

POLARIZATION OF DUSTY “QUASIATOMS”  
IN LOW-DENSITY PLASMA

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S u m m a r y

A model of the polarization of dust particles with trapped ions in an external electric field is presented. It is based on the self-consistent solution of the integral balance equation for trapped ion density and Poisson equation for the electric potential. It is shown that, in a low collisional regime, trapped ions form a spread shell with a maximum located at some distance from the charged dust particle proportional to the ion Debye length. The estimated polarizability of dusty “quasiatoms” is very high and depends on the strength of the external electric field due to the field ionization of trapped ions. With increase in the electric field, the dusty “quasiatom” loses their trapped ions from far orbits due to the field ionization. The radius of the dusty “quasiatom” ionic shell becomes smaller, and the coefficient of polarizability decreases.