

# III Conference of the Italian Society of Statistical Physics - SIFS

WEDNESDAY, JUNE 21<sup>st</sup> 2023

9:00 - 9:30	<b>Opening</b>
9:30 - 9:50	Andrea Maria Chiariello - <i>Università di Napoli Federico II and INFN</i> <b>Modeling genome organization in SARS-CoV-2 infected genomes with Polymer Physics</b>
9:50 - 10:10	Tatjana Skrbic - <i>Ca' Foscari University of Venice</i> <b>A geometrical framework for thinking about proteins</b>
10:10 - 10:30	Alessandro Manacorda - <i>University of Luxembourg</i> <b>Pulsating with discrete symmetry: Lattice dynamics of deformable active particles</b>
10:30 - 10:50	Francesca Di Patti - <i>Università degli Studi di Perugia</i> <b>Stochastic Turing Patterns of Trichomes in Arabidopsis Leaves</b>
10:50 - 11:20	<b>Coffee Break</b>
11:20 - 12:00	Ada Altieri - <i>Université Paris Cité</i> <b>Stability of large ecological communities: number of equilibria, glassiness, and beyond</b>
12:00 - 12:20	Lorenzo Giambagli - <i>University of Florence - University of Namur</i> <b>How a student becomes a teacher: learning and forgetting through Spectral methods</b>
12:20 - 12:40	Rosalba Pacelli - <i>Politecnico di Torino</i> <b>A statistical mechanics framework for deep neural networks beyond the infinite-width limit</b>
12:40 - 13:00	Alessandro Ingrosso - <i>ICTP</i> <b>A tale of convolutions and non-gaussianity</b>
13:00 - 14:30	<b>Lunch</b>
14:30 - 14:50	Claudio Guarcello - <i>Università di Salerno</i> <b>Thermal fingerprint of breathers in long Josephson junctions</b>
14:50 - 15:30	Bruno Bertini - <i>University of Nottingham</i> <b>Entanglement Dynamics from Space-Time Duality</b>
15:30 - 16:00	<b>Coffee Break</b>
16:00 - 16:20	Martina Giachello - <i>Gran Sasso Science Institute</i> <b>Symplectic quantization: a new deterministic approach to the dynamics of quantum fields inspired by statistical mechanic</b>
16:20 - 16:40	Marianna Sorba - <i>SISSA, Trieste</i> <b>Nonequilibrium quantum dynamics in d spatial dimensions</b>
16:40 - 17:00	Marco Baiesi - <i>Università di Padova</i> <b>Variance sum rule for entropy production</b>
17:00 - 18:30	<b>Assemblea dei Soci della Società Italiana di Fisica Statistica - SIFS</b> Durante questa sessione avrà luogo l'Assemblea dei Soci della SIFS, riservata ai soci della Società.

# III Conference of the Italian Society of Statistical Physics - SIFS

THURSDAY, JUNE 22<sup>nd</sup> 2023

9:20 - 9:30	<b>Opening (Marc Mézard)</b>
9:30 - 10:00	Nicolas Brunel - <i>Duke University</i> <b>Adventures at the frontier between neuroscience, statistical physics and computation</b>
10:00 - 10:30	Andrea Pagnani - <i>DISAT, Politecnico di Torino</i> <b>Protein fitness landscapes from screening experiments</b>
10:30 - 11:00	Simona Cocco - <i>CNRS, Paris</i> <b>Transition paths in generalised Hopfield Potts models inferred by Restricted Boltzmann Machines: from mean field theory to application to protein sequence data</b>
11:00 - 11:30	<b>Coffee Break</b>
11:30 - 12:10	Carlo Baldassi - <i>Università Bocconi Milano</i> <b>Diving into Large Language Models</b>
12:10 - 12:30	Federica Gerace - <i>SISSA, Trieste</i> <b>Optimal inference of a generalised Potts model by single-layer transformers with factored attention</b>
12:30 - 14:00	<b>Lunch</b>
14:00 - 14:40	Giorgio Parisi (Online) - <i>Università Sapienza, Roma</i> <b>Multiple equilibria</b>
14:40 - 15:10	Federico Ricci-Tersenghi - <i>Università Sapienza, Roma</i> <b>Connecting algorithmic thresholds to the solution space structure in constraint satisfaction problems: a 20 years long search</b>
15:10 - 15:30	Maria Chiara Angelini - <i>Università Sapienza, Roma</i> <b>How to improve Simulated Annealing in Solving Sparse Hard Inference Problems</b>
15:30 - 16:00	Remi Monasson - <i>CNRS, Ecole Normale Supérieure</i> <b>Deep tempering with nested restricted Boltzmann machines</b>
16:00 - 17:00	<b>Coffee Break &amp; Poster Session</b>
17:00 - 17:30	Bert Kappen - <i>Radboud University, Nijmegen</i> <b>Why adiabatic quantum annealing is unlikely to yield quantum speed-up</b>
17:30 - 18:00	Silvio Franz - <i>Université Paris-Saclay</i> <b>Satisfiability transition in asymmetric neural networks</b>
18:00 - 18:20	Clarissa Lauditi - <i>Università Bocconi Milano</i> <b>Investigating atypical phase transitions and geodesic connectivity in non-convex neural networks</b>
20:30	<b>Social Dinner at Sala delle Colonne - Palazzo dell'Università</b>

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FRIDAY, JUNE 23<sup>rd</sup> 2023

9:30 - 9:50

Marco Cosentino Lagomarsino - *IFOM and Physics Dept, U Milan*  
**Out-of-equilibrium laws for cellular growth**

9:50 - 10:10

Jorge Fernandez de Cossio Diaz - *ENS Paris*  
**Disentangling representations in Restricted Boltzmann Machines without adversaries**

10:10 - 10:30

Raffaello Potestio - *University of Trento*  
**Defocus! Leveraging low-resolution representations to extract information from noisy and incomplete dataset**

10:30 - 10:50

Francesco Piazza - *Università di Firenze*  
**The physics of boundary conditions in reaction-diffusion systems: implications in cell biology**

10:50 - 11:40

**Coffee Break and Poster Session**

11:40 - 12:20

Maria Angeles Serrano - *Universitat de Barcelona*  
**Network geometry: from multiscale to ultra low dimensional representations of complex systems**

12:20 - 12:40

Mario Veca - *Università di Roma La Sapienza*  
**Discrete Laplacian Thermostat for Spin Systems with Conserved Dynamics**

12:40 - 13:00

Giampaolo Folena - *Duke University*  
**On Weak Ergodicity Breaking**

13:00 - 14:30

**Lunch**

14:30 - 14:50

Antonio Trovato - *University of Padova*  
**Entangled motifs in protein structures**

14:50 - 15:30

Agnese Seminara - *DICCA, Genova*  
**TBA**

15:30 - 16:00

**Coffee Break**

16:00 - 16:20

Stefano Mossa - *Institut de Recherche Interdisciplinaire de Grenoble - CEA Grenoble*  
**Theory and simulation of the instantaneous normal modes in liquids**

16:20 - 16:40

Matteo Negri *Università di Roma Sapienza*  
**Storage and Learning phase transitions in the Random-Features Hopfield Model**

16:40 - 17:00

Matteo Paoluzzi - *University of Barcelona*  
**Most probable path of active Ornstein-Uhlenbeck particles**