



1981
No. 1
January

Newsletter

HAPPY NEW YEAR! HAPPY CONGRESS YEAR!

1981 - IFAC World Congress in Kyoto

Contents:

1981 - Congress Year

*

Symposia Reports

*

Forthcoming Events

*

Next Issue of Automatica

*

United Nations International
Year of Disabled Persons (1981)

*

Publications

*

Who is Who in IFAC

* *

Insert: IFAC Events 1981-1983

When many hundreds of millions of people raised their glasses at that zero-hour of 1981, saying "Happy New Year" to their friends, neighbours and relations, each in their own tongue, there were a couple of thousands amongst them who thought of this year as the year of the IFAC-Congress in Kyoto, which they are planning to attend.

Technical Programs

The International Programme Committee, which is to convene for its final meeting on January 30 in Laxenburg will have selected by then the papers to be presented at the Congress. In view of the high quality of these papers every effort is being made to accommodate as many as possible. Each paper is to pass a reviewing procedure before it is accepted or rejected.

The Organizing Committee is now planning about 100 sessions, including sessions of special interest, plenary sessions, tutorial sessions, and several round table discussions to take place between the opening ceremony on August 24 and the closing session on August 28, 1981.

One of the most salient features of this congress is the presentation of case studies. The topics under consideration are as follows

1. Automobile Production System
2. Iron & Steel Production System
3. Electric & Electronic Appliance Production System
4. Environmental System Modeling and Assessment
5. Computer Aided Operation of Chemical Processes
6. Chemical Process Control for Energy Saving
7. Transportation System

8. Flexible Automation
9. Power System
10. Space Technology

Technical Visits

The Organizing Committee is planning to hold Technical Visits to see the most recent status of computer control and instrumentation in several leading industries in Japan relating to

- Steel Making
- Automobile Manufacturing
- Pattern Image Processing, etc.

Social Programs

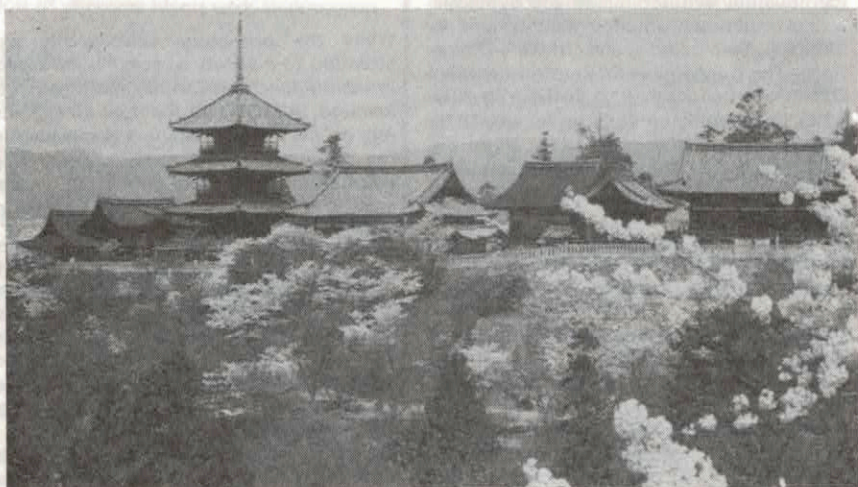
The Organizing Committee is further planning to arrange for cultural activities, such as short tours in Kyoto which include sightseeing (Shrines, Temples, Gardens) and a Kimono (Japanese clothes) Festival as well as opportunities of experiencing such traditional Japanese arts as the Tea Ceremony and Flower Arrangement.

Excursions to the scenic, historical sites and other places of interest in the vicinity of Kyoto such as Nara (the first capital of Japan) are also being planned.

Whichever way you look at it, the Kyoto Congress will be a worthwhile event scientifically, socially and personally. It will provide ample chance of enhancing one's knowledge and stimulating new ideas, in accordance with the main title of the Congress:

"Control Science and Technology for the Progress of Society"

PLAN NOW TO ATTEND



SYMPOSIA REPORTS

6TH IFAC/IFIP CONFERENCE ON DIGITAL COMPUTER APPLICATIONS TO PROCESS CONTROL

The 6th Conference in this series took place in Düsseldorf, Federal Republic of Germany, October 14 - 17, 1980 and was organized by VDI/VDE-Gesellschaft für Mess- und Regelungstechnik. There were 346 participants, with 154 from F.R.Germany and 192 from 25 other countries. The program of this Conference consisted of 5 survey papers, 7 case study papers, 3 tutorial papers, 55 contributed papers and 4 discussion sessions. In order to concentrate the program to the length of two full and two half days it was necessary to organize 3 to 4 parallel sessions. One afternoon was left for technical visits of six companies and research institutes. The main topics and results of the Conference can be summarized as follows:

HARDWARE

There is an increasing functional density in one chip. The hardware develops faster than the computer structure. Very high-speed microcomputers open up new possibilities. Very high-level languages and many different structures may be some directions.

DISTRIBUTED MICROCOMPUTER SYSTEMS

Several microcomputer systems are on the market. A discussion session showed alternative approaches. They differ, among others, by their structure, software aids, redundancy, maintainability and economy. There is a future need to couple distributed systems and their units of different producers.

SOFTWARE

A high interest could be found in software reliability, software productivity and software maintenance. Various papers have shown that high level languages as e.g. PASCAL for sequential control or PEARL for process automation are in use today. However, various users still stick to FORTRAN

or other common languages. Software maintenance and reliability have become more important now, after knowing how much time and effort is spent if these requirements are not satisfied appropriately. Therefore, the program development and its validation should be performed together taking into account systematic tests, special monitoring techniques and a clear straight-forward structure and transparency of the programs. There is a need of teaching systematic software production and documentation.

METHODS OF DIGITAL COMPUTER CONTROL

Design of Computer-Based Automation Systems

Several theories have been developed how to design automation systems now available. They mostly start with a classification of the engineer's work. Various approaches of design models can be used. The main goal is to use the computer itself for the design of the automation system in order to reduce costs, the long development time, the non-responsiveness to user requirements, reliability and maintainability, incompleteness and inconsistency of documentation etc.

Control Algorithms

Several papers showed that various control algorithms are in use. There is still an interest in the comparison of various control algorithms. Partially the computer aided design of control algorithms is applied. A major interest could be observed in adaptive (self-tuning) control algorithms. Ten papers have shown that these adaptive control algorithms may well be used if some conditions are satisfied. Some engineering work has still to be done before implementing and applying these adaptive algorithms. The applications of adaptive control algorithms have mostly been shown for pilot processes. Therefore, a longer time experience with industrial processes is required.

On-Line Optimization

The method of on-line optimization depends on the kind of profit function. If there are constrained profit functions, setpoint changes towards better profits can be made if the variances of the manipulated variable and the controlled variable are improved. If there are unconstrained profit functions, hill climbing techniques may be used. Several examples have been shown where profit improvements by one to three percent may result in a great amount of money saving for larger process units and that a pay-off time of two to four years of additional investments may be worth-while to implement optimization methods.

MAN-MACHINE-PROBLEMS

There is now some experience how to design the operator's environment and how to organize the information flow. The operator's role changes to monitoring tasks. An optimization of decision aids for the operator has still to be achieved.

APPLICATIONS

Former conferences have shown that good progress in process computer applications has been made for power systems, metallurgical processes and petroleum industries. This conference showed that there is also a high progress in other industrial fields, like chemical industries, cement production, climate systems, gas network, and manufacturing technology (robots).

After about 20 years' experience with digital computer applications to process control this conference has shown again that there is a major development going on. Many participants made use of the possibility to visit the INTERKAMA, which also showed that the field of process computer applications is very basic to the development in technology. The conference has also shown that it is worthwhile to have meetings where the general aspects and methods of digital computer application are discussed and experiences are exchanged.

Prof. Dr. Rolf Isermann

IFIP/IFAC Symposium ASSOPO'80 - AUTOMATION FOR SAFETY IN SHIPPING AND OFFSHORE PETROLEUM OPERATIONS - Trondheim, Norway, June 1980.

ASSOPO'80 has been the first International Conference of this kind and can be seen as a continuation of Conferences and Symposia in the series of Computer Applications in Shipping, Ship-building and Offshore Operations. The Conferences on Ship Automation Operations had been held in Oslo in July 1973, in Washington D.C. in August 1976 and in Tokyo, November 1979; those on Automation of Shipyard Operations and Ship Design in Tokyo, August 1973, in Gothenburg, June 1976 and in Glasgow, June 1979. The Symposium on the Automation in Offshore Oil Field Operations was held in Bergen, Norway, in June 1976.

This Symposium was organized by the Norwegian Society for Automatic Control and was sponsored by the TC5 (Computer Applications in Technology) of IFIP and cosponsored by the Applications Committee of IFAC. 12 nations were represented among the 280 participants. 70 papers, in-

cluding 4 survey papers, were presented in 3 parallel sessions.

While the previously held events paid attention to a variety of automation aspects in marine functions and the instrumentation involved, ASSOPO'80 focussed almost entirely on the use of computers in safeguarding the operations and instrumentation on ships and offshore installations. The papers address a large variety of such automation applications for safety.

The most important categories were those on Monitoring and Alarm Systems in which 15 papers were presented, Control Systems with 11 papers, the Human-Machine Systems category containing 10 papers, Simulation for Training featuring 5 papers and Instrumentation Systems containing 6 papers. In addition to those key categories a variety of other safety aspects were

treated such as the contribution on human reliability, risk management and analysis, risk and reliability, navigation and traffic surveillance, risk assessment and simulation, maintenance systems and communication systems.

A number of major catastrophies that threatened and endangered the human being and its environment clearly justified the organization of ASSOPO'80 and the contents of the papers presented demonstrated how computer technology may assist in avoiding such accidents. The technical presentations at ASSOPO'80 further contained material which may also be applicable in other branches of industry and as such it is hoped that the proceedings (North-Holland Publishing Co.) will reach a much larger audience than originally intended.

Dr. Ing. Arthur B. Aune

SYMPOSIA REPORTS (ctd:)

SPACECRAFT SYSTEM RECONFIGURATION IN ORBIT – IFAC Workshop held at The Charles Stark Draper Laboratory, Cambridge, Massachusetts, USA, September 9 – 11, 1980

This Workshop, sponsored by the Technical Committee on Space with the approval of the American Automatic Control Council, was convened for the purpose of exchanging techniques and ideas on space mission recovery in flight. Over 60 participants from 10 countries discussed freely their experiences in system reconfiguration – post-launch data analysis leading to ad hoc system redesign and ground-commanded modification of spacecraft software or hardware systems. The Workshop is believed to be the first meeting held specifically to address maximizing space mission data return in the face of difficulties.

The first day featured spacecraft system reconfiguration techniques. The keynote address on operational flexibility of pro-

grammable satellites was followed by sessions on reconfiguration under ground control, reconfiguration utilizing on-board computers and spacecraft repair in orbit, with examples from the HEOS-2, TD-1, ARIEL VI, X4, OAO and Skylab programs. The second day was devoted to case studies on spacecraft system reconfiguration. Among those considered were Apollo 13, Viking Lander and Voyager in cislunar and deep space; OTS-2, Hermes and INTELSAT at earth-synchronous altitude; ANS, IRAS, GEOS-1, SEASAT-1 and DMSP Block 5D in the near earth domain. Activities the third day focussed on design for reconfiguration flexibility, in sessions on spacecraft systems, computers and command-control systems. Presentations covered reconfiguration

aspects of the Galileo, SPOT and Space Shuttle computers and systems.

Over thirty presentations were included in the program. Quite a number of lively discussions followed the presentations as participants compared experiences. Much of the discussion centered on the degree of automatic reconfiguration to be incorporated in the presence of cost and weight restraints together with reliability limitations.

Judging from the comments of participants, the Workshop was very successful at providing an international forum for those engaged in space system operation and design. A follow-up meeting is planned for 1984.

John W. Hursh

FORTHCOMING EVENTS

It is a rule in IFAC that during a Congress Year, such as 1981, symposia and workshops with IFAC as the main sponsor will take place only in exceptional cases, and only if the NMO organizing the Congress agrees.

1981 will therefore see only two IFAC sponsored and one IFAC cosponsored events. With the consensus of the Japanese NMO Workshops will take place in China (August 15 – 17, in Beijing) on Distributed Computer Control Systems and in Japan (August 31 – September 1 in Kyoto) on Real Time Programming. Both events have been covered in Newsletter No. 6/1980. The 2nd Conference on Technical Diagnostics, with IMEKO main sponsor and IFAC cosponsor is scheduled for November 17 – 19 in London.

For 1982 and 1983 however preparations for Workshops and Symposia are going full speed ahead. A complete list of events scheduled for this period can be found in the insert page of this issue.

IFORS '81, 9th Triennial Conference on Operational Research (Hamburg, FRG, July 20 – 24, 1981)

The Object of the International Federation of Operational Research Societies (IFORS) is the development of Operational Research as a unified science and its advancement in all nations of the world. During this conference there will be Plenary Sessions, Mainstream Sessions, Technical Sessions, National Contributions, Contributed Paper Sessions and Workshop Sessions. The Technical Sessions will be devoted to: Financial Planning, Planning of Urban Transportation, Logistics and Distribution Planning, Multiple Objective Programming, Integer Programming and Combinatorial Optimization, Linear and Non Linear Programming, Production Management, Graphs and Networks, Computational Complexity and Heuristics, Decision Analysis.

Language:
English and French.

Final Programme will be available together with the confirmation of the registration after

April 1981

For more precise information please contact
Prof. Dr. Marc Roubens
Faculté polytechnique
Rue de Houdain, 9
B - 7000 Mons, Belgium

14th European Symposium – – CHEM CONTROL 81 Computerized Control and Operation of Chemical Plants (Laxenburg near Vienna, Austria, September 8 – 11, 1981)

Sponsored by the European Federation of Chemical Engineering.

Topics:
Computerized control and operation of chemical plants

Subsidiary Themes:
Process control, plant operation, operating and investment costs evaluation, interaction of chemical plants with environment.

Language:
English, no simultaneous translation provided.

Papers:
During the symposium 4 plenary lectures and proposed papers will be presented. Titles and abstracts (250 words) of proposed papers will be required by 1981 02 01. Full text of accepted papers must be submitted by June 1, 1981. Preprints will be provided for all participants at the conference office.

Address for correspondence:
CHEM CONTROL 81
c/o Verein Österreichischer Chemiker
Eschenbachgasse 9
A-1010 Wien

automatica

The Journal of IFAC the International Federation of Automatic Control

Preview for the Next Issue March 1981

PAPERS

Structural Parameter Estimation In Power Systems

(C. Maffezzoni, V. Marchese)

Optimal Control of Markov Chains Admitting Strong and Weak Interactions

(F. Delebecque, J. Quadrat)

A. Fuzzy Automation Synthesis Method

(D. Benlahcen, M. Lamotte)

Computer Assisted Static and Dynamical Plannings for Production Activities

(L. Pun)

Analysis of Periodically Switch Controlled Lowpass Systems by Continuous Approximation Models

(M. Grötzbach)

On Absolute Stability and the Aizerman Conjecture

(L. Grujic)

Control Aspects of Human Temperature Regulation

(J. Werner)

BRIEF PAPERS

The Discrete Linear Time-Invariant Optimal Control Problem – An Overview

(J. O'Reilly)

A Graph Theoretic Approach to Multi-variable Control System Design

(C. Schizas, F.J. Evans)

New Prediction Algorithms by Covariance Information Based on Innovation Theory

(S. Nakamori, A. Hataji)

TECHNICAL COMMUNIQUE

On a Method for Model Structure Selection in System Identification

(T. Söderström)

Identification and Estimation of Discrete State-Vector Models with Stochastic Inputs

(P. Otter)

A Generalized Certainty – Equivalence Result in Stochastic Control

(W. Runggaldier)



UNITED NATIONS

The United Nations General Assembly has designated 1981 the International Year of Disabled Persons (IYDP). Active preparations are under way in the United Nations itself, its Agencies, its Member States, and in non-governmental organisations (NGOs) throughout the world.

In response to numerous enquiries the United Nations Executive Secretariat for IYDP convened a meeting hosted by the World Health Organization and the League of Red Cross Societies in Geneva on August 13, 1980. This consultation, convened at short notice, explored ways in which action might be accelerated.

The meeting urged NGO's, including those traditionally dealing with the problems of disability as well as those which are generally working outside this field but who can contribute now to mobilize their resources and intensify their IYDP campaigns.

NGOs should form and communicate action programmes as soon as possible within their

INTERNATIONAL YEAR OF DISABLED PERSONS (1981)

own organizations, to stimulate appropriate media support in communications strategies, and to identify and pursue ways to promote meaningful sharing of experience and benefit to disabled persons between and within countries.

The meeting concluded that there is an urgent need to ensure purposeful involvement of persons with disabilities themselves in the active planning and preparation for the Year. Prevention as well as the continuing pursuit of full participation having regard to the dignity of the individual were stressed. Moreover, mention was made of the importance of including mental disability as well as physical disability in the programmes of the Year.

If you would like to receive a copy of the report of the Geneva meeting, please write to:

Alan A. Reich
c/o International Year of Disabled
Persons, UN International Centre,
P.O. Box 500-8
A-1400, Vienna, Austria.

WHO IS WHO IN IFAC



Prof. John Flavell Coales

John Flavell Coales, C.B.E., M.A., Hon. D.Sc., F.Inst.P., F.I.E.E.E., C.Eng., F.I.C.E., F.I.E.E., F.R.S., is an Emeritus Professor of Engineering of Cambridge University. Born in 1907 and educated at Berkhamstead School and Cambridge University, he joined the Admiralty in 1929 to do original work on radio direction-finding, transferring in 1937 to ultra short-wave radar and communications. During the Second World War he was in charge of research and development on naval gunnery radar, for which in 1946 he was awarded the O.B.E.

In 1964 he joined Elliott Bros. (London) Ltd., as a research director and built up the Laboratories at Borehamwood for research into electrical, mechanical and control engineering computers. In 1952 Professor Coales returned to Cambridge University to organise research and post-graduate courses in control engineering. He was made a reader in engineering in 1958 and in April 1965 the University created a chair of engineering (control) for him, which took effect on the 1st October, 1965.

In that year the U.K. Science Research Council awarded Professor Coales' group a grant to set up a powerful combined analogue and digital computing installation to carry out long-term research on adaptive control of complex processes.

His service to IFAC began in 1957 when he became member of the Executive Council. Consequently he served as 1st Vice-President from 1961 till 1963, when he was elected President of IFAC for the period 1963/66. The 3rd World Congress of IFAC, which was prepared and took place in London under his presidency in 1966 was a great success, but by no means was it the end of his IFAC activities. In the 1966/69 period he held the office of Immediate Past President and was member of the Advisory Committee from 1969 till 1972. During the next three year period he was Chairman of EMSCOM, the IFAC Committee on Economic and Management Systems.

In 1975 John Coales entered into a new field of IFAC activities when he became Honorary Editor of IFAC. Since 1978 he has been Chairman of the IFAC Publication Managing Board.



PUBLICATIONS

Now in its second year:

Chemistry International

The news magazine of the International Union of Pure and Applied Chemistry (IUPAC)

Six issues were published in 1980. The annual subscription rate including postage is US \$ 20,- for individuals, and US \$ 35,- for libraries. Microfiche subscriptions are available simultaneously with the printed edition, and microfilm at the end of the subscription year. Subscription orders may be placed directly with IUPAC's official publisher, Pergamon Press Ltd, Headington Hill Hall, Oxford OX3 0BW, UK.

Chemistry International was formerly published under the title "IUPAC Information Bulletin".

Acta IMEKO 1979

Proceedings of the 8th IMEKO Congress held in Moscow, May 21 - 27 1979 under the title "Measurement for Progress in Science and Technology"

The lectures were arranged in sections under the following headings:

1. Theory and major problems of measurements.
2. New methods and means of physical object state, process and environmental measurements.

3. Achievements in the field of design, manufacture and testing of measuring instruments and systems.
4. Measurement and monitoring in automated production testing and research.
5. Metrological assurance of measurements.

You will find 253 papers and the 4 plenary lectures which were presented at the 1979 IMEKO Congress comprised in 3 volumes (2127 pages). They were published by and are available from

Elsevier/Excerpta Medica/Noth Holland
Associated Scientific Publishers
P.O. Box 211
1000 AC Amsterdam, The Netherlands
at the price of Dfl. 450,-.

For socialist countries from
KULTURA Foreign Trade Company for
Books and Journals
1011 Budapest
Fö utca 32, Hungary
at the price of Ft 1.800,-.

Eigentümer, Herausgeber und Verleger:
International Federation of Automatic
Control (IFAC) Genf/A 2361 Laxenburg

Redaktion und für den Inhalt verantwortlich:
Dipl.-Ing. Fred Margulies
Schloßplatz 12, A 2361 Laxenburg

Druck: H. F. Wallaschek, Kirchengasse 32
1070 Wien

1983

Date	Event	Place	Contact
May	1/83 IFAC Symposium *) Control Aspects of Prosthetics and Orthoptics	Ohio USA	Prof. H.R. Weed BioMed. Engr. Center Ohio State University 2015 Neil Avenue Columbus, Ohio 43210, USA
June	2/83 3rd IFAC Symposium Large Scale Systems; Theory and Applications	Warsaw PL	Prof. A. Straszak, Systems Research Institute, ul. Newelska 6, 01-447 Warsaw, Poland
June	3/83 4th IFAC/IFORS Conference *) Dynamic Modeling and Control of National Economies	New York USA	Prof. W. Perkins Coordinated Science Lab University of Illinois, Urbana, Illinois 61801, USA
June	4/83 IFAC Symposium *) Hydraulic Systems in Robots	Bratislava CSSR	
July	5/83 IFAC Symposium *) Fuzzy Information and Decision Processes	Marseille F	Dr. E. Sanchez, Service Universitaire de Biomatiquies, 27 Bd. Jean Moulin, 13385 Marseille Cedex 4, France
November	6/83 4th IFAC Symposium *) Systems Approach for Development		
7/83	IFIP/IFAC 2nd Int. Symposium *) Automation of Offshore Oil Field Operations	UK	Mr. J. Vlietstra N.V. Philips Gloeilampen- fabrieken, Corporate Develop- ment COB Building VO 1-2-4 5600 MD Eindhoven, Netherlands

*) Tentatively listed, not yet finally approved

IFAC EVENTS 1981—1983

1981

Date	Event	Place	Contact
August 15—17	1/81 IFAC Workshop Distributed Computer Control Systems	Beijing (Peking) PRC	Prof. Liu-Shi-hua Chinese Association of Automation Research Institute of Electronic Technic Application P.O. Box 927, Beijing, China
August 24—28	2/81 IFAC WORLD CONGRESS	Kyoto Japan	IFAC 81 Secretariat Kinki Hatsumei Center 14 Kawahara-cho, Yoshida Sakyo-ku, Kyoto 606, Japan
August 31 —Sept. 1	3/81 IFAC/IFIP Workshop Real Time Programming	Kyoto Japan	1981 IFAC/IFIP Workshop on Real Time Programming, Org. Committee c/o Prof. T. Hasegawa, Dept. of Applied Mathematics and Physics, Faculty of Engineering, Kyoto University, Kyoto 606, Japan
November 17—19	4/81 2nd IMEKO/IFAC Conference Technical Diagnostics	London UK	Technical Diagnostics Sympo- sium, The Institute of Measure- ment and Control, 20 Peel Street, London W8 7PD, United Kingdom

1982

Date	Event	Place	Contact
January 5—7	1/82 IFAC Symposium *) Theory and Applications of Digital Control	New Delhi India	Dr. A.K. Sinha, Department of Electrical Engi- neering, Indian Institute of Technology, New Delhi, 110029 India

*) Tentatively listed, not yet finally approved

Date Event Place Contact

April 5-7 2/82 UKAC/IFAC Symposium *)
Control Principles and Techniques
in Patient Management University
of Sussex
UK
Mr. Michael Yates,
The Institute of Measurement
and Control, 20 Peel Street,
London W8 7PD, UK

April 3/82 IFAC Symposium *)
Components and Instruments for
Distributed Control Systems Grenoble
F

April 4/82 IFAC Symposium *)
Appropriate Automation Technology Egypt
May 5/82 3rd IFAC Workshop *)
Distributed Computer Control Tallin
USSR
Acad. B. G. Tamm,
Head of Tallin Technical Uni-
versity, Ehitajate tee 5,
Tallin 200026, USSR

June 6/82 6th IFAC Symposium
Identification and System
Parameter Estimation Washington
USA
Prof. G.A. Bekey,
Department of Electrical
Engineering/Systems,
University of Southern California,
Los Angeles, California 90007,
USA

June 7/82 IFIP/IFAC Int Conference *)
Computer Applications in the
Automation of Shipyard Operation
and Ship Design (ICCAS 82) Annapolis
USA
Mr. J. Vlietstra
N.V. Philips Gloeilampen-
fabrieken, Corporate Develop-
ment COB
Building VO 1-2-4
5600 MD Eindhoven, Netherlands

June 29 8/82 3rd IFAC Symposium
Control of Distributed
Parameter Systems Toulouse
F
Dr. J.P. Barbary,
Laboratoire d'Automatiques et
d'Analyse des Systemes du
CNRS, 7, Avenue du Colonel
Roche, 31400 Toulouse,
France

July 9/82 9th IFAC Symposium *)
Automatic Control in Space NL
Stuttgart
FRG

August 10/82 4th IFAC Symposium *)
Control in Transportation Systems
September 11/82 IFAC Symposium *)
Regulation of Breathing Los Angeles
USA
Prof. D.M. Wilberg
University of California, Dept.
of Systems Science, School of
Engineering and Applied Science
Los Angeles, California 90024,
USA

*) Tentatively listed, not yet finally approved

Date Event Place Contact

September 12/82 IFAC Symposium
Computer Aided Design of
Multivariable Technological
Systems Purdue
University
W. Lafayette
Indiana, USA
Prof. G.G. Leitinger,
Technical Engineering Building,
Purdue University, West
Lafayette, Indiana 47907, USA

September 13/82 IFAC Symposium *)
Analysis, Design and Evaluation
of Man/Machine Systems FRG

October 11-14 14/82 2nd IFAC Symposium *)
Safety of Computer
Control Systems (SAFECOMP) USA
Mr. R.W. Yunker,
PPG Industries Corp.,
One Gateway Center,
Pittsburgh, PA 15222, USA

October 15/82 4th IFAC/IFIP Conference *)
Manufacturing Technology Gatersburg
Maryland,
USA
Dr. James Albus
Automation Technology Mecha-
nical Process Division
National Bureau of Standards
Washington, DC 20234, USA

October 16/82 IFIP/IFAC Int. Symposium *)
Ship Operation Automation Genoa
Italy
Mr. J. Vlietstra
N.V. Philips Gloeilampen-
fabrieken Corporate Develop-
ment COB
Building VO 1-2-4
5600 MD Eindhoven, Netherlands

17/82 5th IFIP/IFAC Conference *)
PROLAMAT Leningrad
USSR

18/82 IFAC Symposium *)
Biomedical Engineering USA

19/82 3rd IFAC/IFIP Conference *)
Software for Computer Control Madrid
E
Prof. G. Ferrate,
Via Augusta 242,
Barcelona, Spain

20/82 IFIP/IFAC Conference *)
Automation of Offshore
Oil Field Operation London
UK

21/82 El-Riad Univ./IFAC *)
2nd Workshop
Appropriate Applications of
Automatic Control in the Oil
Industry and Desalination Saudi-
Arabia

*) Tentatively listed, not yet finally approved