# International Federation of Automatic Control
## Newsletter
## Issue 2-2001

Contents:



# IFAC Technical Committees and their Scopes

In the last issues we have presented the Coordinating Committees on Manufacturing and Instrumentation, on Systems and Signals and on Transportation and Vehicles. In this issue we continue the presentation with the Coordinating Committee on Design Methods

## Coordinating Committee on Design Methods

**Chair: A. Isidori , Italy**


isidori@zach.wustl.edu


| **Technical Committee on Control Design**<br>**Chair:S. Engell, Germany** | **Scope:** |
|---|---|
|  <br>s.engell@ct.uni-dortmund.de | Addresses all aspects of control system design including specification, computation, simulation, implementation, and testing. Development and evaluation of methodologies for design of feedback systems. Includes issues of problem description (model quality and uncertainty description, performance specification, controller complexity, operability), control structure selection, numerical and analytical techniques for computation of controllers, implementation and validation. |

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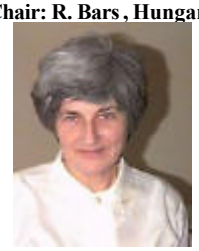
|---|---|
| **Technical Committee on Linear Systems**<br>**Chair: J.M. Dion, France**<br>  <br>dion@lag.ensieg.inpg.fr | **Scope:**<br><br>Fosters analysis, synthesis, and design of control systems described by linear differential or difference equations. Includes study of finite dimensional time-invariant and time-varying linear systems, implicit systems, systems with time delays, and infinite dimensional linear systems. Considers structural properties of linear systems; design methods for decoupling, disturbance rejection, and model following. H-infinity and other linear robust design methods. |
| **Technical Committee on Nonlinear Systems**<br>**Chair: T. Glad, Sweden**<br>  <br>torkel@isy.liu.se | **Scope:**<br><br>Fosters methods for analysis and design of control systems described by nonlinear differential or difference equations. Considers design methods for asymptotic stabilization, regulation and tracking, noninteracting control, feedback linearization, disturbance attenuation. Includes robust control of nonlinear systems in the presence of structured and unstructured perturbations and methods for shaping the response of a nonlinear system. |
| **Technical Committee on Optimal Control**<br>**Chair: R. Bars, Hungary**<br>  <br>bars@aut.bme.hu | **Scope:**<br><br>Promotes classical and modern optimisat ion methods used for solving optimal control problems (calculus of variations, dynamic programming, nonlinear programming, optimal control, differential games, evolutionary algorithms). Includes modelling for control optimisation, large scale optimisation problems and methods, static optimisation problems, nonsmooth and discontinuous problems of control and optimisation. Considers optimisation under uncertainties, singularities in optimisation, algorithms, software and industrial applications of optimal control. |
| **Technical Committee on Robust Control**<br>**Chair: C.V. Hollot, USA**<br>  <br>hollot@ecs.umass.edu | **Scope:**<br><br>Focuses on robust control system analysis and design, robust stability, and the connection between model quality and guaranteed performance bounds for feedback systems. Includes computational issues related to complexity and solvability of robust controllers as well as the interaction and compromise between problem specification and achievable performance. Considers the relationships between modeling, identification, model quality, and eventual feedback control behavior. |

# Management and Control of Production and Logistics - MCPL'2000

## 2nd IFAC/IFIP/IEEE Conference

## Grenoble, France, 5 – 8 July 2000

The 2nd IFAC / IFIP / IEEE Conference on Management and Control of Production and Logistics "MCPL'2000" was held from 5 to 8 July 2000 at the Electrical Engineering School of Grenoble (National Polytechnic Institute of Grenoble - INPG). The Conference was sponsored by the IFAC Technical Committee on Large Scale Systems and co-sponsored by the IFIP, IEEE / SMC and IFAC TCs: Manufacturing, Modelling, Management and Control; Advanced Manufacturing Technology; Components and Instruments; Low Cost Automation; Robotics. It was organised by the Automatic Control Laboratory of Grenoble on behalf of SEE, the French IFAC-NMO and was supported by several organisations, namely CNRS, EC, INRIA, INPG, MEN, R.R-A, ROADEF.

As for the first MCPL'97 Conference organised in Campinas, Brazil, the aim of this meeting was to bring together experts from four different areas - Management, Control, Production and Logistics – to promote synergy among different disciplines in order to solve complex industrial problems. The Grenoble MCPL'2000 Conference had a special significance in that it took place at the turn of the millennium and offered an ideal opportunity to pause and to reflect on the changes that had occurred over the last decades. More than two hundred participants from 36 countries met and reviewed the past, presented new results, exchanged ideas and prospected for future interdisciplinary co-operation.

The technical program reflected the strong interest in the areas of production systems modelling, control and supervision. The 211 selected regular and invited papers were presented in 31 technical sessions, one plenary and one poster session and 16 Special Sessions organised by the research groups or well-known specialists. The Conference was characterised by its interdisciplinary character reflected by the wide range of topics addressed grouped into several sections in the Proceedings:

- *Production System Modeling and Organization* (Design; Graphs and Petri Nets; Performance and Quality Evaluation; Supply Chain; Recycling and Life Cycle Management)

- *Human, Society and Production* (Social Economic Aspects; Manpower Management; Man-Machine Systems)

- *Information and Computer Based System* (Decision Support Systems; Multi-Agent Systems; Simulation Tools)

- *Planning, Scheduling, Supervision and Production Management* (Planning and Scheduling Methods; Flexible Manufacturing Systems; Control and Supervision; Robust, Fault Tolerant and Dependable Systems; Production Lines Design; Layout, Logistics and Supply Chain Management; Cooperative and Coordinated Decision in Distributed Enterprises; Artificial Intelligent Approaches)
- *Automatic Control and Factory Automation* (Modelling, Control, Monitoring and Supervision; Neural Networks and Fuzzy Logic; Mechatronics and Robotics; Real Time Systems and Industrial Communication)

- *Applications*

During the conference period, a meeting with the IPC was held. The evaluation of the current Conference and the forthcoming MCPL meeting were the main subjects of discussion. The IPC approved the proposal to organise the 3rd MCPL'2003 Conference in Chile.

We would like to express our gratitude to all contributors for their efforts as well as to all those who have helped prepare and complete this event, especially to the IPC and NOC members and co-sponsoring organisations. We hope that the MCPL'2000 Conference was useful and rewarding for all participants and has contributed to interdisciplinary research and its industrial applications.

Zdenek Binder, IPC Chair
Bernard Descotes-Genon, NOC Chair

# Linear Time Delay Systems - LTDS2000

## IFAC Workshop

## Ancona , Italy, 11-13 September 2000

The LTDS2000 was the second IFAC Workshop devoted to linear time delay systems. It was sponsored by the IFAC Technical Committee on Linear Systems and by the IFAC Technical Committee on Nonlinear Systems. Other sponsors were the Italian National Association for Automation (ANIPLA) and the Italian Chapter of the IEEE Control System Society.
The aim of the workshop was to bring together specialists in the field of time delay systems to present the state of the art and to discuss new trends and mutual impacts of their research. The 53 papers presented during the three days of the workshop addressed both theoretical and practical problems. The topics covered included modelling and identification, control issues, stability and stabilization problems, numerical methods for DDE's, development of CAD tools.
With a participation of about 70 researchers from 16 countries, the Workshop provided an excellent opportunity for control theorists and mathematicians, both senior and junior researchers, to meet and exchange ideas on the stimulating topics of time delay systems.

Technical trends of interest are those concerning algebraic methods in stabilization problems and in the synthesis of observers, the use of behavioral models for representing and studying time delay systems, the use of H-infinity control techniques, the development of tools and methodologies for dealing with nonlinear time delay systems. Interesting viewpoints were presented about the state of the art of numerical methods. More should be done in this area in order to develop reliable CAD tools for time delay systems. The area of system identification still presents an unclear picture, in my opinion, with techniques which are mainly taylored to specific problems and results which lack generality.

The industrial/academic balance of the event was not completely satisfactory. Only 6 papers, corresponding to 13 % of the total, dealt with specific applied problems. For the next Workshop it is strongly recommended to enlarge the industrial participation, trying to get more people from industry into the IPC and to involve them into the organization of the invited sessions. Pulp and paper companies should be able to provide interesting contributions, as well as companies working in chemical process control.

Guiseppe Conte, IPC Chair

# 9th Latin-American Congress of Automatic Control
# Santiago de Cali, Colombia
### 1 – 4 November, 2000

The 9th Latin-American Congress of Automatic Control was held in Santiago de **Cali**, Colombia, November 1-4, 2000. This was the first Latin-American congress "in cooperation with IFAC" to take place in Colombia. In spite of its social crisis, Santiago de Cali was a comfortable place for all the attendees. The Congress site was ***The Corporacion Universitaria Autónoma de Occidente***, one of the best universities in the southwest of the country.

The Congress was co–sponsored by the Colombian Automation Society - **ACA**, in cooperation with **IFAC**.

This Congress, chaired by Freddy Naranjo Pérez, President of the Latin-American Committee of Automatic Control, was very successful in terms of quality and intensity. There were 322 registered participants, among them students and professionals of many Colombians cities, and different countries of America.

The 9th Latin-American Congress received over 160 papers and poster papers, which were reviewed by the International Program Committee during six months. Ultimately 123 papers and posters were allocated to the various parts of the technical program. During three days, the program was split up into 15 sessions, with five respectively running in parallel.

The papers focussed on topics such as Control Applications, Robotics, Intelligent Systems, Instrumentation and Simulation.

The Technical Program featured three plenary speakers preceding the technical sessions of the three days. The first day Professor Pedro Albertos, President of IFAC, presented the lecture: "Learning Iterative Control Design". The second day, Professor Romeo Ortega from The National Research Center of Paris, spoke on: "Design of Controllers to Physics Systems, Through Energy Methods"; and the third day, Professor Kevin Passino from Ohio University – USA , gave the lecture: "Biomimicry of Foraging for Optimization and Control".

As a complementary activity, the Congress offered three short courses entitled: "Predictive Control and Identification", by Professor Willian Ipaneque, "Intelligent Control" by Professor Kevin Passino, and "Digital Realization of Controllers: Integrated Design", by Professor Pedro Albertos.

Additionally, there were 17 outstanding Colombian companies presenting their products in a technical exhibition, which was well visited by students and general attendees. The exhibition showed novel software, equipment and devices specialized in Automation and Control.

We want to give special thanks to all the people who made this event possible, thus contributing to the development and interaction between Academia and the Industry, in spite of the difficulties in our country.

# Robot Control – SYROCO'00
### IFAC Symposium
### Vienna, Austria
### September 21 – 23, 2000

After Barcelona (1985), Karlsruhe (1988), Vienna (1991), Capri (1994), Nantes (1997), the sixth IFAC Symposium on "Robot Control – SYROCO'00" was again organised in Vienna by the Institute of Robotics at the Vienna University of Technology.

The contributions covered the whole field of robot control starting with the classical subjects such as non-linear control, robust and hybrid control, force and tracking control, modelling and identification, simulation and education, neural and fuzzy control. But new robot applications require new robot concepts and new control tasks. As a consequence most of the contributions deal with mobile, intelligent robots and multiple robot systems but also with new applications like disassembly. One of the fastest growing fields in the last three years has been development and control of robots for entertainment, leisure and hobby. Therefore a session was organised on this topic supported by practical demonstrations.

In 4 survey papers the state of the art in robot control and further developing trends were emphasised. Since the field of robotics is today developing considerably in smaller countries, two presentations dealt with robots in Brazil and in Macedonia. The very important field of sensor fusion and an industrial view of future developments in robot control were also topics of survey papers.

We have first to thank our IPC members. They did a tremendous job. Each of the 154 extended abstracts were reviewed at least by 3 of them to ensure a high quality. 90% of the papers were submitted by e-mail. Therefore the reviewing procedure was carried out mostly in the same way. Finally we accepted 126 contributions (119 presented), arranged in 31 sessions.
In addition we organised a social program on all three evenings of the symposium to stimulate discussions and bring together scientists from all over the world.

On behalf of the International Program Committee (IPC) and the National Organising Committee (NOC), we would like to thank all for participating in this event.

Peter Kopacek, IPC Chairperson
Bernd Kopacek, NOC Chairperson

# Distributed Computer Control Systems - DCCS 2000

## IFAC Workshop

### Sydney Australia, Nov 29-Dec 1, 2000

The 16th IFAC workshop on Distributed Computer Control Systems (DCCS '97) was held in Sydney, Australia from 29 Nov to 1 Dec 2000. This IFAC workshop, sponsored by IFAC's Technical Committee on Distributed Computer Control Systems (CCD), was organised by the School of Computer Science and Engineering, University of New South Wales, Sydney, Australia. It was co-sponsored by the IFAC-TCs on Artificial Intelligence in Real-Time Control (AIRTC), Real-time Software Engineering (RTSE), Safety of Computer Control Systems, (SCCS) and Fault Detection, Supervision and Safety of Technical Processes (SAFEPROCESS). Prof. Jaehyun Park, as CCD Chair, also chaired the International Program Committee, and Dr. Arcot Sowmya, School of Computer Science and Engineering, University of New South Wales, chaired the National Organizing Committee. The workshop was held at the campus of the University of New South Wales in Sydney, the venue of the 2000 Olympics. It took place side by side with the 7th Australasian Conference on Parallel and Real-time Systems (PART2000), which enabled the sharing of the two invited talks as well as of the tutorial program organised by PART2000.

Twenty members of the International Program Committee reviewed the 34 extended abstracts submitted. Even though the topics on distributed computer control systems are very diverse, two major foci emerged: Real-time network protocols between control devices and open software architecture. After review, 24 regular papers were selected for the presentation at the Workshop. In addition to these regular papers, two plenary presentations by the well-known researchers, Gordon Brebner and Paul Caspi were invited. Prof. Brebner is Professor of Computer Systems at the Division of Informatics, University of Edinburgh, U. K and is an expert on reconfigurable computing. He gave a talk on Parallel and Real-time Issues for Chip-Area Real-time Networks. Prof Paul Caspi from Laboratoire Verimag, Grenoble, France is an expert on synchronous languages and real-time control. He gave a talk on the Quasi Synchronous Approach to Distributed Control System Design. On the third day, a panel chaired by Professor Leo Motus, Tallinn Technical University, Estonia, discussed "Whither DCCS in the Internet and Multimedia Era?". The 24 regular papers were classified into five major categories according to their topics and the sessions organised around them:

- Control Theory and application
- Real-time Networks
- Architecture
- Specification and Simulation
- Applications of DCCS

The pre-conference tutorial program organised by PART2000 was thrown open to DCCS participants, with the concurrence of the TC Chair. The tutorials, all of them half-day long, included:

- Time and Clocks in Distributed Systems, presented by Dr Colin Fidge, Software Verification Research Centre, University of Queensland, Australia.
- Ipv6: The Next generation of Internet and Web-based Computing, presented by Dr Wanlei Zhou, Deakin University, Australia.
- Data Mining: Parallelism's Killer Application, presented by Dr David Skillicorn, Queen's University, Canada.
- Internet Quality of Service (QoS) Management, presented by Dr Sanjay Jha and Dr Mehbub Hassan, University of New South Wales, Australia.

The workshop itself was held over two and a half days with eight regular sessions. At the workshop, 21 out of 24 papers were presented by the authors or their representatives and will be included in the final proceedings edited by Arcot Sowmya and Jaehyun Park. Proceedings will be published by Elsevier Science. The International Program Committee has recommended five papers for possible publication in Control Engineering Practice (CEP) and one paper for possible publication in Automatica.

A TC meeting was held on the second day of the workshop. The TC Chair presented possible scenarios for restructuring the TC and a roadmap for future DCCS events. Many ideas for increasing publicity and participation at future DCCS events were also discussed.

# Control Engineering Practice

## Papers from the March 2001 Issue



## Papers from the April 2001 Issue

(K. Xiao, C. Tzoganakis, H. Budman)
Electro-hydraulic Proportional Control of Twin-cylinder Hydraulic Elevators
(K. Li, M.A. Mannan, M. Xu, Z. Xiao)
Visual Command of a Robot Using 3D-scene Reconsctruction in an Augmented Reality System
(M. Shaheen, M. Mallem, F. Chavand)
A High-performance Control System for Spreading Liquid Manure
(A.Munack, E. Buning, H. Speckmann)

Special Section on Algorithms and Architectures for Real-time Control
Preface to the Special Section on Algorithms and Architectures for Real-time Control
(V. Hernandez, A.E. Ruano)
Reference Architecture for Robot Teleoperation: Development Details and Practical Use
(B. Alvarez, A. Iboraa, A. Alonso, J.A. de la Puente)
On Identifying and Evaluating Object Architectures for Real-time Applications
(O.P. Dias, I.M. Teixeira, J.P. Teixeira, L.B. Becker, C.E. Pereira)
Fuzzy Predictive Algorithms Applied to Real-time Force Control
(L.F. Baptista, J.M. Sousa, J.M.G. Sa da Costa)
Probability Estimation Algorithms for Self-validating Sensors
(A.W. Moran, P.G. O'Reilly, G.W. Irwin)
DICOS: A Real-time Distributed Industrial Control System for Embedded Applications
(J.C. Campelo, P. Yuste, P.J. Gil, J.J. Serrano)
Real-time Control of Air Motors Using a Pneumatic H-bridge
(M.O. Tokhi, A. Al-Miskiry, M. Brisland)
Real-time Video for Distributed Control Systems
(J.A. Clavijo, M.J. Segarra, C. Baeza, C.D. Moreno, R. Sanz, A. Jimenez, R. Vazquez, F.J. Diaz, A. Diez)

Conference Calendar

# Automatica

## Papers from the April 2001 Issue

**Survey Paper**

A Review of Methods for Input/Output Selection
(M. Van De Wal, D. De Jager)

Regular Paper

Non-parametric Identification of Viscoelastic Material from Wave Propagation Experiments
(M. Mossberg, L. Hillström, T. Söderström)

**Brief Papers**

Conjugate Points in Infinite-horizon Control Problems
(J. Blot, N. Hayek)
Inference of a Candidate Loop Performance and Data Filtering for Switching Supervisory Control
(E. Mosca, T. Agnoloni)
Output Regulation of Nonlinear Systems by Sliding Mode
(C. Bonivento. L. Marconi, R. Zanasi)
A Descriptor System Approach to Nonlinear Singularly Perturbed Optimal Control Problem
(E. Fridman)
Robust Adaptive Control of Nonlinear Discrete-time Systems by Backstepping without Parametrization
(Y. Zang, C. Wen, Y.C. Soh)
Synthesis of Complete Rational Orthonormal Bases with Prescribed Asymptotic Order
(H. Akcay)
Decentralized H-infinite Controller Design: A Matrix Inequality Approach Using a Homotopy Method
(G. Zhai, M. Ikeda, Y. Fujisaki)
Robust Maximum Likelihood Estimation in the Linear Model
(G. Calafiore, L. El Ghaoui)
Associative Memory Design Using Overlapping Decompositions
(M. Akar, M. E. Sezer)
Variable Structure Methods in Hydraulic Servo Systems Control
(A. Bonchis, P.I. Corke, D.C. Rye, Q.P. Ha)
Control of Linear Systems Subject to Input Constraints: A Polynomial Approach
(D. Henrion, S. Tarbouriesh, V. Kucera)

**Technical Communiques**

A Note on Absolute Stability of Uncertain Systems
(S.T. Impram, N. Munro)
A Combined PID/Adaptive Controller for a Class of Nonlinear Systems
(S.N. Huang, K.K. Tan, T.H. Lee)
Lower Bounds on the Solution of Coupled Algebraic Riccati Equation

(A. Czornik, A. Swierniak)
On the Strengthened Robust SPR Problem for Discrete-time Systems
(B. Mosquera, F. Pérez)

**Book Reviews**

Performance, Stability, Dynamics and Control of Airplanes, by B.N. Pamedi
(J. Shinar)
An Introduction to Inifinite-dimensional Linear Systems Theory, by R.F. Curtain and H. Zwart
(S.P. Banks)
Quantitative Feedback Theory: Fundamentals and Applications, by C.H. Houpis and S.J. Rasmussen
(A.L. Stevens)
Robust Stablization and H-infinite Problems, by V. Ionescu and A. Stoica
(B.M. Chen)

## Papers from the May 2001 Issue

**Survey Paper**

Constructive Nonlinear Control: A Historical Perspective
(P. Kokotovic, M. Arcak)

**Papers**

A Frequency-domain Iterative Identification Algorithm Using General Orthonormal Basis Functions
(H. Akcay, P. Heuberger)
Adaptive Smoothing Methods for Frequency-function Estimation
(A. Stenman, F. Gustafsson)
Analytical Reduncancy Relations for Fault Detection and Isolation in Algebraic Dynamic Systems
(M. Staroswiecki, G. Comtet-Varga)
Nonlinear Passive Weather Optimal Postioning Control (WOPC) System for Ships and Rigs: Experimental Results
(T.I. Fossen, J.P. Strand)

**Brief Papers**

Reliable H-inifinite Controller Design for Linear Sytems
(G.-H. Yang, J.-L. Wang., Y.C. Soh)
Non-fragile H-inifinite Control for Linear Systems with Multiplicative Controller Gain Variations
(G.-H. Yang, J.-L. Wang)
New Results for Analysis of Systems with Repeated Nonlinearities
(F.J. D'Amato, M.A. Rotea, A.V. Megretski, U.T. Jönsson)
Parameter Identification of a Class of Hammerstein Plants
(F. Giri, F.Z. Chaoui, Y. Rochdi)
Algebraic Solution to the Robust SPR Problem for Two Polynomials
(B. Mosquera, F-Pérez)

**Technical Communiques**

A New Approach to Reaching Mode of VSS Using Trajectory Planning
(R.J. Mantz, H. De Battista, P. Puleston)
Robust Stabilization for Uncertain Discrete Singular Systems
(Shengyuan Xu, C. Yang, Y. Niu, J. Lam)
A Dynamic Output Feedback Controllers for Mismatched Uncertain Variable Structure Systems
(Kuo-Kai Shyu, Y.-W. Tsai, C.-K. Lai)
Asymptotic Variance Expressions for Closed-loop Identification
(M. Gevers, L. Ljung, P. van den Hof)

**Book Reviews**

Mechatronics, 2nd Edition, by W. Bolton
(I.Bucher)
Optimal Control of Soil Venting: Mathematical Modelling and Applications, by H.H. Gerke, U. Hornung, Y. Kelanemer, M. Slodicka, and S. Schumacher
(J.S. Gierke)
Stabilization of Linear Systems, by V. Dragan, A. Halanay
(A. Ilchmann)
Robust Adaptive Control, by P.A. Ioannu, J. Sun
(J. Böhm)
Computational Methods for Controller Design, by N. Elia, M.A. Dahleh
(P. Voulgaris)
Robust Aeroservoelastic Stability Analysis, by R. Lind, M. Brenner
(M. Karpel)
Stability of Discrete Event Systems, by K.M. Passino, K.L. Burgess
(B. de Schutter)

## WHO IS WHO IN IFAC

**Prof. Alberto Isidori**

**Member of the Technical Board**

Alberto Isidori was born in Rapallo, Italy, in 1942. His research interests are primarily focused on mathematical control theory and control engineering. He graduated in electrical engineering from the University of Rome in 1965. Since 1975, he has been Professor of Automatic Control in this University. Since 1989, he has also been affiliated with the Department of Systems Science and Mathematics at Washington University in St. Louis.

He is the author of several books: „Teoria dei Sistemi" (in Italian), with A.Ruberti, 1979; „Sistemi di Controllo" (in Italian), 1979 and 1992; „Nonlinear Control Systems" (Springer Verlag), 1985, 1989 and 1995; „Topics in Control Theory" (Birkhauser), with H.Knobloch and D.Flockerzi, 1993; „Output regulation of uncertain nonlinear systems" (Birkhauser), with C.I.Byrnes and F.Delli Priscoli, 1997; „Nonlinear Control Systems II" (Springer Verlag), 1999. He is author of 81 articles on archival journals, of 16 book chapters and 81 papers on refereed conference proceedings, for a large part on the subject of nonlinear feedback design. He is also also editor/coeditor of 19 volumes of Conference proceedings.

He received the G.S.Axelby Outstanding Paper Award from the Control Systems Society of IEEE in 1981, for his technical contributions to the application of differential geometry to the problem of noninteracting control of nonlinear systems, and in 1990, for his technical contributions to the solution of the problem of asymptotic regulation and tracking in nonlinear systems. He also received from the Automatica Prize in 1991 for his technical contributions to the application the notion of zero dynamics in problems of feedback stabilization. In 1987 he was elected Fellow member of the IEEE „for fundamental contributions to nonlinear control theory". In 2000 he was awarded the first Ktesibios Award from the Mediterranean Control Association. In 2001, he will be awarded the Bode Lecture Prize from the Control Systems Society of IEEE

In 1996, at the opening of 13th IFAC World Congress in San Francisco, Dr. Isidori received the Georgio Quazza Medal, for „pioneering and fundamental contributions to the theory of nonlinear feedback control".

He has organized or co-organized several international Conferences on the subject feedback design for nonlinear systems. In particular, he was the initiator of a permanent series of IFAC Symposia on this topic. He has served in numerous Editorial Boards of major archival journals. He acted as Program director, in the area of Sy stems and Control, for the Italian Department of Education from 1983 to 1989. From 1993 to 1996 he served on the Council of IFAC. Currently he is a member of the Technical Board of IFAC and Chair of the Selection Committee for the Major Medals (Quazza Medal, Nichols Medal). From 1995 to 1997 he was President of the European Community Control Association.

# Forthcoming Events

**The list of forthcoming events is available on the IFAC Homepage at**
http://www.ifac-control.org

**or**

**in the printed version of the IFAC Newsletter, which is available from the IFAC Secretariat**
**Schlossplatz 12, A-2361 Laxenburg**
**e-mail:** secr@ifac.co.at