ISAC-CNR*

**Stochastic dynamics with mixed boundary conditions in time**

Matteo Paoluzzi - *Sapienza Università di Roma*

**The non-Debye spectrum in structural glasses and supercooled liquids**

Mauro Pastore - *Università di Milano & INFN*

**Large deviations of the free energy in the p-spin glass spherical model**

Francesco Petziol - *Università di Parma*

**Creation of entanglement by superadiabatic quantum state transfer**

Mirko Pieropan - *Politecnico di Torino*

**Compressed Sensing Reconstruction using Expectation Propagation**

Lorenzo Piroli - *Max-Planck Institute for Quantum Optics*

**Nonequilibrium quantum states of matter and generalized hydrodynamics**

Marco Pretti - *ISC-CNR*

**Dynamical transitions in driven-diffusive lattice-gas models**

Fabio Saracco - *Scuola IMT Alti Studi Lucca*

**The role of bot squads in the political debate on Twitter**

Vittore Ferdinando Scolari - *Institut Pasteur*

**Kinetic signature of cooperativity in the irreversible collapse of a polymer**

Samir Suweis - *Università di Padova*

**Adaptive Metabolic Strategies in Consumer-Resource Models**

Pablo Villegas Góngora - *ISC-CNR Roma*

**Landau–Ginzburg theory of cortex dynamics: Scale-free avalanches emerge at the edge of synchronization**