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Absolute electron density measurement using the cut-off method in magnetized plasmas IKJIN CHOE, CHINWOOK CHUNG, Division of Electrical Engineering, Hanyang University — Electron density measurement in magnetized plasmas is very difficult because electron saturation currents to Langmuir probes are greatly distorted. Recently, the cut-off probe measuring the plasma frequency in unmagnetized plasmas was developed [J.H. Kim, et. al., Appl. Phys. Lett., 83, 4725(2003)]. We constructed a cut-off probe and applied this method to measure electron densities in weakly magnetized plasma. The ordinary wave is used because its cutoff frequency is equal to the plasma frequency even in the DC magnetic field. The electron density is compared with the ion densities from the ion currents that are not affected by the magnetic fields. It is found that the measured electron density is proportional to the ion density. This cut-off method is expected to be one of reliable methods to measure electron density in magnetized plasmas.

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