

DUSTY PLASMA IN AN INDUCTIVE RF DISCHARGE

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Observations of dust structures created under conditions of an RF inductive type discharge (RFI) in a weak and moderate magnetic field is presented. Since there are instabilities in a magnetic field in a direct current discharge usually used for volumetric dust traps it was decided to use an electrodeless RF discharge, which is free from a number of such problems.

It was chosen conditions under which a volumetric dust structure is formed in the diffuse region of the discharge in a magnetic field of up to 750 Gauss and begins to rotate. In this magnetic field range a strong dependence of the size of the dust structure on the radius of the discharge chamber and the type of particles used were discovered. A linear dependence of the rotation speed on magnetic induction was recorded. A significant velocity gradient along the magnetic field vector was discovered.

An interpretation for the obtained results - the conditions and dimensions of particle levitation and angular velocity of rotation - is proposed. This interpretation and qualitative assessments make it possible to compare the results with data on other types of discharges: the DC discharge in the stratum and in the region of narrowing of the current channel, as well as in the RFE electrode discharge.

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