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P3.018 Design of the 105GHz electron cyclotron resonance heating system on J-TEXT

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To meet requirements of heating and physics experiments on J-TEXT, we are developing a 105GHz/500kW/1s electron cyclotron resonance heating (ECRH) system. With the toroidal field of about 2T for normal discharges on J-TEXT, this system will mainly work at the second extraordinary mode. The ECRH system consists of a Gycom gyrotron with a superconducting magnet and related power supplies, a 30m transmission line based on corrugated waveguides, a quasi-optical launcher, a control system, a cooling system, etc. The designed transmission efficiency is about 85% and the injection angle of the electron cyclotron wave can be adjusted by the movable mirror of the launcher. Considering the transmission efficiency and the power loss of the launcher, about 400kW microwave power will be delivered to the plasma of J-TEXT tokamak.

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