Abstract Submitted
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Utilization of 2D ECEI images for the study of the core instability structures under ECRH[1] G.H. CHOE, Y. NAM, G.S. YUN, J.E. LEE, M.J. CHOI, H.K. PARK, POSTECH, Pohang, Korea, A. BIERWAGE, Japan Atomic Energy Agency, Aomori, Japan, K.D. LEE, National Fusion Research Inst., Daejeon, Korea, KSTAR TEAM — A wide variety of sawtooth patterns have been observed in the core of plasmas assisted by electron cyclotron resonance heating (ECRH) in a large number of tokamaks. In the KSTAR tokamak, the sawtoothing core under ECRH has been visualized in 2D using an electron cyclotron emission imaging (ECE-I) system. The 2D images revealed a variety of instability structures such as dual cores, triple cores, and crescent shaped structure, which are different from the internal kink mode of the normal sawteeth. For rapid identification of the core structure using 1D ECE signals, the characteristic patterns in the ECE time traces have been explained by the corresponding 2D ECEI images. The statistical analysis for more than 600 discharges using this identification method suggests that the current perturbation due to ECRH inside the q=1 surface may be responsible for the altered core instability structures. A simulation based on linearized two-field reduced MHD model is planned to study the role of localized current perturbations.

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