



**NOVEMBER 25 - 28  
2019 - PISA**

## **SCIENTIFIC DATA ANALYSIS SCHOOL**

Elaborazione a cura del Servizio Comunicazione e Relazioni Esterne | SNS

Sala Stemmi | Sala Azzurra  
Palazzo della Carovana  
Scuola Normale Superiore  
Piazza dei Cavalieri, 7

Sala Multimediale  
Maria Bakunin  
Laboratorio SMART  
Piazza San Silvestro, 12

Scientific Committee  
**ANDREA FERRARA**  
**SIMONA GALLERANI**  
**FRANCO LIGABUE**  
**STEFANO LUIN**  
**LUIGI ROLANDI**

Local Organizing Committee  
**ELISA GUIDI**  
**GIORDANO MANCINI**  
**MONICA SANNA**

Info  
Attività culturali  
050 509307  
eventiculturali@sns.it



SCUOLA  
NORMALE  
SUPERIORE

The school on Scientific Data Analysis will be held at Scuola Normale Superiore on 25<sup>th</sup>-28<sup>th</sup> November 2019. It is addressed to SNS PhD students interested to the theory and applications of Scientific Data Analysis with particular emphasis on Astrophysics, Biophysics, Condensed Matter, Particle Physics. The School will consist in a series of lectures that will provide a review on the most common techniques for data analysis (acquisition, mining, handling, visualization), including Artificial Intelligence, Machine Learning, Neural Networks.

The school aims at encouraging cross-disciplinary discussions between participants and speakers, and starting joint research activities. The school on Scientific Data Analysis is sponsored by the Italian Ministry of Education, University and Scientific Research (MIUR) in the context of the project "Dipartimenti di Eccellenza". The deadline for the application is 15<sup>th</sup> November 2019. Applicants should provide a brief statement motivating their interest in attending the School, including a self-assessment of computing skills. The number of participants is limited to 25. Special attention will be given to applications from first and second year students, seeking balance among different scientific areas of the SNS.

## MONDAY 25<sup>th</sup> NOVEMBER

Sala Azzurra

Palazzo della Carovana, piazza dei Cavalieri, 7

16:00    **STEFANO MARMI**, Scuola Normale Superiore  
*Welcome Speech*

16:10    **FRANCESCO MORANDIN**, Università degli Studi di Parma  
*Mathematical foundations of data science: statistics*

17:30    **MICHELE BENZI**, Scuola Normale Superiore  
*Numerical linear algebra techniques for data analysis*

Sala Gran Priore

Palazzo della Carovana, piazza dei Cavalieri, 7

19:00    Welcome cocktail

## TUESDAY 26<sup>th</sup> NOVEMBER

Aula Multimediale Maria Bakunin  
Complesso San Silvestro, piazza San Silvestro

- 9:00      **PAOLO ARETINI**, Fondazione Pisana per la Scienza Onlus  
*Data Analysis in Next Generation Sequencing*
- 10:30     **STEFANO LUIN**, Scuola Normale Superiore  
*What can we learn from single particle tracking?*
- 11:00     Coffee break
- 11:30     **STEFANO LUIN**, Scuola Normale Superiore  
*Dynamics and interactions of neurotrophin receptors in the membrane of living cells*
- 12:00     **FRANCESCO CARDARELLI**, Scuola Normale Superiore  
*Correlation spectroscopy in living cells: an introduction*
- 13:00     Lunch break
- 14:00     **FRANCESCO CARDARELLI**, Scuola Normale Superiore  
*Analysis of microscopy movies with SimFCS*
- 15:30     **FRANCESCO ROSSELLA**, Scuola Normale Superiore  
*Multidimensional transport measurements in semiconductor nanostructures*
- 16:00     Coffee break
- 16:30     **FRANCESCO ROSSELLA**, Scuola Normale Superiore  
*Extracting information from multidimensional data*

## WEDNESDAY 27<sup>th</sup> NOVEMBER

Aula Multimediale Maria Bakunin  
Complesso San Silvestro, piazza San Silvestro

- 9:00 **SIMONA GALLERANI**, Scuola Normale Superiore  
*Scientific Data Analysis in Astrophysics*
- 10:30 **STEFANO CARNIANI**, Scuola Normale Superiore  
*Exploration of 3D spectroscopy data*
- 11:00 Coffee break
- 11:30 **STEFANO CARNIANI**, Scuola Normale Superiore  
*Exploration of 3D spectroscopy data*
- 13:00 Lunch break
- 14:00 **GRAZIANO UCCI**, Scuola Normale Superiore  
*Machine Learning on Galaxy spectra*
- 16:00 Coffee break
- 16:30 **ANDREA PALLOTTINI**, Scuola Normale Superiore  
*Synthetic spectra from galaxies in cosmological simulations*

### Sala Stemmi

Palazzo della Carovana, piazza dei Cavalieri, 7

- 20:00 Social dinner
- 21:30 After-dinner speech  
**VIVIANA ACQUAVIVA**, New York City College of Technology  
*The Science of Data Science*

# THURSDAY 28<sup>th</sup> NOVEMBER

Aula Multimediale Maria Bakunin  
Complesso San Silvestro, piazza San Silvestro

- 9:00     **GIUSEPPE BAGLIESI**, INFN  
*Computing in High Energy Physics*
- 11:00     Coffee break
- 11:30     **ANDREA RIZZI**, Università di Pisa  
*Machine learning and Deep Neural Networks in (High Energy) Physics*
- 13:00     Lunch break
- 14:00     **LEONARDO GIANNINI**, Scuola Normale Superiore  
*Machine Learning and b-tagging in CMS*
- 16:00     Coffee break
- 16:30     **LORENZO BIANCHINI**, INFN sezione di Pisa, Unipi, SNS  
*ROOT: a HEP tool for data analysis*
- 18:00     **ANDREA FERRARA**, Scuola Normale Superiore  
**GIGI ROLANDI**, Scuola Normale Superiore  
*Concluding remarks*

Welcome speech by **STEFANO MARMI**

## Speakers

**VIVIANA ACQUAVIVA**

**PAOLO ARETINI**

**GIUSEPPE BAGLIESI**

**MICHELE BENZI**

**LORENZO BIANCHINI**

**FRANCESCO CARDARELLI**

**STEFANO CARNIANI**

**SIMONA GALLERANI**

**LEONARDO GIANNINI**

**STEFANO LUIN**

**FRANCESCO MORANDIN**

**ANDREA PALLOTTINI**

**ANDREA RIZZI**

**FRANCESCO ROSSELLA**

**GRAZIANO UCCI**



<https://indico.sns.it/event/8/>