



GIORNATA ACCELERATORI 7-8.04.2022

Speaker: Nadia Pastrone

Muon Colliders

Muon colliders provide a unique and sustainable route to deliver high energy collisions that enable discovery searches and precision measurements to extend our understanding of the fundamental laws of physics. Since the recommendation of the update of the European Strategy for Particle Physics (ESPPU), an International Muon Collider Collaboration (IMCC) hosted at CERN, is leading the on-going Design Study effort.

The focus is the design of a 10+ TeV center of mass (CM) energy facility to explore the physics energy frontier. A muon collider with a CM energy around 3 TeV could be delivered on a time scale compatible with the end of operation of the HL-LHC, as assessed in the Roadmap for Accelerator R&D.

INFN has been a key player since the ESPPU to demonstrate the unique opportunity of a muon collider as a path toward the high-energy, high-luminosity frontier beyond the expected reach, despite the challenges to produce bright muon beams and mitigate the drawbacks arising from the short muon lifetime at rest. The status of the design effort and technology R&D towards such a machine, outlining INFN activities and plans will be discussed.