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## Cauchy Problem of Bogolyubov Hierarchy and Bogolyubov Kinetic Equation

I will discuss some important problems in statistical mechanics formulated by M. Bogolyubov [1, 2] and illustrate in which way modern mathematical physics has contributed to progress in solving them. Among such problems are the description of evolution of infinitely many particles and the rigorous derivation of kinetic equations from underlying many-particle dynamics [3]. Special emphasis will be placed on problems related to quantum kinetic equations both for the Bose gas and Bose condensate, namely the nonlinear Schrödinger equation and its generalization.

- [1] Bogolyubov N.N. Problems of Dynamical Theory in Statistical Physics. — Gostekhizdat, 1946.
  - [2] Bogolyubov M.M. Lectures on Quantum Statistics. Problems of Statistical Mechanics of Quantum Systems. — Rad. Shkola, 1949 (in Ukrainian).
  - [3] Cercignani C., Gerasimenko V.I., Petrina D.Ya. Many-Particle Dynamics and Kinetic Equations. — Kluwer Acad. Publ., 1997.
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