

## **Bogolyubov approach and Relaxed Optics**

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Relaxed Optics is the chapter of modern physics, which is created for the explanation of the processes of the irreversible interaction light with matter [1]. This theory is based on the kinetic-energy classification of possible processes. For the classification of possible types phenomena the Bogolyubov chronological classification was complemented energy classification. This procedure may be represented as generalizing Sato theorem (theorem of reduction) from nonholonomic dynamical systems on kinetic phenomena.

This approach is more generalize as Bogolyubov approach. It allow to use various mathematical methods for the modelling hierarchic dynamical processes. The using of BBGKI (Bogolyubov-Born-Green-Kirkwood-Ivon) chains for the explanation experimental data of irreversible interactions light and matter is very difficult. For the concrete realization of this classification for the modelling proper processes may be used methods of synergetic and catastrophe theory [2].

Another effective method of the realization of inhomogeneous time-energy hierarchy classification is the method of modelling hierarchy of saturation the excitation of proper chemical bonds. The proper chain of relaxation times is corresponded to step of saturation of excitation proper chemical bonds. This method allow to classify basic phenomena of interaction laser irradiation from Quantum Electronics (optical pump for laser irradiation) to Relaxed Optics (laser implantation) and synergetic (chaotization of laser irradiation).

The other possible applications of this method for the modelling mixing phenomena of Relaxed Optics are discussed too.

1. P. Trokhimchuck. Mathematical foundations of the knowledge. Polymetrical doctrine. Lutsk: Vezha, 2009. – 520 p. (In Ukrainian)
2. P. Trokhimchuck. Foundation of Relaxed Optics. Lutsk: Vezha, 2006. – 294 p.