

# CONTENTS & ABSTRACTS

## VOTING PROCEDURES IN SMALL GROUPS. . . . . 2

**Volskiy V.I.**

A classification of voting procedures in small groups is proposed, based on the information about candidate' orderings obtained from voter's ballots. Descriptions of known from literature voting procedures are given.

**Keywords:** voting procedure, voter, ordering, ranking, candidate's pairwise comparison.

## SEMIOTIC COGNITIVE MAPS. Part 2. THE BASIC DEFINITIONS AND ALGORITHMS. . . . . 24

**Kulinich A.A.**

Suggested is the model of semiotic cognitive maps representation as a conceptual framework in the structured semantic space. Conditions of metadesign activity and semiotics system states' transition rules are defined. Suggested for concrete cognitive map is the interpreting conceptual framework construction algorithm intended for supporting the processes of cognitive maps modeling results interpretation and verification.

**Keywords:** cognitive maps, cognitive modeling, III-structured subject domain, a sign, sign system, semiotics, applied semiotics, a conceptual framework, conceptual system.

## FREQUENCY ADAPTIVE CONTROL FOR MANAGED PRESSURE DRILLING. . . . . 41

**Alexandrov V.A., Palenov M.V., Shatov D.V.**

Frequency adaptation in application to managed pressure drilling control is studied. It is noted that the main problem is to maintain constant annulus pressure in a presence of external disturbances and system parameters drift while the well depth changes. To solve it the frequency adaptation is used and an adaptive annulus pressure control system is build. Given are the results of numerical simulation and experimental investigations on a plant implementing the managed pressure drilling technology.

**Keywords:** frequency adaptation, linearization, PID-control, drilling, MPD technology.

## MATHEMATICAL MODELLING AND SIMULATION OF THE COMPLEX SOCIAL-TECHNICAL AND ENTERPRISE SYSTEMS LIFECYCLES . . . . . 49

**Belov M.V.**

The paper presents an approach to model and simulate the complex systems consisting of the hierarchy of interacting business agents. The approach is developed to govern or manage such business system employing definition and figuring

out economic indicators of the system. The set of mathematical models proposed based on lifecycle concept and stochastic processes theory. The implementation of the models to govern large systems integrator and consulting company is described as an exemplar case.

**Keywords:** economic indicators of complex systems and systems of systems; modelling and simulation; lifecycle of enterprise and business systems; stochastic modelling; business management and governing.

## CORRUPTION ACCOUNTING IN MODELS OF PUBLIC AND PRIVATE INTEREST BALANCING IN HIERARCHICAL CONTROL SYSTEMS. . . . . 62

**Gorbaneva O.I., Ougolnitsky G.A.**

Considered is the corruption accounting in models of active agents public and private interests balancing in three-level control systems of the «principal — supervisor — agent» type. It is shown that in presence of economic corruption supervisor takes bribes for increasing agent's share in public income, while in presence of administrative corruption it reduces the requirements to agent's participation in public activity. Models are investigated in descriptive and normative approaches, the obtained results are discussed.

**Keywords:** models of combining of public and private interests, corruption, administrative and economical mechanisms, descriptive and normative approaches.

## AEROMAGNETIC GRADIOMETRY AND ITS APPLICATION IN NAVIGATION. . . . . 72

**Karshakov E.V., Tkhorenko M.Yu., Pavlov B.V.**

Described are the existing methods of airborne magnetic measurements. The stochastic algorithm of aeromagnetometer and aeromagnetic gradientometer deviations compensation is discussed. The integration algorithm of inertial navigation and correlation-extremal navigation systems is briefly described.

Justified is the advantage of the magnetic gradient field usage as navigational information. Results of integration algorithm numerical modeling are presented.

**Keywords:** correlation-extremal navigation system, aeromagnetic gradiometry, magnetic compensation, integrated navigation system.

## THE REVIEW OF THE MONOGRAF V.L. SHUL'TS, V.V. KUL'BA, A.B. SHELKOV, I.V. CHERNOV «SCENARIO ANALYSIS IN THE MANAGEMENT OF GEOPOLITICAL INFORMATION CONFRONTATION» . . . . . 81