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Book of Abstracts

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The method of plasma diagnostics by measuring the dust-free region near the electric probe

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The usage of the traditional electric probe method in diagnostics of the gas discharge dusty plasmas parameters causes an interesting behavior of the plasma-dust formations as well as of the individual dust particle near probe region [1]. Thus, various trajectories of dust particles [2] and the dust-free region around the probe in a glow discharge have been observed and analyzed [3].

In this work the method for determination of the temperature and concentration of the buffer plasma on the basis of the experimental measurement of the radius of the dust-free region around an electrical probe in a dusty plasma in the positive column of a glow discharge is presented. The size of the dust-free region depending on the potential applied to the probe and the discharge plasma parameters were investigated. To determine the parameters of the plasma the energy balance between dust particles and probe field was used [4]. The main characteristics of the buffer plasma, such as temperature and concentration of electrons were determined under different experimental conditions based on proposed method.

References

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