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Effects of ExB Velocity Shear on Nonlinear Coupling between Electron Temperature Gradient Mode and Drift Wave Mode in Magnetized Plasmas CHANHO MOON, RIKIZO HATAKEYAMA, TOSHIRO KANEKO, Tohoku University — In our previous work, we have observed that the multi-scale nonlinear coupling between the electron temperature gradient (ETG) mode ($\sim$0.4 MHz) and the drift wave mode ($\sim$7 kHz) is enhanced when the ETG mode exceeds a certain threshold. In this paper, we report the effects of ExB velocity shear on the ETG mode and the drift wave mode in linear magnetized plasmas. The ExB velocity shear owing to the radial electric field can be controlled independently of the ETG by changing the bias voltages of the electron emitter [1]. When the radial electric field becomes slightly positive, the ETG mode amplitude is increased, because a bicoherence between the ETG and drift wave modes is decreasing with an increase in the ExB velocity shear, which reduces the energy transfer of ETG mode and increase the ETG mode amplitude. On the other hand, the ETG mode is suppressed with the strong radial electric field regardless of its signs. It can be figured out for the first time that the ExB velocity shear affects not only the suppression but also the nonlinear coupling of the ETG mode.

[1] C. Moon et al., Rev. Sci. Instrum. **81**, 053506 (2010).

Chanho Moon
Tohoku University

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