**ABOUT MELTING CURVE AND NONCONGRUENCE OF COLLOIDAL AND DUSTY PLASMAS MODELS**

Martynova I.A., Iosilevskiy I.L.

1 MIPT(SU), Russia, Institutskiy 9, Moscow,141701

2 JIHT RAS, Russia, Izhorskaya Street, 13/2, Moscow, 125412

***martina1204@yandex.ru***

The base for a consideration is a well-known and widely used dusty plasmas phase diagram [1] for an equilibrium charged system with the Yukawa potential in its standard representation in the coordinates: Γ-κ (Γ is the Coulomb non-ideality parameter, κ is the dimensionless Debye screening parameter). The phase regions for the three states of the system (fluid vs. bcc and fcc crystals) from the Hamaguchi diagram are reconstructed in the density-temperature coordinates. Two simplified variants of dusty plasmas models are considered as a thermodynamically equilibrium combination of classical Coulomb particles: (i) a two -component electroneutral system of macro- and microions (+Z,-1), and (ii) a 3- component electroneutral mixture of macroions and two kinds of microions (+Z,-1,+1). The resulting phase diagram in the logarithmic coordinates lnT-lnN has the form of a linear combination of crystalline and fluid zones separated by the boundaries Г=const. Parameters and locations of these zones are analyzed in dependence on the intrinsic parameter of the model - macroion charge number *Z*. Parameters of a splitting the one-dimentional melting boundaries of the Hamaguchi diagram (i.e. hypothetical melting density gap between separate freezing liquid line (*liquidus*) and melting crystal line (solidus)) are discussed. Additional splitting of all phase boundaries in the three-component model (+Z,-1,+1) because of so-called non-congruency of all phase transitions are also under consideration.

**LITERATURE**

1. Hamaguchi S., Farouki R.T. Dubin D. Phys. Rev. E **56**, 4671, 1997