

The J-TEXT digitally controlled electron cyclotron emission imaging diagnostic

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Abstract

A 256-channel Electron Cyclotron Emission Imaging (ECEI) diagnostic system has been developed and installed on the J-TEXT tokamak, which has full remote-control features. Two independent arrays are employed for simultaneous temperature fluctuation measurements on the J-TEXT high field and low field sides. The J-TEXT ECEI instrument has multiple operation modes including three radial zoom options and two poloidal zoom options. The ECEI system is able to work under almost all J-TEXT plasma scenarios ($B_0 = 1.2 \sim 2.3$ T). The intelligent unit has been developed for feedback control, which is based on good channel identification and signal level optimization. The preliminary ECEI results will be presented and discussed in this paper, including magnetic islands, sawteeth, and minor disruptions.

Keywords : J-TEXT tokamak, Electron cyclotron emission imaging diagnostic, digital control, data cleaning, feedback adjustment

References

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