



Contribution ID: 409

Type: Oral presentation (by invitation only)

FCC cryogenics status, layout, and implementation studies

Tuesday 6 June 2023 13:48 (18 minutes)

Having reached the middle of its 5-year duration, the FCC Feasibility Study is now heading towards its mid-term review, which will take place in Fall'23. The aim of this study is to propose a concrete design for the accelerator, serving as input for the next ESPP Update in 2026/2027. The major layout update of early 2022, which reduced the overall length of the machine as well as its total number of access points from 12 to 8, induced a significant revision of the RF architecture layout, and its related cryogenic design. As a result, a new optimised layout was presented during the subsequent RF review at CERN in Fall'22. Finally, and more recently, the latest of the accelerator placement, presented in January'23, required a refinement of the previous proposal to cope with the newly received geographical constraints at the RF access points for the -ee machine.

This presentation will cover the three main areas of the study that have been investigated since early 2022, with placement, energy and cryogenics usage optimization as main drivers. First, a significant effort has been made to provide the associated civil engineering studies with the cryogenic requirements in terms of above- and under-ground surface requirements, with an emphasis on the service caverns and the tunnel alcoves. The proposed update of the cryogenic infrastructure, layout, implementation and process will then be addressed (including first cryogenic process study for the RF modules), taking into consideration the most recent update of the accelerator placement and inherent geometry of the RF access points. The related cryogenic needs in terms of electrical power supply and water cooling will be covered. Tentative timeline and upcoming objectives for the end of the feasibility study will be presented.

Primary author: NAYDENOV POPOV, Boyan-Kaloyanov (CERN)

Presenter: NAYDENOV POPOV, Boyan-Kaloyanov (CERN)

Session Classification: Technical Infrastructures

Track Classification: Technical Infrastructures