



Accelerator School at E. Majorana
CENTER - Erice (Sicily)

Applications should be submitted via the website

<https://agenda.infn.it/event/35286/>

Fee: 1000 Euro (it includes full board)

Arrival in 27 th of July and Depature 2 of August

Novel acceleration schemes and enabling technologies;

Muon Collider, Plasma acceleration, ERL and dielectrics

The schools will start with a recap of the basic principle of particle accelerators and will review the limit of the present technologies on which are based existing or near-future accelerators. The saturation in gaining energy of the last two decades clearly show the necessity of pursuing novel acceleration schemes and new technologies enabling to go beyond the present limits of accelerators. The topic of this course is to examine some of the more promising schemes: rather than focusing on single type of accelerator the school will discuss basic concepts and layout for acceleration of muons and of plasma-based accelerators. Other schemes, like acceleration based on dielectrics and Energy Recirculating Linacs (ERL) will be also presented and discussed. **You will need to be prepared to upload your short CV. Response will be sent via e-mail. The number of place is being limited. Acceptation will be done mainly according to first come-first served base. For questions not covered on the websites, please contact: Ms Tiina Benson – Tiina.Benson@mi.infn.it**

Directors of the Course: [Professor Frank Tecker - CERN](#), [Professor Lucio Rossi - University of Milan & INFN – LASA](#),
[Professor Ralph Assmann - DESY & INFN-LNF](#)

Speakers:

Antoine Chance - CEA-IRFU

Christopher Rogers - STFC

Claude Marchand - CEA-IRFU

Daniele Sertore - INFN-Mi-LASA

David Alesini - INFN-LNF

Eduard Prat - PSI

Enrica Chiadroni - Univ. La Sapienza Roma

Frank Zimmermann - CERN

Giuseppe Lerner - CERN

Giuseppe Torrisi - INFN-LNS

Leonida A. Gizzi – INO - CNR

Luca Bottura - CERN

Lucio Rossi - Univ. of Milan & INFN-Mi-LASA

Mark Hogan - SLAC

Michaela Arnold - Technical Univ. Darmstadt

Oliver Bruning - CERN

Pablo Cirrone - INFN-LNS

Peter Hommelhoff - University of Erlangen

Ralph Assmann - DESY & INFN-LNF

Samuele Mariotto - Univ. of Milan – INFN- LASA

Tatiana Pieloni - EPFL

Viktor Malka - Weizmann Institut

Program:

Thursday, 27 July 2023 - Arrival and Introduction

Friday, 28 July 2023

Introduction to accelerators - I- Transverse dynamics & Introduction to accelerators - II - Transverse Dynamics, Tatiana Pieloni

Introduction to accelerators - III- Longitudinal dynamics & NC RF limitations, David Alesini

Superconducting RF limitations, Daniele Sertore

Magnets, Luca Bottura

Synchrotron light, FRANK ZIMMERMANN

Seminar- Pushing present technology: the High Luminosity LHC case, Lucio Rossi

Saturday, 29 July 2023

Parameters for future Particle Physics accelerators (Colliders, others) , Frank Zimmermann

Parameters for future light sources and FEL & Main project at PSI for light and FEL, Eduard Prat

Medical and other applications, Lucio Rossi

Muon Collider(s): why, gain and challenges & Muon beam generation & fast cooling, Chris Rogers

Muon beam fast acceleration & collider ring, Antoine Chance

MC technology challenges: Magnets, Luca Bottura

Sunday, 30 July 2023

MC technology challenges: RF, Claude Marchand

MC technology challenges: collimators & shielding, Giuseppe Lerner

Excursion

Monday, 31 July 2023

Plasma Acceleration: why, gain, challenges, Ralph Assmann

Overview of different schemes, Enrica Chiadroni

Plasma Accelerators: Inside a laser plasma accelerator, Victor Malka

Plasma Acc.: staging for high energy & Plasma acceleration of positrons: is there a hope?, Mark Hogan

Science and Technology of laser drivers for plasma accelerators, Leonida Antonio Gizzi

Technology of beam driver, Enrica Chiadroni

Overview of plasma acceleration of proton and ions, Giuseppe Cirrone

Tuesday, 1 August 2023

Dielectric acceleration: why, gain, challenges and Overview of results and R&D directions, Peter Hommelhoff

Co-propagating/Colinear waveguides for Dielectric Laser Accelerators (DLAs): Design, Results and Perspectives, Giuseppe Torrisi

Energy recovery Linacs: why, gain , challenges & ERL for Pearle and LHeC & ERL for the future, Oliver Bruning

ERL: overview of results, Michaela Arnold

Energy saving magnets for sustainable accelerator infrastructures, Samuele Mariotto Contribution

Wednesday, 2 August 2023 – Departure

