

Abstract Submitted
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Observation of the electron density fluctuations by using the O-mode Microwave Imaging Reflectometry in LHD¹ YOSHIO NAGAYAMA, National Institute for Fusion Science, SOICHIRO YAMAGUCHI, Kansai University, HAYATO TSUCHIYA, National Institute for Fusion Science, DAISUKE KUWAHARA, Tokyo University of Agriculture and Technology, LHD EXPERIMENTAL TEAM — Visualization of local electron density fluctuations will be very useful to study the physics of confinement and instabilities in fusion plasma. In the Large Helical Device (LHD), the O-mode microwave imaging reflectometry (O-MIR) has been intensively developed in order to visualize the electron density fluctuations. The frequency is 26 – 34 GHz. This corresponds to the electron density of $0.8 - 1.5 \cdot 10^{19} \text{ m}^{-3}$. The plasma is illuminated by the Gaussian beam with four frequencies. The imaging optics make a plasma image onto the newly developed 2D (88) Horn-antenna Millimeter-wave Imaging Device (HMID). In HMID, the signal wave that is accumulated by the horn antenna is transduced to the micro-strip line by using the finline transducer. The signal wave is mixed by the double balanced mixer with the local wave that is delivered by cables. By using O-MIR, electron density fluctuations are measured at the H-mode edge and the ITB layer in LHD.

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