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Status and plans for the high energy booster of the future electron-positron collider FCC-ee

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In the context of the FCC IS European study, which investigates the feasibility of a 100 km circular e^+e^- collider for the future high energy physics research, we present the status of the High Energy Booster (HEB) ring. The HEB will be located in the same tunnel as the collider and should have the same circumference. The main difference is to have a bypass near the experiments to avoid perturbing the detectors. In order to perform precision measurements of the Z, W and H bosons, as well as of the top quark, unprecedented luminosities are required. To reach this goal and to fill the collider, it is mandatory to continuously top up inject some beams with a comparable emittance and bunch length to the collider ones.
One challenge of the HEB is in the fast cycling time allowing to reach the collider equilibrium emittance, especially for the Z mode. We present the status of the layout and optics design of the HEB taking into account these challenges. A special focus will be made on the cycling considerations.

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Footnotes

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