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Nonlinear system's synthesis – the central problem of modern science and technology: synergetics conception. Part II: Strategies of Synergetics control (plenary report)

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Our environment, such as natural, social, economics and engineering ones are the world of complex supersystems of various natures. These systems are collection of various subsystems providing defined functions and interconnected by processes of forced dynamics interaction and exchange of power, matter and information. These supersystems are nonlinear, multidimensional and multilinked. And in these systems are complex transients and has place of critical and chaotic modes. Problems of system synthesis, i.e. finding of common objective laws of control processes in a such dynamics system are much actual, complicated and, in many respects, practically inaccessible for present control theory.

In the report we consider fundamental basis of nonlinear theory of system's synthesis based on synergetics approach in modern control theory as well as its application [1, 2].

The report consists of three parts: Part I General Statements; Part II Strategies of Synergetics control; Part III Synergetics synthesis of nonlinear systems with state observers.

Keywords: synergetics, system's synthesis, invariants, nonlinear systems, regulator's design, chaotic disturbances