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Superconducting Cavity Design for FCC-ee

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As a part of the Future Circular Collider (FCC) study, the FCC-ee design is considered as a potential intermediate step towards the 100 TeV hadron collider. The Superconducting RF (SRF) system of the FCC-ee shall serve for electron-positron collision at different beam energies ranging from 45.5 GeV to 175 GeV. Challenges for the SRF cavity design result from operating at four different voltages and currents. The two limiting cases are the Z-pole characterized by low voltage and a current exceeding 1 A, and tt-nominal for requiring high voltage of 10 GV. The SRF requirements for each case would optimally necessitate different cavity designs. Nevertheless, no more than one or two designs shall be found that can serve for all four scenarios. This poster will address some design aspects of SRF cavities mainly covering the requirements of the FCC-ee with high accelerating gradient and high current in the same machine.

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