



M. Capua and E. Tassi on behalf of OC
EIC_NET Meeting - March,10 2023

Outline

- Motivation
- General Information
- Scientific program

Motivation

Important to introduce and train a new generation of physicists to EIC physics programme.

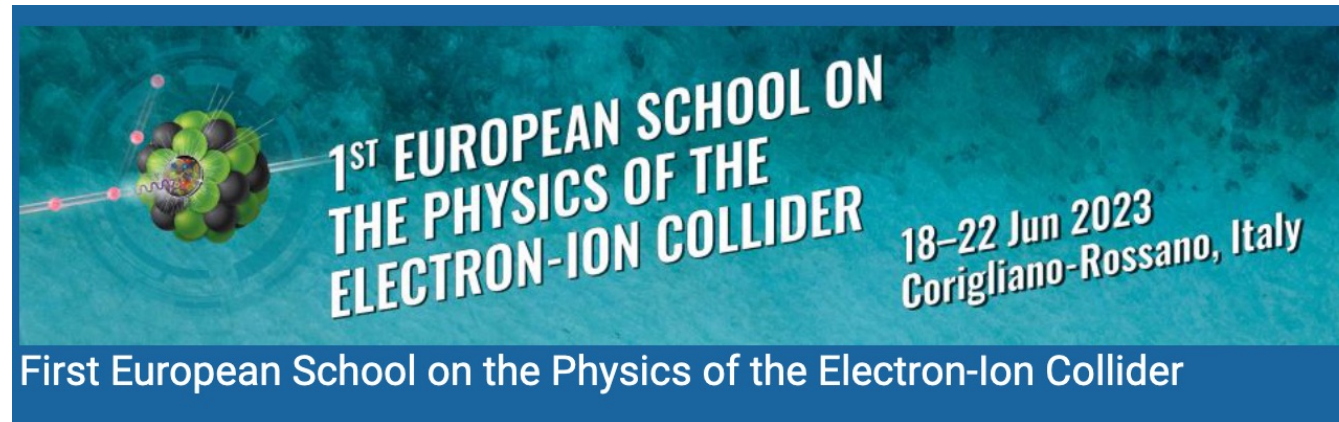
An EIC summer school is organized by the CFNS (since 2019) but we believed it is useful to have a companion European school.

The school is intended for advanced graduate students and postdocs in nuclear and particle physics.

School will take place 18-22 Jun 2023 at the [BV Airone Resort](#) of Corigliano-Rossano.

School site and agenda available at: <https://agenda.infn.it/event/33450/>

Registrations opened on February, 10th with the circulation of [Bulletin nr. 1](#)



18-22 Jun 2023
Europe/Rome timezone

Overview

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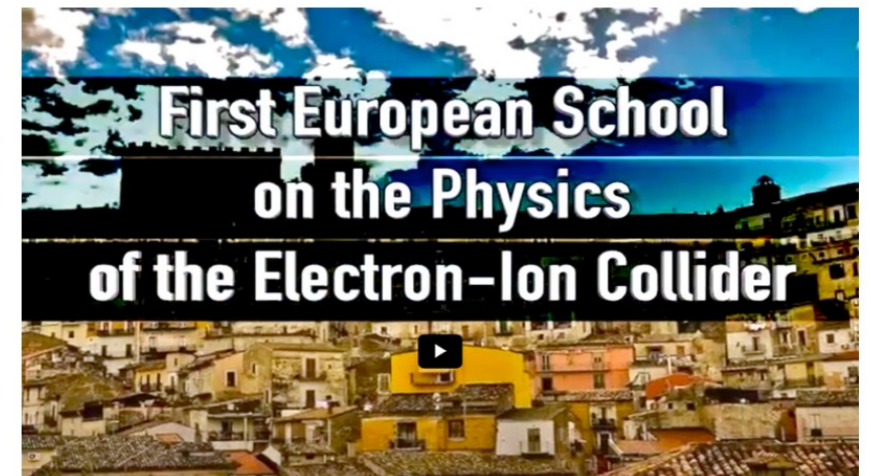
[Sponsoring institutions](#)

Contact the Local Organizers

[✉ eicschool2023@lists.infn.it](mailto:eicschool2023@lists.infn.it)

The first European Summer School on the Physics of the Electron-Ion Collider will be hosted by University of Calabria (Italy) June 18-22, 2023 at Corigliano-Rossano. The school is jointly organized by INFN, University of Calabria, University of Catania and University of Salerno and the Data Center ReCaS-Bari, and will explore topics common to both nuclear and particle physics.

The Electron Ion Collider (EIC) is the world's first polarized electron-nucleon (ep) and electron-nucleus (eA) collider planned for construction at Brookhaven National Laboratory in Long Island, New York by the U.S. Department of Energy. The Electron-Ion Collider will be a discovery machine for unlocking the secrets of the "glue" that binds the building blocks of visible matter in the universe.



The key physics questions that the EIC will address are:

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**1ST EUROPEAN SCHOOL ON
THE PHYSICS OF THE
ELECTRON-ION COLLIDER**
18-22 Jun 2023
Corigliano-Rossano, Italy

TOPICS

- Deep Inelastic Scattering
- Physics at the EIC
- EIC detectors
- PDFs in a free proton and in nuclei
- Transverse-momentum distributions
- Hadron spectroscopy
- Machine learning applications for DIS
- Hands-on sessions

INTERNATIONAL ADVISORY COMMITTEE

- P. Antonioli (INFN-Bologna)
- E. Aschenauer (Brookhaven National Laboratory - USA)
- S. Dalla Torre (INFN-Trieste)
- A. Deshpande (Stony Brook University & CFNS - USA)
- B. Erazmus (Subatech, CNRS-IN2P3 - France)
- E. Gallo (DESY - Germany)
- A. Mukherjee (Indian Institutes of Technology - India)
- P. Newman (Birmingham University - UK)
- B. Pasquini (Pavia University)
- P. Rossi (Jefferson Lab - USA & INFN-LNF)
- D. Sokhan (IRFU-CEA, Paris-Saclay University - France)
- J. Wagner (NCBJ - Poland)

ORGANIZING COMMITTEE

- P. Antonioli (INFN-Bologna)
- F. Bellini (Bologna University)
- M. Capua (University of Calabria - Chair)
- D. De Gruttola (Salerno University)
- S. Fazio (University of Calabria)
- A. Mastroserio (Foggia University)
- M. Radici (INFN-Pavia)
- E. Tassi (University of Calabria - Chair)
- C. Tuvi (Catania University - Vice Chair)

<https://agenda.infn.it/e/EICschool2023>
email: eicschool2023@lists.infn.it

Committees

Organizing Committee

- Pietro Antonioli (INFN-Bologna)
- Francesca Bellini (U. di Bologna and INFN-Bologna)
- Marcella Capua (U. della Calabria and INFN-Cosenza)
- Daniele De Gruttola (U. di Salerno and INFN-Salerno)
- Salvatore Fazio (U. della Calabria and INFN-Cosenza)
- Annalisa Mastroserio (U. di Foggia and INFN-Bari)
- Marco Radici (INFN-Pavia)
- Enrico Tassi (U. della Calabria and INFN-Cosenza)
- Cristina Tuvè (U. di Catania and INFN-Catania)

International Advisory Committee

- Pietro Antonioli (INFN-Bologna)
- Elke Aschenauer (BNL - USA)
- Silvia Dalla Torre (INFN-Trieste)
- Abhay Deshpande (Stony Brook Univ. and CFNS - USA)
- Barbara Erazmus (Subatech, CNRS-IN2P3 - France)
- Elisabetta Gallo (DESY - Germany)
- Asmita Mukherjee (IIT Mumbai - India)
- Paul Newman (Univ. Birmingham - UK)
- Barbara Pasquini (Univ. Pavia and INFN-Pavia)
- Patrizia Rossi (JLab - USA and INFN-LNF)
- Daria Sokhan (IRFU-CEA, Univ. Paris-Saclay - France)
- Jakub Wagner (NCBJ - Poland)

Sponsoring Institutions

School sponsored by

- Istituto Nazionale di Fisica Nucleare, Italy
- Center for Frontiers in Nuclear Sciences, USA
- STRONG2020: a European Union's Horizon 2020 Research and Innovation programme on hadron physics (grant agreement No 824093)
- Physics Department of University of Calabria, Italy
- Salerno University and Physics Department "E. R. Caianello" of Salerno University, Italy
- Physics and Astronomy Department "E. Majorana" of Catania University, Italy
- RECAS Bari, Italy

Financial Support

A budget has been made available by CFNS to provide financial support (waive of registration fee) for deserving early career scientists (fully advertised in the School page).



1st Meeting with IAC

It took place online February, 20th

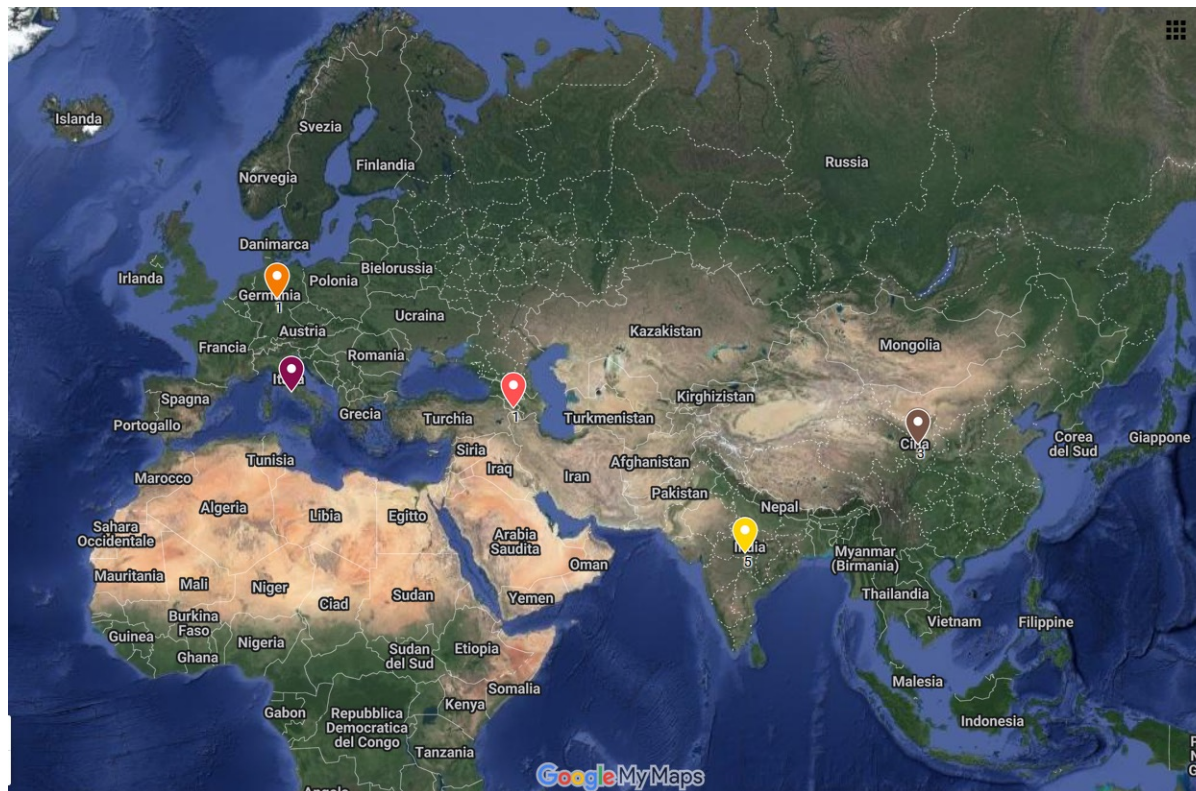
- The IAC expressed appreciation and full support for the initiative
- It was emphasized how the school could be a unique training opportunity for European students as well as students coming from Asian countries
- We got useful suggestions on possible improvements of the scientific program (greater balance between theory vs experimental lectures) that we're trying to implement
- Broad discussion on the future of European School

We will approach again the IAC before the start of the School

Registrations so far...

The registrations' trend is, up to now, very good:

- 20 registered students (6 girls) from Italy (8), India (7), China (3), Germany (1) and Armenia(1)
- We expect additional (7) italian students
- Keep advertising the school (in particular in European countries) → 2nd bullettin



Paesi di provenienza

-  Armenia
-  Cina
-  Germania
-  India
-  Italia

Scientific Program

- A detailed (although still preliminary) scientific program already available on the School site.
- A broad coverage of most the relevant EIC physics topic (with a special emphasis on TMDs)
- Decided to add a Poster Session (Call of abstracts)
- Very import to harmonize the content of the various lectures

Scientific Topics

- The Electron-Ion Collider: From an idea to reality
- Introduction to Deep Inelastic scattering
- Collinear Proton PDFs from past, present and future data
- Theory of Transverse-momentum dependent distributions (TMDs) and gluon TMDs
- Experimental results on TMDs
- Cooking show: how to extract TMDs from a global fit
- The case for Ions: the Physics of nuclear PDFs and hadronization studies
- Overview of the Physics case for the EIC
- Overview on Spectroscopy
- Introduction to Machine Learning Techniques
- Hands-on session on Machine Learning Techniques (coll. PDFs and/or EIC Physics)
- Monte Carlo Event Generators for EIC
- The ePIC Detector
- The Italian contribution to EIC

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Announced Lecturers

- Pietro Antonioli (INFN)
- Alessandro Bacchetta (U. Pavia and INFN)
- Andrea Bressan (U. Trieste and INFN)
- Francesco G. Celiberto (FBK - Trento)
- Matteo Cerutti (U. Pavia and INFN)
- Silvia Dalla Torre (INFN)
- Annalisa D'angelo (U. Tor Vergata and INFN)
- Abhay Deshpande (Stony Brook University and CNFS - USA)
- Enrico Tassi (U. Calabria and INFN)
- Gioacchino VINO (INFN)
- Pia Zurita (U. Regensburg - Germany)

Concluding Remarks

- Organization of the School is progressing well
- School Site is now complete
- Registration trend is very good
- Working on finalizing the scientific program
- Will soon circulate a second bulletin

Will keep you updated...