



**Jacob T. Schwartz International  
School For Scientific Research**

C.F. 93035610877

Dipartimento di Medicina Clinica e Sperimentale  
Università degli Studi di Catania  
c/o Dipartimento di Matematica e Informatica  
Viale A. Doria, 6 – 95125, Catania (IT)  
Tel: +39 095 738 3071; +39 095 738 3087  
E-mail: liparischool@dmi.unict.it  
Web: <https://liparischool.it>

To whom It may concern.

This is to certify that **Francesco Tosoni** attended the "Jacob T. Schwartz International School for Scientific Research - Lipari School Computational Complex and Social Systems" entitled *DATA SCIENCE: Models, Algorithms, AI and Beyond* (July 17th - July 23rd, 2022), in Lipari Island, Italy.

This also certifies that **Francesco Tosoni** passed the final exam with a grade of **A-**.

The amount of hours of the Lipari School course corresponds to a **6** credits course. The school included the following courses:

**Lectures:**

- Ginestra Bianconi, Queen Mary University of London, UK: "Higher-order networks"
- Andrea Gabrielli, University Roma 3, Italy: "Laplacian Renormalization Group for heterogeneous networks: information core and entropic transitions"
- Tommaso Gili, IMT Lucca, Italy: "Functional Brain Networks: Scaffolds, Scales, and Behaviour"
- Filippo Caruso, LENS and University of Florence, Italy: "Quantum Computing & Quantum Machine Learning"
- Dirk Helbing: ETH, Zurich: "Data Analytics: The End of Science?"
- Carlo Ratti, MIT, USA: "The Senseable City"

**Workshop: The future of compressed data structures, 20 years after the FM-index (July 19-20, 2022):**

- Richard Durbin, Wellcome Sanger Institute, UK
- Paolo Ferragina, University of Pisa, Italy
- Simon Gog, eBay
- Giovanni Manzini, University of Pisa, Italy
- Bud Mishra, Courant Institute, New York University
- Gene Myers, Max Planck Institute of Molecular Cell Biology and Genetics, Germany
- Gonzalo Navarro, University of Chile, Chile
- Travis Gagie, Dalhousie University - Canada
- Antonio Arcidiacono, European Broadcasting Union - Switzerland
- Nicola Prezza, Università Ca' Foscari Venezia
- Alfredo Pulvirenti, University of Catania
- Simona Rombo, Università degli Studi di Palermo
- Giorgio Vinciguerra, University of Pisa

Lipari, July 23rd, 2022

Alfredo Ferro  
Director of the School