

Anomalous spatial charge profiles of plasma

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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, 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].

[1] Iosilevskiy I L, Chigvintsev A Yu, Noginova L Yu and Zorina I G 2021 *High Temp.* **59** 836

[2] Iosilevskiy I L 1985 *High Temp.* **23** 807

[3] Chigvintsev A Yu, Iosilevskiy I L, Noginova L Yu and Zorina I G 2018 *J. Phys.: Conf. Ser.* **946** 012092