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## CONFORMAL BEHAVIOR MODELS. PART 2. MATHEMATICAL MODELS. . . . . 2

**Breer V.V.**

The paper considers mathematical models of conformal behavior that have been developing starting with works of Granovetter and Schelling. The modern mathematical models of conformity, which are investigated by methods of probability theory, game theory and statistical physics are considered in details. The possible applications of mathematical models in accordance with the proposed classification are presented.

**Keywords:** conformal behavior, social interaction, a model of critical mass, the threshold model of social interaction, social-physics model, crowd control.

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The paper considers the existence of steady-states (asymptotically stable) in positive nonlinear normalized models (PNM) and control for such states in positive orthant  $K$  of  $R^n$ . The graph model of PNM is a functional graph. Using the notion of admissible control (with coordinates in  $(0,1]$ ) a convexity of stable states set in PNM generated by admissible controls has been proved. The issues of PNM movement from any initial state in  $K$  to some predetermined stable state in  $K$  have been solved (in asymptotical sense) for open-loop PNM and for PNM with linear state feedback. The appropriate procedures are illustrated by numerical example.

**Keywords:** positive nonlinear model, fixed point of power of nonlinear operator, admissible control, open-loop and closed models.

## ALGORITHM FOR ROBUST STABILITY ANALYSIS OF CONTINUOUS CONTROL SYSTEMS WITH PERIODIC CONSTRAINTS IMPOSED ON THEIR PARAMETERS. . . . . 26

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Algorithm for numerical construction of time-periodic Luapunov functions that fall in the prescribed parametric classes is built for use in continuous time-varying control systems with periodic constraints imposed on their parameters. This algorithm is based on the solution of appropriate minimax problems in mathematical programming. The convergence of the developed algorithm is established and example of its computer implementation is given.

**Keywords:** continuous time-varying control systems, periodic constraints, Luapunov functions, algorithm for numerical construction, parametric classes, minimax problem, mathematical programming.

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**Keywords:** data patterns, data patterns analysis, analytical applications, decision support systems, best practice, PDL, formal grammars, structural pattern recognition.

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**Keywords:** multiagent systems, imitation modeling, Schelling segregation model, Markov chains, stationary distribution, log-linear behavioral rule.

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**Keywords:** research projects, mathematical modeling, project efficiency, innovation.

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**Keywords:** backbone electric network, electric power system, optimization for electric network expansion, structural model, reliability, software package, geoinformation technology.

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**Keywords:** tokamak, multivariable system, tracking, magnetic control, channel decoupling, poloidal flux, Green's function.

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**Keywords:** discrete model, migration matrix, Perron's vector, residence time, Bellman's function.

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**Andreev K.V.**

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**Keywords:** multiple targets tracking, bearings-only measurements, multiple hypothesis tracking, probability hypothesis density filtering.

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