

Bulgarian activities of IFAC:

- Bulgaria is founding member of IFAC since 1960;
- Five IFAC Symposia and Workshops were organized in Bulgaria;
- Bulgarian scientists presented papers on all IFAC congresses;
- Bulgarian scientists took part in several Technical Committees of IFAC;
- Many Bulgarian experts were selected to review IFAC event papers and journals.

The *first* IFAC Symposium in Bulgaria was “**Optimization methods – applied aspects**”. It was organized in collaboration with the International Federation on Operational Research (IFORS) and was held in [Varna, October 8-11th, 1974](#). The International Program Committee included 15 distinguished world experts in the area and accepted 53 papers in three main directions:

- Applied Mathematical Programming – 18 papers;
- Large Scale Systems – 17 papers;
- Synthesis of Optimal Feedback Systems – 18 papers.

Participants from 15 countries attended the Symposium. Sixteen (30%) of the presented papers were from Bulgarian authors.

Four survey papers have been presented: “Linear Differential Games”, “Computational Methods for Optimization”, “Synthesis of Optimal Feedback Systems” and “Large Scale and Hierarchical Systems”.

Three panel discussions have been organized: “Applied Optimization - Today and Tomorrow”, “Theory and Practice of Large Scale Systems” and “Contemporary Problems of Applied Optimal Control”.

Prof. D. Q. Mayn, Prof. J. Medanic and Prof. M. Thoma strongly supported the NOC in all stages of the symposium preparation.

The *second* IFAC/IFORS Symposium on “**Optimization Methods – Applied aspects**” was held in [Varna, October 15-19, 1979](#). About 150 abstracts were received and IPC accepted 45, dividing them into six categories:

- Optimal Control Systems – 12 papers;
- Optimal Time/Energy Control – 6 papers;
- Computational Aspects of Optimization – 5 papers;
- Decentralized LQG Problems – 6 papers;
- Multilevel Control – 5 papers;
- Large-Scale System Optimization Problems – 11 papers.

Specialists from 12 countries participated in the Symposium. Some 18 of all accepted papers (40%) were presented by Bulgarian authors.

The NOC (Chaired by Prof. N. Naplatanov) expressed its gratitude to Prof. J. C. Balchen, Prof. N. Eldin, Prof. H. Muller-Merbach, Prof. Y. Sawaragy, Prof. M. Thoma, Prof. P. Titty and Prof. Y. Z. Tsytkin for their contribution in the selection of papers, and for the scientific encouragement of participants.

The *third* Bulgarian IFAC Symposium on “**Distributed Intelligence Systems – Methods and Applications**” was organized together with the International Association for Mathematics and Computer Simulation (IMACS)



and was held in [Varna, June 27 – July 1, 1988](#). The IPC was chaired by Prof. H. N. Eldin and consisted of 36 experts from 16 countries.

Three invited papers were presented: “Distributed Intelligence Systems in Bulgaria – State of the Art and Outlook” (S. Markov), “Human Organization as Distributed Intelligence System” (A. Levis), “Network Architecture INTEGRAL” (E. Yacubaitis). Thirteen invited papers devoted to the most actual topics of the Symposium field have been presented.

Sixty regular papers have been reported in 15 technical sessions, divided in three directions:

- Methods for Synthesis of Control Systems with Distributed Intelligence, in 3 sessions: Decentralized Control and Stabilization, Decentralized Robust Control and Pole Placement, and Optimization Methods and Fuzzy Techniques for Distributed Control.

- Computer Structures for Systems with Distributed Intelligence, in 6 sessions: Distributed Knowledge-Based Systems, Software Design of Distributed Computer Systems, Control of Networks and Distributed Computer Systems, Testing and Fault-Tolerance in Distributed Intelligence Systems, Man-Machine Systems with Distributed Intelligence, Data Bases for Distributed Intelligence Systems.

- Applications of Systems with Distributed Intelligence, in 6 sessions: Distributed Intelligent Systems in Industry, Distributed Intelligent Systems in the Steel and Cement Industry, Distributed Control in the Energy and Transport Systems, Distributed Intelligent Systems for Technological Processes, Distributed Intelligent Robot Control, Distributed Intelligent Systems for Management and Office Automation.

Authors from 20 countries attended the Symposium. Some 20 papers (26%) have been reported from Bulgarian authors. A panel discussion with a huge number of participants was organized.

The *fourth* IFAC event in Bulgaria was the Workshop on “**Automatic Systems for Building the Infrastructure in Developing Countries – Regional and Global Aspects**”. It took place in **Bansko, 3-5th October, 2004**. This Workshop was the fourth of the IFAC Workshop series, dedicated to *Knowledge and Technology Transfer to Developing Countries* (DECOM-TT). In the IPC, 70 leading world scientists and experts from 33 countries were invited. The proceedings of DECOM-TT brought together 59 papers of authors from 18 countries. Some 21 of the papers (36%) were presented by Bulgarian authors. This Workshop emphasized regional and global aspects of the implementation of automatic control and systems theory to build the infrastructure in developing and in commonly weak small countries.

The main topics of DECOM-TT'04 were discussed in six invited papers: “Education for Automation in Developing Countries” (P. Kopacek), “Remote Learning of Mechatronics” (F. Burns and H. Erbe), “Optimizing Supervision and Control for Industrial Furnaces: Predictive Control Based Design” (G. Dimirovski, T. Dinibutune et al.), “Overview of Road Traffic Control Strategies” (M. Papageorgiou), “Using Transport Telematics to Help Developing Countries Achieve a More Sustainable Transport Infrastructure” (V. Manro and G. Franco), “Macro-System Models of Flows in Communication – Competing Networks (Grid Technology)” (Y. Popkov).

Twelve technical sessions were organized on the following topics: “Control and Management in Transportation Systems”, “Modeling, Simulation and Identification”, “Decision Making and Optimization” (2), “Information and Communication Technologies” (2), “Advanced Control”, “Intelligent Systems”, “Control and Management of Power and Water Systems”, “Production, Automation and Robotics”, “Bio- and Medical System Control” and “Environmental Aspects of Production Systems”.

The *fifth* IFAC event in Bulgaria will be the Workshop on “**Energy Saving Control in Plants and Buildings**” (ECS'06). It will be held in **October, 2-5th 2006 in Bansko**. ECS'06 aims to promote the reduction of energy consumption and improvement of energy efficiency through implementation of advanced control theory, applied control methods and control system design. The workshop shall treat energy efficiency as a tool to enhance competitiveness of economy, environmental protection, and the comfort for the population.

The IPC, chaired by Prof. H. Erbe (DE), shall include 42 distinguished experts from academia and industry from 18 countries. Four invited papers will be presented: “Energy Efficiency Control in Plant and Buildings” (H. Erbe), “Control Performance Assessment for Building Automation Systems” (T. Salsbury), “Evolving Fuzzy Rule-Based Systems for Modeling of Non-Linear Non-Stationary Processes” (P. Angelov), “Multi-Agent Intelligent Control of Centralized HVAC Systems” (M. Hadjiski, V. Sgurev, V. Boishina).

From the 50 regular draft papers received, IPC accepted 40 for oral presentation. The Workshop program will be organized in 10 technical sessions (including industrial presentations). The session topics shall include: Advanced Control (2), Intelligent Control, District Heating, HVAC Control, Decision Making and Fault Detection, Energy Saving by Control (2), New Technologies for Energy Saving, Modeling and Simulation.

Some 14 papers (30%) from Bulgarian authors will be presented. Panel discussion on the Workshop main topics shall be held.

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IFAC 50th Anniversary Celebration



BULGARIAN NATIONAL COMMITTEE OF IFAC

