**A review of Bogolyubov method of the reduced description of nonequilibrium states**

A. Sokolovsky

*Oles Honchar Dnipro National University, Faculty of Physics, Electronics and Computer Systems, 72 Gagarin Ave., 49010 Dnipro, Ukraine, E–mail: Alexander.I.Sokolovsky@gmail.com*

This year 110th Bogolyubov birthday is celebrated. In this talk a review of fundamental Bogolyubov ideas in nonequilibrium statistical mechanics is proposed with the following plan.

Natural evolution of a system and hierarchy of its nonequilibrium processes. Time scales separation.

Hilbert normal solutions and Bogolyubov idea of the functional hypothesis.

The Bogolyubov idea of the functional hypothesis as a basis of his method of the reduced description of nonequilibrium processes.

Chapman and Enskog ideas about natural evolution of nonequilibrium systems.

The Chapman–Enskog method of kinetic equation solution as some case of the Bogolyubov method of the reduced description.

The Grad method of kinetic equation solution and the Bogolyubov method of the reduced description.

The effective initial conditions to equations for parameters of the reduced description.

The reduced description of nonequilibrium processes in a system and invariant manifolds of this system.

Investigation by Bogolyubov of nonlinear system dynamics and the reduced description of nonequilibrium processes.

Bogolyubov idea of the functional hypothesis and Zubarev method in theory of nonequilibrium processes.

Investigation of nonequilibrium processes in a system with account for its kinetic modes.

Investigation of nonequilibrium processes in the vicinity of standard ones.

Correlations as parameters of the reduced description of nonequilibrium states.

*Some of these themes can be omitted with account for time of the presentation.*