

Actual Problems of Applied Mathematics

The All-Union Conference

From May 20 to May 22, 1991, the All-Union Conference "Actual Problems of Applied Mathematics" was held at Saratov State University with international participation. There were 61 participants from Balashov, Elektrostal, Krasnoyarsk, Moscow, Saratov, St.-Petersburg, Tchelyabinsk, Tumen and Ufa.

The conference program was divided into the following sections:

- interval methods in problems of identification, optimization and control;
- new information technologies in automated education;
- discrete models and methods of technical diagnostics;
- interval mathematics;
- numeric-analytic methods in mechanics;
- mathematical aspects of navigation and control problems;
- numerical methods in the theory of plates and shells;
- continuous models and methods of technical diagnostics.

The list of lectures given in the sections "Interval mathematics" and "Interval methods in problems of identification, optimization and control" follows:

Section on "Interval mathematics"

M.A. Lyashko "On iterative location of the optimal solution for linear dissipative problems" (Saratov region, Balashov).

N.A.Khlebalin "Characteristics of the relationship between the two interval polynomials representing the real and imaginary parts of a function of a complex variable" (Moscow region, Elektrostal).

- E.A.Musaev "Non-hierarchical wave computations" (St. Petersburg).
- A.G.Yakovlev "Specific parallelism of localizational (interval) computations" (Moscow).
- N.A.Khlebalin "Analytical construction of regulators under interval uncertainty in the parameters" (Moscow region, Elektrostal).
- V.N.Efanov, V.G.Krymsky, R.B.Glyashov "Synthesis of admissible controls for dynamic objects with interval parameters" (Ufa).
- V.I.Baturin "Synthesis of robust regulators of given order" (Tumen).
- V.N.Tchestnov "A frequency stability criterion for dynamic systems with linear dependence of their coefficients on an interval parameter" (Moscow region, Elektrostal).
- V.P.Artyushok "Direct adaptive control systems with interval standard dynamics" (Tumen).
- V.I.Shiryaev "Discrete systems in statistically uncertain situations" (Tchelyabinsk).
- V.I.Shiryaev, S.B.Peltsverger "Convex polyhedra in decision problems with uncertain conditions" (Tchelyabinsk).
- V.S.Zyuzin, N.N.Kuzmicheva "Solving ODE's by the Adams' interval method of any order" (Saratov).
- S.P.Shary "A new sequential verification algorithm for solving interval algebraic systems" (Krasnoyarsk).
- V.I.Verbitsky, A.N.Gorban' "Solution estimates and stability analysis of a class of non-linear systems" (Krasnoyarsk).
- A.N.Rogalev "Solving a system of ODE's with initial data in the form of an interval" (Krasnoyarsk).
- V.S.Zyuzin "Solving ODE's by means of interval Taylor series" (Saratov).
- A.V.Zakharov "Constructing an interval algebraic solution in extended interval arithmetic" (Saratov).

Section on "Interval methods in problems of identification, optimization and control"

- N.P.Dyvak "Interval models of errors and their application to applied problems" (Moscow).
- M.V.Milevsky "Algorithms for solving problems of object identification with interval errors in the input and output" (Moscow).
- V.A.Trusov "An approach to parameter identification in a model with interval experimental data" (Moscow).
- A.F.Bochkov, Nguen Viet Zung "An approach to identification of non-linear dynamic objects from interval experimental data" (Moscow).
- Yui Chunsguan "Properties of interval dynamic models in the frequency domain" (Moscow).
- A.F.Bochkov, L.A.Yakovleva "Methods of interval optimization of objects with interval output" (Moscow).
- A.N.Ryukhin "Finite methods in interval linear programming problems" (Moscow).
- A.F.Bochkov, T.V.Evtushenko "Solving constrained quadratic programming problems with interval coefficients" (Moscow).
- A.P.Voshinin, S.Zh.Simov "On some aspects of knowledge representation in the subject domain: optimization in expert systems" (Moscow).
- N.V.Skribitsky, Tyan Yuipin "Control of linear dynamic objects according to an interval model" (Moscow).
- N.V.Skribitsky, Tyan Yuipin "Algorithm for constructing a control domain, guaranteeing the given accuracy of the solution of the translation problem under conditions of interval uncertainty in the parameters" (Moscow).
- V.A.Momelskaya "On the stability of continuous dynamic systems with interval uncertainty" (Moscow).
- M.A.Khaligov "Simulation modeling of technical systems with interval uncertainty" (Moscow).
- Yu.A.Mercuriev, V.A.Popov "Interval identification of linear objects" (Riga).

During the conference 55 lectures were given, and 3 of them were held at the plenary session. The participants stayed at the hotel "Slovakia" on the banks of the Volga. Various social events were arranged. On May 20 an excursion to the Radishchev Museum and a steamship cruise along the Volga took place.

The participants had useful discussions in the sections; some practical problems were solved, while new contacts and business relations were established.

The closing session was held on May 22, at which time conclusions and resolutions were formulated. Among these were the following:

- 1) continue the tradition of periodic meetings of specialists in interval mathematics, statistics, analysis of data and control;
- 2) support the initiative to publish the periodical "Interval Computations";
- 3) consider it necessary to compile and maintain a complete bibliography of works of Soviet authors on interval mathematics and interval statistics;
- 4) consider it advisable to invite foreign specialists to future conferences on given topics.

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