LOW FREQUENCE TURBULENCE IN HELICON PLASMA

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Spectra of oscillations in a dense plasma of the short helicon source excited at the frequency 13.56 MHz were investigated. It was shown that the nonlinear interaction between high frequency pumping and the plasma resulted in arise of a low frequency turbulence (in the range of 1 MHz). Excitation thresholds depending on a power deposition and a magnetic field strength were estimated. Phase velocities and waves, as well as their spatial correlation properties were measured. The turbulent pulsations were identified to be the ion-sound waves. Their spatial distribution in the discharge volume were measured. Several mechanisms of the ion-plasma turbulence excitations were analyzed theoretically and numerically estimated. It was shown that in the given experimental conditions the decay instability of electrostatic oscillations had the most efficiency.