ANOMALOUS SPATIAL CHARGE PROFILES OF PLASMA AS MANIFESTATION OF PHASE TRANSITIONS IN MODIFIED ONE COMPONENT PLASMA MODEL

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The paper discusses the possibility of the appearance of discontinuities in the results of calculations of equilibrium space charge profiles in the vicinity of the source of inhomogeneity [1]. These discontinuities are considered as a kind of micro-level manifestation of phase transitions and other (macro-level) charge correlation effects ("non-ideality") contained in the local equation of state (EOS), which is used to describe the non-ideal electronic and/or ionic subsystem within the framework of the quasi-homogeneity approximation ("local density") [2].Particular attention in this work is paid to the possibility of a specific manifestation of the above-mentioned nonideality effects in the studied equilibrium charge profiles in the form of an ultradisperse two-phase mixture ("mixed phase"). The proposed general conclusion is the statement that the concept of mixed phase is not an attribute of exclusively astrophysical applications, but is a fairly general property of computational schemes used to describe equilibrium inhomogeneous Coulomb systems [3].

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