



# IFAC

# INFORMATION BULLETIN

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International Federation  
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## 5th World Congress of IFAC

The 5th Congress of the International Federation of Automatic Control (IFAC), Paris, June 12-17, 1972, will be organized in close cooperation with the Association Française de Cybernétique Economique et Technique (AFCET) which is the French National Member Organization not only of IFAC but also of IMEKO (International Measurement Confederation), IFIP (International Federation for Information Processing) and IFORS (International Federation of Operational Research Societies). These international associations as well as AICA (Association Internationale pour le Calcul Analogique) have been invited by IFAC to cooperate in the preparation of the Congress.

It is planned that the following topics will be treated at the technical sessions of the Congress:

### 1. Control Theory

New theoretical methods likely to lead, in a reasonable future, to useful practical achievements in large-scale industrial systems, ecological and environmental systems (water and air pollution control), biomedical systems (including bio-engineering of artificial organs), control of natural resources, urban development and traffic control, automatic control in space, economic and management systems, models of societal, psychological and education problems.

### 2. Systems

2.1. Systems engineering needs and tools for developing countries

2.2. Methodology of systems engineering

2.3. Can the systems approach aid in the solution of problems of man and his environment (housing systems, urban problems, transportation control, water and air pollution control, destruction of the physical environment resulting from the exploitation of natural resources etc.)?

### 3. Control components

3.1. Engineering analogues of the biological receptors and analyzers (preprocessors): General trends in research. Analogues of sense organs (sight, hearing, smell, taste, touch). Reduction and conversion of data.

3.2. Processing of data from measurement

3.3. Information acquisition in computerized control systems

3.4. New means for signal processing in control systems: Data converters. New memory devices (analog and digital) and logic circuits. Sensor-computer and computer-actuator interfaces.

3.5. New ideas for the design of actuators and output devices: Special rotary and linear motors (electric, pneumatic, hydraulic) and their control circuits.

### 4. Control Applications

4.1. Computer languages for control applications: problem-oriented languages, general languages.

4.2. Minicomputer applications to dedicated control tasks.

4.3. Application of remote time-shared computers to control,

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*Thank you for your cooperation.*

*The IFAC Secretary*

4.4. Management control of large-scale systems (combining information processing, process control and/or business management),

4.5. Operator, engineer and management interfaces in process computer controlled systems

4.6. Automation of instrument manufacturing,

4.7. Testing automation,

4.8. Automatic inspection in materials handling,

4.9. Case histories of:

- Applications of modern control theory to specific systems

- Applications of fluidics technology to specific uses in aerospace, biology, ecology, electric power, industry, transportation, automation in mining and mineral processing

### 5. Control Education

5.1. Automatic Control education on the higher level (with special reference to postgraduate education),

5.2. Continuing education in Automatic Control,

5.3. Automatic Control education and training in developing countries.

### 6. Control Terminology

International and national developments in Automatic Control terminology.

A detailed brochure "First Information and Call for Papers" is sent by AFCET in large quantities to the National Member Organizations of IFAC for further distribution. Potential authors will receive a copy from them either automatically or upon request, whereas potential authors from a country without an IFAC member organization should apply to AFCET. Offers of a paper should include an abstract and additional information as outlined in the brochure and should be submitted for international selection by April 15, 1971, after having passed a pre-selection by the National Member Organizations of IFAC who will propose an earlier date at which they wish to receive the abstracts. Authors from countries not represented in IFAC are asked to submit their abstracts directly to AFCET by March 1, 1971.

The submission of the full papers is stipulated for summer 1971.

Details about the languages to be used are given in the brochure. In the authors own interest, preference should be given to English.

Please note the address of AFCET who will deal with all enquiries concerning the Congress:

AFCET

Centre Universitaire Dauphine,  
Place du Maréchal de Lattre de Tassigny  
Paris 16e/France

### High Priority for Automatic Control Proposed to UNESCO Activities

UNESCO activities in the field of engineering sciences and research have been discussed in a four days meeting at UNESCO Headquarters in Paris among representatives of non-governmental organizations and international experts. On invitation of UNESCO, the president of IFAC, Prof. Dr. Ing. Broida attended the meeting acting as rapporteur.

The meeting recommended that UNESCO should increase its research and promotional activities in applied and engineering sciences.

The following programmes and areas of study are recommended to be given priority:

1. A Major Programme on heat and mass transfer and rheology
2. Cooperation Programmes in the information, system and automatic control sciences, with particular reference to the following areas of study:
  - measurement and instrumentation
  - pattern recognition (including sensing of taste and smell)
  - artificial intelligence
  - automatic control theory (including problems of stability)
  - systems analysis
  - power and process control
  - automation of machining assembly and inspection
  - communications, transport, and traffic control
  - modeling and simulation (including studies of ecology, urban systems, transportation)
  - operations research

Besides these topics of highest priority, 17 other study areas in material sciences, energy sciences and system sciences are recommended for Routine Programmes.

The support of UNESCO is sought amongst others for research centers, for advanced education facilities, for liaison groups of non-governmental organizations, for dissemination of information and for further identification of specific problems to be solved.

### Multivariable Technical Control Systems

This is the slightly amended title of the second IFAC Symposium on that subject, to be held in Düsseldorf (Fed. Rep. Germany), October 11 - 13, 1971 (see Bull. No. 58 and No. 60). The word "Technical" has been added to the title in order to make it obvious right in the title, and not only in the list of topics, that there is a clear distinction between the subject matter of this symposium and the IFAC Symposium on "Management Control and related Multi-level System Control" which will take place at Baku/USSR at almost the same time, namely from September 28 to October 1, 1971. Details about that symposium are included in Bulletin No. 60.

### Digital Computer Applications to Process Control

After the first information on this 3rd International IFAC/IFIP Conference on the subject, to be held at the Technical University Otaniemi near Helsinki/Finland, June 2 - 5, 1971, this second information shall give some ideas about the scientific programme. Far over a hundred offers of papers and abstracts from authors of 18 countries were received and processed by the International Selection Committee. More than 70 have been accepted, out of which, for instance, 15 from U.K., and 10 each from U.S.A. and U.S.S.R.

A glance on the provisional programme shows that the session on Pulp and Paper Processes includes, for example, a paper "A Kinetic and Dynamic Mathematical Model of the KAMYR Digester and its Use in Automatic Control Systems Development" and another "Computer Control of a Yankee Paper Machine". Some significant papers of the three planned sessions on Metallurgical Processes will certainly be:

"On-line Identification for the Computer Control of a Cold Rolling Mill",

"Optimal Methods of Automatic Hot Rolling of Plates on a Reversing Stand",

"Computer Software Techniques and Practices for Metal Industry Systems" and

"Influence of the Process Computer on the Basic Instrumentation and on the Communication between Operator and Process".

Chemical and Petroleum Processes, to which three sessions will be devoted, include such papers as

"A Real Time File System and Job Initiation Routines for Process Computers" and

"Hierarchic Automated Control Systems for Chemical Works".

Some Papers that will come under the two sessions on Mineral and Cement Processing are:

"Application of Computer Control in Mineral Beneficiation at Lake Dufault",

"Effect of Computers on the Design Control and Management of Cement Processes", and

"Application of State Variable Technique to the Control of a Cement Plant".

Selected subjects for the two sessions on Systems Structuring, Software, Hardware are:

"The Structure and Comparison of Three Real-time Operating Systems for Process Control",

"Software Organization for Minicomputer Systems",

"Control of Sewage Purification with a Computer" and

"New Digital Computer Interface for Process Control";

and for the sessions on Power Plants and Systems:

"The Site Commissioning of the On-line Control Programs for 2000 MW Thermal Generating Stations",

"The Optimal Control of a Pilot Steam Generator" and

"Programmed and Wired Automatic Systems to Control and Operate Hydroelectric Projects".

For further information contact:

3rd IFAC/IFIP Conference  
Box 10192  
Helsinki 10/Finland.

## Higher Education in Automatic Control

The IFAC Education Committee is planning a Workshop on "Higher Education in Automatic Control" to be held in Dresden, German Democratic Republic, on March 15 - 17, 1970. This Workshop is open by invitation only and will consist of a series of panel discussions with extensive audience participation. This is a rather unusual format for IFAC activities, but is felt necessary in this case because of the rather specialized nature of the subject matter.

The following topics will be discussed at the Symposium. They are all of course related to automatic control:

1. Post Graduate Education
2. The Teaching of Modeling Principles in Automatic Control
3. Computers in Automatic Control Education
4. Control Theory and Mathematics
5. Control Applications and Laboratory Courses
6. Systems Science and Operations Research in Automatic Control Education
7. Education in Automatic Control Components and Measurement Techniques
8. Control Education in Developing Countries

The Chairman of the Organizing Committee is Professor H. Kindler (GDR) and the Chairman of the Program Committee is Professor L. A. Hyldgaard-Jensen (Denmark).

Additional information may be obtained from the following persons:

Dipl.-Ing. oec. G. Klotz, Secretary of the Organizing Committee of the IFAC Workshop on Education, DGMA, Kammer der Technik, 108 Berlin, GDR, Clara Zetkinstrasse 115/117.

Prof. H. Kwakernaak, Secretary of the Program Committee of the IFAC Workshop on Education, Twente University of Technology, P.O. Box 217, Enschede, The Netherlands.

Prof. S.J. Kahne, Member of the Program Committee of the IFAC Workshop on Education, Dept. of Electrical Engineering, University of Minnesota, Minneapolis, Minnesota 55455, USA.

## The Second International Fluid Power Symposium

Final details of the Second International Fluid Power Symposium, to be held at the University of Surrey, Guildford, Surrey, England from 4th - 7th January, 1971, have been announced by the organizers, The British Hydromechanics Research Association (B.H.R.A.).

Some 40 papers from authors in 7 countries will be presented in 10 - 12 technical sessions. These deal with control systems/servo systems, fluids, transmission systems, valves, pumps and motors, filtration/contamination, testing and instrumentation, and general aspects.

The inclusive charge for delegates attending the three-day Symposium is £36 10.0, which will include registration fees, preprints of papers and full accommodation.

Intending delegates are advised to write immediately for registration forms and further details to:

H. Stephens,  
2 IFPS,  
British Hydromechanics Research Association,  
Cranfield, Bedford, England.

## Automatic Control and Computers in the Medical Field

The Institut Belge de Régulation et d'Automatisme (IBRA), Belgian member organization of IFAC, in collaboration with the Société Belge pour l'Application des Méthodes Scientifiques de Gestion (SOGESCI), will be organizing a symposium on Automatic Control and Computers in the Medical Field to be held under the sponsorship of the IFAC Applications Committee in Brussels, Belgium, from September 27 to October 1, 1971. The cosponsorship of the IFIP TC-4 (Technical Committee 4 of the International Federation for Information Processing) is being sought.

Papers are invited in the following fields:

- I. Multiple branched approach of applied automation and data processing techniques
- II. The medical record
- III. Optimization of the doctor's work (increasing the doctor's productivity)
- IV. Intervention of the computer in the management of health expenses
- V. Teaching of automation, data processing and connected branches in medicine.

Admissible languages: English, French, German, Dutch. Simultaneous translation will be provided.

Potential authors should submit the title of their proposed paper and an abstract (two type-written pages, single-spaced) to IBRA (address see below) by December 15, 1970, in the language as chosen by the author for the presentation of his paper. An English translation should be added. Only original papers will be acceptable.

Full manuscripts must reach IBRA by March 15, 1971. All correspondence should be addressed to

Institut Belge de Régulation  
et d'Automatisme (IBRA)  
3 Rue Ravenstein  
Brussels/Belgium.

## The Theory of Machines and Computations

An international symposium on that subject will be held at the Technion (Israel Institute of Technology), Haifa, August 16 - 19, 1971 under the sponsorship of the Technion departments of Computer Science and Electrical Engineering and in cooperation with the IEEE Technical Committee on Switching and Automata Theory and the ACM Special Interest Committee for Automata and Computability Theory. Papers (in English) describing original research in the general areas of switching theory, automata theory, formal languages, computability theory are being sought.

Potential authors should request further information from

The Organizing Committee  
The International Symposium on the  
Theory of Machines and Computation  
P.O. Box 16271  
Tel Aviv, Israel.

## Automation in Land Transport

An international conference in connection with the 11th International Automation and Instrumentation Conference and Exhibition, Milan/Italy, November 20 - 26, 1970 (details see in Bulletin No. 56), is devoted to "Automation in Land Transport" on November 25 and

26, 1970. 24 papers by authors from seven countries putting emphasis on automation in railway transport including underground systems, are listed in the programme which is obtainable from

F.A.S.T.  
Piazzale Rodolfo Morandi, 2  
I-20121 Milano/Italy.

## Automatica

The Journal "Automatica" launched as an IFAC Journal almost two years ago, has proved to be a valuable source of information making the most significant papers from IFAC Congresses, Symposia and Conferences become more accessible to individual control engineers. Thus, the activities of IFAC and developments in all aspects of the control field are illustrated by the variety of subjects included in the Journal. Some of the papers appearing in the last two issues of 1970 (appearing in Sept. and Nov. 1970) are given below.

The Journal is published bi-monthly. If you wish to subscribe, write to either

Pergamon Press Ltd.  
Headington Hill Hall,  
Oxford OX3 OBW, England  
or

Pergamon Press Inc.  
Maxwell House Fairview Park,  
Elmsford, New York 10523, USA  
or

Pergamon Press (Australia) Pty. Ltd.,  
Pergamon House 19a Boundary Street,  
Rushcutters Bay, Sydney NSW 2011, Australia.

Papers to be published in AUTOMATICA,  
Volume 6, Number 5, September 1970

Control of Distributed Systems with Application to the Deformable Primary Mirror of an Orbiting Telescope

The Minimum Time Thrust Vector Control Law in the Apollo Lunar Module Autopilot

A Spin and Attitude Control System for the ISIS-I and ISIS-B Satellites

A Gyroless Sounding Control System with Sub-arc Second Pointing Stability

Optimal Control of Fluid Catalytic Cracking Processes

Measurement Optimization in Optimal Process Control

On the Controllability of Nonlinear Systems

Stability of Systems with Power-Law Non-Linearities

Stochastic Optimal Control for Nonlinear Dynamical Systems Under Noisy Observations

The IFAC Symposium Automatic Control In Space:  
Toulouse, March 1970

Papers to be published in AUTOMATICA,  
Volume 6, Number 6, November 1970

The Importance of Optimal Control for the Practical Engineer  
Mariner Mars 1969 Navigation, Guidance and Control

Dynamical Optimization of Steel-Making Processes in Electric Arc Furnaces

Optimal Quasi-Stationary Periodic Processes

An Algorithm for the Determination of the Optimal Frequency of Periodic Processes

Adaptive Algorithm for Identification Problem

Limit Cycle Oscillations in a Satellite Attitude Control System

Optimal Piecewise Constant of Continuous Time Systems with Time-Varying Delay

Nonlinear, Non-Autonomous Systems of First Order

A Summary of the IFAC Congress Round Table Discussion "The Future of IFAC"

## Amendments to the List of IFAC Publications

Readers are invited to modify and to supplement the list issued in Bulletin No. 55.

The address of the INSTRUMENT SOCIETY OF AMERICA (ISA), the publisher of a number of IFAC symposium proceedings, has changed and reads now:

Instrument Society of America (ISA)  
400 Stanwix Street  
Pittsburgh, Pa. 15222/USA

Purchasers in Europe or Japan are requested to order from ISA's overseas distributors:

Europe:	Japan:
Pertel Ltd.	Taisay Koheki Company
30 Cursitor Street,	Ltd.
Chancery Lane,	Higashinakano 1-46-19
London E.C. 4/U.K.	Nakano-ku, Tokyo/Japan

The above overseas distributors will accept orders in local currency and will fill orders from their inventory, thus, assuring quick delivery.

IFAC/IFIP Symposium, Toronto, June 1968 on DIGITAL CONTROL OF LARGE INDUSTRIAL SYSTEMS

There will be no hard-bound proceedings from ISA as originally planned. Continued sale of preprints at US \$ 20 from

E.M. Gruetzner, Ass. Director  
University of Toronto,  
Div. of University Extension,  
84 Queen's Park  
Toronto 181/Canada.

IFAC Symposium, Yerevan, September 1968 on TECHNICAL AND BIOLOGICAL PROBLEMS OF CONTROL

English-language version (Russian papers translated into English) at US \$ 48 available from

Instrument Society of America (ISA)  
400 Stanwix Street  
Pittsburgh, Pa. 15222/USA.

## New Publications

IFIP/IFAC PROLAMAT Conference, Rome, Sept. 1969 Proceedings "NUMERICAL CONTROL PROGRAMMING LANGUAGES"; edited by W.H.P. Leslie, 1970; approx. 400 pages, Contents: Applications; Some input languages; Implementation of processors; Cutting technology; General; Background information. Available at Hfl. 75,- (US \$ 21,-) from:

North Holland Publishing Company  
P.O. Box 3489  
Amsterdam/The Netherlands.

IFAC/IFIP Symposium, Versailles, June 1970 on "TRAFFIC CONTROL"

A full set of preprints (9 volumes of technical papers) may be obtained at 90 French francs plus postage and individual volumes at 10 French francs plus postage from

AFCET  
Centre Universitaire Dauphine,  
Place du Maréchal de Lattre de Tassigny,  
Paris 16e/France