

Design and R&D of CEPC Superconducting RF System

Friday, July 6, 2018 8:15 PM (15 minutes)

CEPC is a 100 km double-ring circular electron-positron collider operating at 90-240 GeV center-of-mass energy of Z-pole, WW pair production threshold, and Higgs resonance, with the feasibility of energy upgrade. The conceptual design report (CDR) of CEPC has been published as an important step to move the project forward. Superconducting RF system is one of the most important and challenging accelerator systems due to the wide range of beam energy and current of CEPC operation. In this contribution, the CDR layout design and configuration of CEPC superconducting RF system will be introduced. According to CEPC physics operation model with long Higgs run first, the Higgs, W and Z mode will use the same RF cavity to achieve their luminosity goals, which is different from the FCC-ee approach. The design consideration for beam-cavity interaction with both fundamental and higher order modes are discussed, including the special issue with parking cavities. The operation of Booster fast RF voltage ramp with the narrow-band cavity is discussed. The SRF technology design and R&D progress is also shown at last with some high light on the Fe-based pnictide thin film study.

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Session Classification: POSTER