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FCC-ee Pre-Booster Accelerators

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CERN's new ambitious project, Future Circular Collider-ee, will have 4 operations as Z, W, H and tt factories covering energy from 45.6 to 175 GeV. The main challenge of Z operation is to get high current as 1450 mA which will heavily depend on the injector. For this reason, we conclude that we need high bunch charge of 3.3E10 both for e- and e+, and fill 91500 of each of those bunches into the collider. In order to achieve the goal, we have designed an S-band (2.856 GHz) normal conducting electron linac up to 6 GeV, and we will use it alternatively both to create and accelerate electrons and positrons. Positrons will be created inside the linac at 5 GeV, and will be accelerated up to 1.54 GeV at the linac, and then will be transferred to the designed Damping Ring. In this study, we'd like to present the designed linac, damping ring, and the operational requirements of 100-km-booster.

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