

Development of methods and algorithms for analysis and optimal control of nonlinear singular systems

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There will be developed the basis of theory of multivalued dynamic systems in Banachian spaces, the methodology of exploring global attractors of managed systems without the singleness of solutions will be created. In the project, there will be developed topological methods and methods of nonlinear analysis pointed at studying problems of object management and optimization, described with the systems of nonlinear operative and differential operative equations, and also with the systems of differential inclusions and variation inequalities in the functional spaces. For the present class of systems, it is being developed the new approach based on theory of multivalued solving operators, theory of multivalued dynamic systems, and theory of topological level for multireflections of S+ class, high accurate algorithms of finding extreme solutions for nonlinear singular distributed systems on the base of modern computer technologies; the Faedo-Galyorkin method for differential operator inclusions in functional spaces is grounded; the categorical and topological classification of multivalued reflections is made; the systems methodology and algorithmic providing of complex exploring of complex singular mixed objects with distributed parameters are developed.