Contribution ID: **753** Type: **Parallel session talk**

Status of the International Muon Collider Complex Study at 10 TeV

Wednesday 23 August 2023 09:35 (20 minutes)

A circular muon collider, due to strong suppression of synchrotron radiation (muons are about 207 times heavier than electrons), can provide high energy (multi-TeV) collisions using fundamental (point-like) particles improving that way the energy frontiers of lepton-antilepton machines. A unique feature of muon colliders, is the significant increase of the luminosity per beam power with beam energy. Muon colliders have been studied in the past by several initiatives. Recently, a new International Muon Collider Collaboration (IMCC) was formed and and is working mainly on the development of a 10 TeV center of mass energy muon collider complex. Such a machine is expected to require less power than the CLIC at 3 TeV and to provide a physics reach similar to the 100 TeV proton version of FCC with a more compact collider ring. A muon accelerator complex is expected to be a cost effective facility provided numerous technical challenges can be overcome. These challenges are mainly driven by the short lifetime of muons and among the crucial ones are the need for rapid cooling and acceleration of the beams with power and cost efficient solutions, the use of high field magnets, the minimisation of the beam induced background and to keep the maximum radiation doses for people due to neutrinos recaching the Earth surface at negligible levels . The progress of the main studies on the 10 TeV muon accelerator complex will be present on behalf of the IMCC.

Collaboration / Activity

IMCC

Primary author: SKOUFARIS, KYRIACOS (CERN)

Presenter: SKOUFARIS, KYRIACOS (CERN)

Session Classification: T13 Accelerators for HEP

Track Classification: Accelerators for HEP