

Data Science Workshop

February 26th, 27th

Room 128, SISSA

Following the success of the Data Science Proposal for the “Dipartimenti di Eccellenza”, on February 26 and 27 SISSA will host a first workshop along this new research direction.

The meeting will have a series of presentations, starting in the afternoon of the 26th, and ending in the morning of the 27th, where well known experts conducting research on Data Science will illustrate the main open questions in this new branch of Science, and review their main achievements.

The meeting will be in room 128, with the schedule given below. A dinner will be organized for the evening of the 26th, with details which will be communicated during the workshop. For further information, please contact Carlo Baccigalupi, [bacci at sissa.it](mailto:bacci@sisssa.it)

Data Science Workshop at SISSA: Schedule

February 26, Room 128

- 13:50 - Meeting Start, Welcome by the Director, Stefano Ruffo

Talks chaired by Carlo Baccigalupi

- 14:00 - **Evelyn Tang**: The geometry and topology of neural systems
- 14:45 - **Andrei Mesinger**: The cosmic 21-cm signal: preparing for the Big Data revolution
- 15:30 - **Luca Ghiringhelli**: Data-Driven Materials Science: Critical Role of the Descriptor

- 16:15 Coffee Break
- 16:30 - **Tristan Berau**: Multiscale simulations of soft matter augmented by data-driven methods
- 17:15 **Matthias Rupp**: Machine Learning for Quantum Mechanics
- 18:00 - End of First Day and Dinner

February 27, Room 128

Talks Chaired by Alessandro Laio

- 9:00 - **Fabio Anselmi**: Invariant and selective data representations for efficient deep networks with applications to visual cortex
- 9:45 - **Giulio Fabbian**: Reconstructing and understanding the cosmic sky: problems in Cosmic Microwave Background and weak-lensing data analysis
- 10:30 - Coffee Break
- 10:45 - **Rafael de Souza**: Towards a Data Science eco-system
- 11:30 - **Jean Barbier**: Unified and Rigorous Approaches to the Information-Theoretic and Algorithmic Limits in High-Dimensional Estimation and Learning
- 12:15 End of the workshop