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Observation of MHD fluctuation by ECE on W7-X first experimental campaign HAYATO TSUCHIYA, National Institute for Fusion Science, MATTHIAS HIRSCH, GAVIN WEIR, UDO HOFEL, MARC BEURSKENS, Max Planck Institute for Plasma Physics, SUGURU MASUZAKI, National Institute for Fusion Science, W7-X TEAM — Wendelstein 7-X is an optimized stellarator for ECRH high density steady-state discharges at reactor relevant collisionality regimes. The first experiment (OP1.1) was successfully conducted from Dec.2015. ECE (Electron Cyclotron Emission diagnostic) is one of the main diagnostic during the first experimental campaign. The 2^{nd} harmonic x-mode emission is obtained by outside-antenna and detected by 32-channel heterodyne radiometer. The frequency band is from 126GHz to 162GHz. Radiometers are calibrated by LN_2 temperature and room temperature. The absolute calibration error was estimated to be ˜10%. The electron temperature radial profile obtained by ECE agrees the Thomson scattering and imaging X-ray spectroscopy result. The asymmetric profile is still indicated due to mix of O2-mode. Fluctuations derived from MHD instability are often observed by electron temperature and magnetic fluctuations. The radial mode structure is clearly identified by ECE. It indicates the existence of magnetic island and from its appearance on both sides of the X2 emission spectrum the knowledge on the localization of the ECE channels can be improved by symmetrization.

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