Mini-workshop: Highlights from the Future Circular Collider Design with Path to Construction, and theory aspects of the upcoming precision physics program (ACC+TH)

Report of Contributions

https://agenda.infn.it/e/48437

Contribution ID: **1** Type: **not specified**

Highlights from the Future Circular Collider Design and Path to Construction

Monday 13 October 2025 14:30 (1 hour)

The proposed Future Circular Collider (FCC) integrated programme consists of two stages: An electron–positron collider serving as a highest luminosity Higgs-boson, electroweak and top-quark factory, followed by proton–proton collider with a collision energy around 100 TeV.

In 2021, the CERN Council launched the FCC Feasibility Study. This study covered, inter alia, physics objectives and potential, geology, civil engineering, technical infrastructure, territorial implementation,environmental aspects, R&D needs for the accelerators and detectors, socio-economic benefits, and cost.

The Feasibility Study was completed on 31 March 2025. The subsequent European Strategy Symposium has singled out the FCC as the by-far preferred future collider option for CERN. We present a few study highlights, the status, and the next steps.

Presenters: ZIMMERMANN, Frank (CERN); BENEDIKT, Michael (CERN)

Contribution ID: **2** Type: **not specified**

Introduction

Monday 13 October 2025 14:25 (5 minutes)

Presenter: BOSCOLO, Manuela (Istituto Nazionale di Fisica Nucleare)

Contribution ID: **3** Type: **not specified**

Introduction

Monday 13 October 2025 15:45 (5 minutes)

Presenter: BAGNASCHI, Emanuele Angelo (INFN LNF)

Contribution ID: **4** Type: **not specified**

Gearing up for the precision frontier: theory challenges at HL-LHC and FCC

Monday 13 October 2025 15:50 (1 hour)

As the High-Luminosity LHC prepares to deliver an order of magnitude more data, and the planning of future colliders such as the FCC gains momentum, the collider physics programme for the upcoming decades relies critically on the precision of theoretical predictions for scattering observables.

Delivering predictions with the necessary accuracy and flexibility is paramount to enhance the discovery potential of future experiments as well as to stress test the Standard Model and explore its complex structure.
Meeting this challenge requires a collective effort and entails a multitude of obstacles in several areas of theoretical calculations.

In this talk, I will discuss the road ahead and highlight some of the key opportunities and the conceptual and technical challenges that must be tackled in the upcoming years.

Presenter: MONNI, Pier Francesco (CERN)