

Singularities of frequency dispersion of permittivity in a disordered Coulomb system with the single-particle Bose–Einstein condensate

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The frequency dispersion of the permittivity of disordered Coulomb systems in the presence of the single-particle Bose–Einstein condensate for nuclei is considered using the linear response theory and the concept of off-diagonal long-range order. It is shown that the superconductivity of nuclei exists in such a system and is manifested in the Meissner effect for a weakly nonuniform low–frequency electromagnetic field. This result offers an opportunity to solve the problem of the presence of the single-particle Bose–Einstein condensate in superfluid He-II based on direct experiments. The Kramers–Kronig relations for the dielectric permittivity of a disordered Coulomb system in the presence of a single-particle Bose–Einstein condensate for nuclei are also obtained [1, 2].

[1] Bobrov V B and Trigger S A 2018 *Theor. Math. Phys.* **194** 404–414

[2] Bobrov V B and Trigger S A 2020 *J. Low Temp. Phys.* **200** 118–130