



The Abdus Salam
International Centre
for Theoretical Physics



Niš School 2024: Information, Noise and Physics of Life

Description:

Statistical physics and information theory have a ubiquitous role in the research of life sciences and complex systems. The interplay of these research fields represents a unique basis for analyzing real biological systems, such as active matter and gene regulatory systems, which are usually far from equilibrium and strongly influenced by fluctuations and noise. In addition, the synergy of statistical physics and information theory provides powerful tools for the analysis of inference and optimization methods that are at the heart of artificial intelligence.

MORE DETAILS:

The school provides key knowledge about the fundamentals of information theory and statistical physics and about the applications to machine learning, biophysics and bioinformatics. The courses require little or no prior knowledge and aim to equip participants with groundbreaking multidisciplinary research in cutting-edge scientific fields, being suitable for Masters and PhD students as well as postdocs. The ultimate goals of the school are to expand international collaboration and the exchange of scientific and professional knowledge and experience, and to promote active interactions between students and researchers from developed and developing countries.

TOPICS:

- Information Theory and Entropy Foundations
- Fundamentals of Statistical Mechanics
- Out of Equilibrium Physics
- Statistical Physics in Bioinformatics
- Active Matter in Biological Systems
- Statistical Physics of Machine Learning

SPEAKERS:

- L. CUGLIANDOLO, Sorbonne University, France
- A. DECELLE, Universidad Complutense de Madrid, Spain
- S. GUPTA, TIFR Mumbai, India
- V. JAKŠIĆ, McGill University, Canada
- A. JELIĆ, ICTP, Italy
- Z. STOJANOVIĆ-RADIĆ, PMF, University of Niš, Serbia - *colloquium*
- B. TODOROVIĆ, PMF, University of Niš, Serbia - *colloquium*
- M. WEIGT, Sorbonne University, France



17 - 28 June 2024



Niš, Serbia



**Deadline:
20 February 2024**

DIRECTORS:

- R. CHETRITTE, Cote d'Azur University, Nice, France
- D. DAS, ICTP, Italy
- A. DECELLE, Universidad Complutense de Madrid, Spain
- A. HEDRIH, Mathematical Institute of SASA, Belgrade, Serbia
- V. ILIĆ, Mathematical Institute of SASA, Belgrade, Serbia
- B. SEOANE, Paris-Saclay University, France

SCIENTIFIC CONTACT:

É. ROLDÁN ICTP, Italy

FURTHER INFORMATION:

E-mail: smr3946@ictp.it

Web: <http://indico.ictp.it/event/10484/>

Female scientists are encouraged to apply.



REGISTRATION:

A limited number of grants are available to support the attendance of selected participants, with priority given to participants from developing countries. There is no registration fee.

