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Research and design of microwave diagnostics on CFETR

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Microwave diagnostics including reflectometry and electron cyclotron emission are the candidates for tools to measure the basic parameters such as electron density and temperature profile on CFETR. They have high spatial and temporal resolution with the radial coverage of the entire plasma. Nevertheless, because of the transmission of signal relies on the waveguide which can survive in the neutron environment on CFETR, they have need for reduced access, front-end robustness. However, due to the high temperature of the target plasma especially in the core region based on the scenarios, realistic effect can change the position of the cutoff layers and downshift the ECE frequency. Based on the newly developed scenarios, the cutoff frequencies and the electron cyclotron frequencies are carefully calculated taking the realistic effect into consideration. The spatial coverage and resolution are evaluated under the developed scenarios of CFETR.

Eligible for student paper award?

Yes

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