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Electron cloud simulations for arc quadrupoles

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The electron cloud is one of the critical issues to be addressed due to its capability to affect the FCC-ee accelerator performance and degrade beam quality, in particular, for the arcs of the machine. In this work, we report the first part of a series of studies on electron cloud build-up for the arc quadrupole sections. Variations mainly on beam energies, beam pipe radii, and secondary electron emission yields were explored. In addition, we found a significant reduction in electron central density when winglets are implemented as part of the beam pipe chamber.

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