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Wave excitation by microwave power modulation in unstable linear ECR plasma HAYATO TSUCHIYA, Graduate University for Advanced Studies, Japan, Y. NAGASIMA, Kyushu University, Japan, A. FUJISAWA, National Institute for Fusion Science, S. SHINOHARA, Y. KAWAI, Kyushu University, Japan, K. ITOH, National Institute for Fusion Science, S.-I. ITOH, Kyushu University, Japan — Understandings of the wave structures in turbulent plasmas and their nonlinear processes are important topics concerning to plasma structural formation. The characteristics of waves excited by the external force have been investigated for clarifying the dominant nonlinear process caused by the flute instability. An ECR plasma is produced by 2.45 GHz microwaves in the mirror magnetic field with argon pressure of 0.4 mTorr. The electron density is 10ˆ11cmˆ-3, and the electron temperature is 5 eV. Fluctuations excited by the flute instability are measured with several Langmuir probes. The frequency of the flute instability is about 4 kHz. The power of the microwaves is modulated at the frequency from 1 to 10 kHz in order to excite the test waves. The test waves do not have azimuthal but radial eigenmode structure. When the modulation frequency is lower than that of the flute instability of 4 kHz, this instability tends to be suppressed. On the other hand, as the modulation frequency becomes higher than 4 kHz, the power spectrum of the flute instability becomes sharper (more coherent). Aspects of nonlinear interaction between the flute instability and the excited test waves are discussed.

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