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Machine Detector Interface for the e+e- Future Circular Collider

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The design of the interaction region (IR) of the positron-electron future circular collider must comply with various important constraints, imposed by high beam currents, short bunches, high beam energy, high luminosity need for polarization, and crossing scheme. The innovative IR layout of the FCC-ee is based on the crab-waist collision scheme and it will be compatible for all beam energies foreseen, from 175 to 45.6 GeV. It will be shown how the latest layout for the interaction region fulfills all requirements and physical constraints, as confirmed by numerical simulations performed on critical topics such as synchrotron radiation, trapped modes, collective effects, etc. The present magnet layout including solenoid compensation scheme will be discussed, together with the design of the luminosity calorimeter and the designs for the first IR quadrupole design. A refined Geant4 model for the MDI will be described, which allows studying the impact of luminosity and beam backgrounds on the detector occupancy.

Experimental Collaboration

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