

# 21st joint workshop on electron cyclotron emission (ECE) and electron cyclotron resonance heating (ECRH)

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## Current status of ECE system on EAST tokamak

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The electron cyclotron emission (ECE) diagnostic on the experimental advanced superconducting tokamak (EAST) has a major upgrade since 2020, when EAST heating system also went through a huge upgrade, including the one NBI system was changed from counter-current to Co-current (moving from port F to port D), and the antenna and the installation port of LHW and ICRF system have also been changed. The quasi-optical (QO) antenna of P port ECE system [1] has been redesigned, the main purpose is to add one oblique ECE view, the angle with respect to perpendicular to the magnetic field is about  $10^\circ$ , which can measure the electron velocity distribution caused by LHW system. The ellipsoidal mirror has also been moved close to the plasma, about 70 cm away from the plasma center, and the poloidal beam waist radius in the plasma has been optimised to be less than 3 cm. The CECE system [2] has also been moved from port G to port C. The frequency coverage of the CECE system has been upgraded to 106-134 GHz by adding one radio frequency (RF) module, also in the intermediate frequency (IF) module, 8 narrow-band filters has been added to improve the space coverage of the system. On port F, a new superheterodyne radiometer with narrow-band filters in IF module has been installed. It consists of eight channels, the radial coverage is about 8 cm, the main purpose of this new system is to study the fine structure of magnetic island.

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