

# PLASMA POLARIZATION IN MASSIVE ASTROPHYSICAL OBJECTS

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Macroscopic plasma polarization, which is created by gravitation and other mass-acting (inertial) forces in massive astrophysical objects (MAO) is under discussion. Non-ideality effect due to strong Coulomb interaction of charged particles is introduced into consideration as a new source of such polarization. Simplified situation of totally equilibrium isothermal star without relativistic effects and influence of magnetic field is considered. The study is based on variational formulation of equilibrium statistical mechanics. It leads to conditions of constancy for generalized (electro)chemical potentials and/or conditions of equilibrium for all forces acting on each charged specie. New “non-ideality force” appears in this consideration. Hypothetical sequences of gravitational, inertial and non-ideality polarization on thermo- and hydrodynamics of MAO are under discussion.