

PROPERTIES OF TWO-DIMENSIONAL COULOMB
GAS IN THE REGION IN WHICH QUADRUPOLE
CLUSTERS ARE DOMINATING

L.A. Bulavin, M.M. Malomuzh

Taras Shevchenko Kyiv National University,
Faculty of Physics
(6, Academician Glushkov Ave., Kyiv 03127, Ukraine;
e-mail: *mmn@univ.kiev.ua*)

S u m m a r y

The liquid-vapor coexistence curve of a two-dimensional Coulomb gas was found to belong – in the phase diagram of the system – to the region in which the ensemble of quadrupole clusters is diluted by a small amount of dipole pairs. The results of computer experiments for the critical temperature and density are well consistent with their analytical dependences. The destruction of quadrupole clusters owing to their thermal excitation and the electrostatic interaction between them has been considered at a qualitative level. The location of the insulator–conductor transition curve in the phase diagram has been analyzed.