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A demonstrator to investigate the feasibility of a Muon Collider

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Following the input of the European Strategy Update released in 2020, an International Collaboration hosted by CERN is being formed to investigate the feasibility and the physics reach of a muon collider in two stages, the first at around 3 TeV, and the second at an energy in excess of 10 TeV. The International Muon Collider Study is organised around three pillars, the design of the colliders at 3 and 10+14 TeV, the development of prototypes and hardware test facilities for the most critical components, and finally the proposal for a beam test facility whose aim is to produce, capture and provide in a convincing way a demonstration that it is possible to provide sufficient cooling to achieve the performances required for injecting in the collider ring, and measure the cooling and transmission efficiencies. As a first step a full review of past results obtained by collaborations in the different regions is being performed. In parallel, possible options and sites for its construction are being investigated. At CERN we are developing ideas for a campus compatible with the present CERN infrastructure and future developments and that may take advantage of existing beam lines, while not interfering with already approved programs. A first decision has to be taken on the energy at which muons will be produced, which will allow to select between the PS and the SPS complex of accelerators and experimental areas. Also, it would be suitable to design a facility that could possibly evolve in the future into the final collider complex. This paper will describe the status of the discussions and the possible options at stake.

Collaboration / Activity

International Muon Collider

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