



Contribution ID: 77

Type: **Talk**

【384】 High temperature superconducting magnets for FCC-ee

Thursday 7 September 2023 14:45 (15 minutes)

High temperature superconductor (HTS) technology has attractive features for use in accelerator magnets. Two distinct benefits compared to low-temperature superconductors are the ability to operate at higher magnetic fields and/or at higher temperatures. We illustrate the advantages of HTS magnets by means of two potential use-cases for FCC-ee.

The first concerns a compact defect-tolerant 15 T capture solenoid for FCC-ee's positron source. The second use-case investigates the possibility of replacing the normal conducting magnets in FCC-ee's short straight sections by HTS variants, allowing a reduction in energy consumption from ~50 MW to below 10 MW. Additional benefits are an increase in dipole filling-factor, and flexibility in the optics.

Theoretical Work

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Session Classification: Accelerator Science and Technology

Track Classification: Accelerator Science and Technology