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**Filamentation of capacitive Radio-Frequency discharge at low pressures** SERGEY DVININ, Lomonosov Moscow State University, ZAFARI KODIRZODA, Tajik National University, Faculty of Physics — It is known that ionization instability may occur in high-frequency (HF) discharges, resulting in breaking of uniform plasma density distribution [1 – 3]. The model [1] dealt with an instability associated with the peculiarities of transfer processes and electron kinetics for non-Maxwellian electron energy distribution function. We consider the stability of capacitive discharge between two cylindrical electrodes with radii  $R$  and  $r$  at low pressures. It is shown that for large electrodes  $R-r \ll r$  the uniform density distribution in the discharge can be unstable. Instability occurs if the frequency of supporting field is higher than geometric plasma-sheath resonance [4] frequency, and the output impedance of the RF generator is large enough. Instability is connected with falling current-voltage characteristics and leads to discharge filamentation. Analytical model, based on equations for filament boundary motion, is developed. The model allows to determine the size of discharge chamber area occupied by plasma, the density of electrons, and current-voltage characteristics. Numerical calculations confirm analytical results.

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