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Muon Colliders and their future R&D

Muons offer a unique opportunity to build a compact high-energy electroweak collider at the 10 TeV scale. It will be a paradigm-shifting tool for particle physics representing the first collider to combine the high-energy reach of a proton collider and the high precision of an electron-positron collider. The International Muon Collider Collaboration (IMCC) has made significant progress in developing a 10 TeV centre-of-mass facility, including the proton driver, target, front-end, cooling, low and high energy acceleration, and a 10 km collider ring with two detectors. The muon collider design is sufficiently mature that R&D is now essential to guide the technological limits of simulations of the accelerator complex. A 10 year R&D plan has been proposed which would focus on developing detector technology, muon cooling technology and the superconducting magnet prototyping. This would enable a first muon collider stage with a start of operation around 2050. Its could thus be the next flagship project in Europe.

This talk highlights the overall design of the muon collider, the contributions made by the IMCC in recent years, and the aims of the proposed R&D plan.

Secondary track

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