## SERIES ON STABILITY, VIBRATION AND CONTROL OF SYSTEMS



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# Proceedings of the First European Conference on Structural Control

Editors A Baratta J Rodellar



Proceedings of the First European Conference on

# STRUCTURAL CONTROL

# BIBLIOTHEQUE DU CERIST



**STRUCTURAL** CONTROL

Proceedings of the

Barcelona, Spain

May 29-31, 1996

Editors

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### STRUCTURAL CONTROL

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### FIRST EUROPEAN CONFERENCE ON STRUCTURAL CONTROL

### Barcelona, May 29 - 31, 1996

### MAY 29, 1996

- 08.30 09.00 Registration
- 09.00 09.30 Opening
- 09.30 10.30 Keynote Lecture
- 10.30 11.00 Coffee Break
- 11.00 13.00 Special Theme Session on CIS (Civil Infrastructure Systems)
- 13.00 14.30 Lunch
- 14.30 16.30 Special Theme Session on DCT (Distributed Control Theory)
- 16.30 17.00 Coffee Break
- 17.00 18.00 Special Theme Session on IS (Innovative Schemes)
- 18.00 19.00 Keynote Lecture
- 19.00 20.00 Welcome Cocktail

### MAY 30, 1996

09.00 - 11.00	Parallel Sessions
	▷ MATERIALS
	BASE ISOLATION I
11.00 - 11.30	Coffee break
11.30 - 13.30	Parallel Sessions
	▶ IDENTIFICATION AND DAMAGE DETECTION
	BASE ISOLATION II
13.30 - 15.00	Lunch - General Meeting of ACS
15.00 - 16.00	Keynote Lecture
16.00 - 16.30	Coffee Break
16.30 - 18.30	Parallel Sessions
	CONTROL METHODS I
	▷ CONTROL APPLICATIONS I
20.00 - 20.30	Reception
21.00 - 22.30	Banquet

### MAY 31, 1996

- 09.30 10.30 Keynote Lecture
- 10.30 11.00 Coffee Break
- ► CONTROL APPLICATIONS II
  ► CONTROL METHODS II
- 16.30 17.00 Farewell

BIBLIOTHEQUE DU CERIST

# **Editor's Preface**

The First European Conference on Structural Control, held in Barcelona, Spain, at the end of May 1996, concentrated on fundamental aspects and on specific applications of structural control. Specific topics of the conference have been: Civil Infrastructure Systems; Distributed Control Theory; Innovative Schemes; Materials; Base Isolation; Identification and Damage Detection; Control Methods; Control Applications; Reliability Aspects; Optimization.

We are indebted to the Association for the Control of Structures (ACS) for having promoted and sponsored the conference and the Scientific Committee for having collaborated to the dissemination of the information as well as to a prompt reviewing of the papers submitted for publication in these proceedings.

We also express our gratitude to the participants who have contributed to enlight the conference with excellent scientific contributions and with stimulating discussions during the various sessions.

A. Baratta University of Naples, Italy J. Rodellar Technical University Catalonia, Spain

# BIBLIOTHEQUE DU CERIST

# Address of the President of ACS

Mr. Chairmen, Ladies and Gentlemen,

On behalf of the Association for the Control of Structures (ACS) I would like to welcome you at this First European Conference on Structural Control.

The idea of organizing this conference was accepted in December 1994 by the Board of Directors and the General Assembly of ACS. Since that time both chairmen, Professor Baratta and Professor Rodellar, have done an excellent job preparing such an outstanding scientific programme. The chairmen have been advised by the Scientific Committee in soliciting participants, organizing sessions and selecting papers. Its members cover Austria, France, Italy, Slovenia, Spain and UK, but in this lecture room there are delegates from all the continents.

The Association for the Control of Structures is born on July 1993, when a few friends realized that this was the only way to coordinate a European effort to develop applications of emerging technologies as structural control, intelligent structures, smart materials, etc., in the areas of Architectural, Civil and Infrastructure Engineering. Italy, the country with the largest number of isolated bridges in the world, hosted the first attempts to establish links with the leading countries in that special topic: Japan and USA. On June 27-29, 1991, Professor Faravelli hosted in Perugia the first trilateral US-Italy-Japan Workshop on Intelligent Systems. On July 13-15, 1992, Professor Baratta hosted in Sorrento the second trilateral US-Italy-Japan Workshop on Structural Control and Intelligent Systems. Participants from the US, Italy, Japan and other Western European countries presented papers and participated in group discussion.

But it was at the Tenth World Conference on Earthquake Engineering in Madrid, Spain, that a recommendation was made to organize an International Association for Structural Control (IASC). The international association promotes communication and coordinates activities. For these purposes it organized the First World Conference on Structural Control, in Pasadena, California, in August 1994, and will organize the Second World Conference on Structural Control in Japan, in 1998. ACS, the European branch of IASC, is organizing here its firts general meeting.

Ladies and gentlemen, welcome to Barcelona. I wish you three days of outstanding scientific activity and am sure you will enjoy your stay in this beautiful town

> Fabio Casciati President of ACS

# Final Address at the Closing Ceremony

Ladies and Gentlemen,

it is too early to examine the quality achievements of this conference. We leave it to the acceptance of the proceedings. Formally I can say this conference was a success. We had a mixture of senior scientists and beginners, of engineers and mathematicians and, as result, a lively discussion, new ideas, the start of new cooperations.

Also, as President of ACS, the promoting Association, I wish to underline the geographical distribution of the participants:

Africa	2
Australia	2
Japan	6
Middle-East	2
North America	13
South America	3
Austria and Germany	6
France	4
Italy	<b>32</b>
Spain and Portugal	7
Russia	6
Other European Countries	5

Three items were addressed by most of the lecturers:

- the need of analystical benchmark problems;
- the development of laboratory experiments repeated on several testing facilities of different countries;
- the special attention to be paid to the reliability and maintenance of control systems.

Before I close with the thanks of ACS to the chairmen, Professor Baratta and Professor Rodellar, and to the members of the Local Organizing Committee, as well as to all the contributors and participants, let me invite you to continue this experience in France four years from now.

Have a good journey back home and thanks for your participation

Fabio Casciati President of ACS

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