

CONTENTS & ABSTRACTS

ROBUST CONTROL OF THE LINEAR SINGULAR-DISTURBED PLANTS. 2 **Tsykunov A.M.**

The problem of control of a linear plant, which mathematical model is described by the singular- disturbed differential equations with an a priori unknown parameters, is solved. The algorithms of control providing indemnification of parametrical and external disturbance with required accuracy, as well as conditions under which the initial model may be decomposed by allocating of fast and slow components, are received. The received results are illustrated by a numerical example.

Keywords: robust control, observer of the derivatives, singular-disturbed system, state vector, auxiliary contour.

METHOD OF FAULT-TOLERANT CONTROL FOR NONLINEAR DYNAMIC SYSTEMS: LOGIC-DYNAMIC APPROACH 11 **Shumsky A.E., Zhirabok A.N., Bobko Ye.Yu.**

The method of solving control problem for nonlinear dynamic systems with faults on the basis of logic-dynamic approach is suggested.

Keywords: nonlinear dynamic system, fault, fault-tolerant control, logic-dynamic approach.

RAPID ESTIMATION OF THE TENDENCY OF COMPLEX DYNAMICAL SYSTEMS TO DEGENERATION ON THE BASIS OF ROBUST COMPUTING PROCEDURES. 19 **Dudarenko N.A., Polyakova M.V., Ushakov A.V.**

The paper considers the problem of estimation of propensity to system degeneration of complex dynamic systems. The algorithm of estimation of degeneration functional based on robust computing procedures is proposed. The statements put forward are illustrated by an example.

Keywords: rapid estimation, functional degeneration, complex system, criterial matrix, robust computing procedure.

ECONOMIC PROBLEMS OF HIGH RISK INNOVATION PROJECTS MANAGEMENT IN SCIENCE-INTENSIVE INDUSTRIES 25 **Ivanova N.V., Klochkov V.V.**

The paper proves the need of high risk innovation projects for Russian science-intensive industry. Special attention is paid to the branches producing costly products with long lifecycle. The most principle kinds of risk are analyzed, the model of optimal diversification of exploratory research is suggested.

Keywords: «breakthrough» products, time competition, lock-in effect, exploratory research, risk, diversification.

MEDIA REACH CALCULATION 34 **Popov E.V., Shmatov G.A.**

The paper develops the analytical instrument of media reach calculation. The recurrence relation for the media reach range is derived, the characteristics of the media reach frequency distribution behavior are analyzed, the formula of media reach calculation is generalized and the audience reach calculation error is estimated. The analytical instrument developed permits to meet the challenge connected with advertising budget management and advertising placement optimization.

Keywords: media reach frequency distribution, audience reach calculation error, optimization.

SYSTEM OF EMPLOYEES' PERSONAL MOTIVATION IN THE COURSE OF NEW PRODUCT MASTERING. 39 **Olenev S.E.**

The paper covers new methodology of employee's personal motivation, based on the mathematical model, which reflects increasing

rates of output during the time of new product launching. This model provides objective appraisal of employee's input and qualification in each manufacturing operation, which allows to set close dependence between his output and salary.

Keywords: automation, modeling, motivation, forecasting, output, mastering, rate of output.

AGENT BASED MODELING AS A TOOL FOR DEMAND ANALYSIS AND FORECASTING IN ENERGY 46 **Suslov S.A., Kondratyev M.A., Sergeev K.V.**

Agent-based modeling and simulation was applied to investigate a set of problems in the energy context. The paper shows advantages of the agent based modeling approach. The method to define agents-consumers in simulation tool AnyLogic and the approach to simulating investment project risk are suggested.

Keywords: simulation, agent based modeling, AnyLogic, demand for energy forecasting, simulation based management, risk analysis, decision support tool.

MODELS, KNOWLEDGE AND EXPERIENCE FOR CONTROL OF TECHNOGENIC SAFETY 53 **Berman A.F., Nikolaychuk O.A.**

General principles, approaches, methods of investigation have been formulated and control actions directed to provision of technogenic safety have been determined. Considered are accidents and technogenic extreme situations, which are conditioned by destruction or depressurization of unique mechanical systems inside technological complexes exploited for the processes running under extreme values of technological parameters of hazardous agents. Some issues related to investigation and control of the states of technological complexes and unique mechanical systems inside them are discussed.

Keywords: technogenic safety, cause-effect complex, states, technique, models, knowledge, experience, information technologies.

SYNCHROMODELS IN DATA VALIDATION OF CONTROL SYSTEMS 61 **Sidorov A.A., Zakharchenko V.E.**

The article investigates a problem of data validation in control systems. A so-called syncromodel is suggested as a solution. It is based on simulation of control object and interval calculations. Syncromodel functions synchronously with the control object. Fuzzy sets theory is used to determine the measure of data validity.

Keywords: data validation, cleaning data, syncromodel, dirty data, control systems, parameters, simulating model, fuzzy set.

ALGORITHMS FOR FAST ESTIMATION OF HIGH DIMENSION VECTOR. 69 **Andrienko A.Ya., Tropova E.I.**

The problem of planning of programmed control of mobile object under conditions of deficiency and aprioristic uncertainty of time allocated for the planning is considered. For solution of this problem algorithms for fast estimation of vectors of parameters of high dimension are suggested.

Keywords: vector of indignations of high dimension, algorithm for fast estimation, deficiency of time estimation.

XVII INTERNATIONAL CONFERENCE «PROBLEMS OF COMPLEX SYSTEMS SAFETY CONTROL» 74

INNOVATION MANAGEMENT: MODERNIZATION ON THE BACKGROUND OF THE CRISIS 78

ALEXANDER SEMENOVICH RYKOV (to the 65-th anniversary) 83