

On equilibrium charge distribution above dielectric surface

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The problem of the equilibrium state of the charged many-particle system above dielectric surface is formulated. We consider the case of the presence of the external attractive pressing field and the case of its absence. The equilibrium distributions of charges and the electric field, which is generated by these charges in the system in the case of ideally plane dielectric surface, are obtained. The solution of electrostatic equations of the system under consideration in case of small spatial heterogeneities caused by the dielectric surface, is also obtained. These spatial inhomogeneities can be caused as by the inhomogeneities of the surface, as by the inhomogeneous charge distribution on it. In particular, the case of the “wavy” spatially periodic surface is considered with the account of the possibility of the surface charges presence.