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Low-Frequency Fluctuations Driven by Electron Temperature Gradient in Magnetized Plasma CHANHO MOON, SHUICHI TAMURA, TOSHIRO KANEKO, RIKIZO HATAKEYAMA, Tohoku Univ. — We investigate low-frequency instabilities driven by an electron temperature gradient (ETG), which is generated by using a magnetized electron cyclotron resonance (ECR) plasma. The ECR plasma produced by a microwave (6 GHz, 10 W) passes through mesh grids [grid 1 (ϕ 6 cm, 10 mesh/inch) and grid 2 (doughnut shape, OD: ϕ 6 cm, ID: ϕ 3 cm, 30 mesh/inch)] into an experimental region where low-temperature thermionic electrons (0.2 eV) emitted from a tungsten hot plate (3 kW) are superimposed upon high-temperature electrons (2.5 eV) of the ECR plasma. By applying a bias voltage to the grid 2, a density of the high-energy electrons only in the peripheral region is controlled, and therefore the ETG can be formed easily. In addition, we observe density fluctuations in the frequency domain to find a relation with the ETG and low-frequency instabilities. As a result it can be figured out experimentally that the large ETG excites the fluctuations, but a space potential gradient is also necessary to destabilize the fluctuations.

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