

THE INFLUENCE OF SCREENING EFFECTS
ON THE GRAIN CHARGE IN A THERMAL
DUSTY PLASMA

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S u m m a r y

The influence of an inhomogeneous screened electric field on the charging of dust grains in a thermal dusty plasma is studied. The electric field of charged grains is considered within the cell approach, where the problem is reduced to a one-particle one. Within the model of quasichemical equilibrium, which is generalized to the case of an inhomogeneous screened electric field, we obtain the value of mean charge of dust grains, the distribution function of grains over charges, and the variance of this distribution. We also give the criterion of an inhomogeneity $g(z)$ of the electric field and show that the influence of screening effects can be neglected in the case of the rarefied subsystem of dust grains (for $r_c/r_p \gg 1$) and in the case of small-radius grains ($r_p \sim 10^{-5}$ cm).