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Tunable external RF choke filter design for single Langmuir probe in RF discharges SANGBUM JEON, YU-SIN KIM, DONG-HWAN KIM, CHIN-WOOK CHUNG, Hanyang University — The tunable external RF choke circuit was developed to compensate radio frequency (RF) fluctuation in single Langmuir probe measurement. This method consists of series circuit of each harmonic component of the driving frequency, and has high impedance at the resonance frequencies. The measured electron energy probability functions (EEPFs) from the single Langmuir probe with the external RF compensation circuit were obtained at various discharge conditions, such as gas pressures and RF powers. The EEPFs have highly populated low energy electrons with bi-Maxwellian EEPFs at low plasma density regime, compared to results from the uncompensated Langmuir probes. This method can also provide real-time tuning and thus, high quality EEPF measurement is possible even when the rf discharge condition is changed.

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