

EQUATION OF STATE
FOR A TWO-DIMENSIONAL COULOMB GAS

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S u m m a r y

This work develops the cluster approach proposed by L.A. Bulavin and M.N. Malomuzh to the description of the phase diagram for a two-dimensional Coulomb gas. We restrict ourselves by the ensemble of the simplest clusters – dipole pairs. The effective interaction potential of dipole pair conserving a two particle configuration integral is constructed. In order to reflect more completely the long-range interaction in the system, the third virial coefficient is taken into account. The phase diagram of the Coulomb gas is analyzed on the basis of the generalized van der Waals equation of state, whose parameters are some functions of the temperature and the density. The position of the critical point is determined in different approximations. It is shown that this problem is essentially non perturbative.