

Please send this report to the Secretary of the European Mechanics Council, Professor Bengt Lundberg, School of Engineering, Uppsala University, Box 534, S-751 21 Uppsala, Sweden, within one month after the Colloquium.

General

Euromech Colloquium No: 318

Title: Stability and Vibrations of Mechatronic Systems

Co-Chairmen: Prof. M. Hiller Germany

Place and country: Prague, Czech Republic

Dates: June 1-3, 1994

Finance

The conference fee 230 USD included organizing expenses, accommodation and full meals for 3 days, concert in Castle Liblice, banquet

Funding: Czech Society for Mechanics, Institut of Thermomechanics

Accommodation (type and cost): Hotel of Academy of Sciences, mostly single rooms, 25 USD/ night

Meals: breakfast, lunch, dinner in Academy Restaurant
coffee, refreshment

Participation

Total number of participants: 32

Distribution of participants by country:

Code	Country	Number	Code	Country	Number
A	Austria	2	IRL	Ireland	
B	Belgium		LT	Latvia	1
BG	Bulgaria		LV	Lithuania	
CH	Switzerland		N	Norway	
CS	Czech Republ.	16	NL	Netherlands	
D	Germany	8	P	Portugal	
DK	Denmark		PL	Poland	1
E	Spain		R	Rumania	
EE	Estonia		S	Sweden	
F	France		SF	Finland	
GB	Great Britain		YU	Yugoslavia	
GR	Greece		CIS	CIS	
H	Hungary	3	Slovak Republic	Others	1
I	Italy				

Is there need of another colloquium on the same subject? Which year? Yes, in 3 years

Scientific Report

The local Organizing Committee, consisting of 10 persons from Czech Republic was established for the solution of organization and scientific matters.

Basic scientific and program matters were solved in cooperation with the co-chairman Prof. M. Hiller.

From 39 abstracts received as a results of invitations letters and Call for papers, 32 abstracts were selected for presentation. The Program of Colloquium is enclosed.

Nearly all papers were presented but I sorry that the Russian and Italian authors did not come. The spared time was used for discussion. In addition two video records about the vehicle motion and impact systems were presented in the free time.

The booklet of abstracts (enclosed) was distributed to all participants at the registration. During the Colloquium the possibilities to copy of full text of papers organized by the secretariat were used by many participants.

Contributions were presented in five topics:

- Modelling the dynamics of mechanical and non mechanical systems and their interactions.
- Stationary and transient responses of the mechatronic systems on the external excitation.
- Control design with regard to performance, stability and vibration criteria.
- Dynamic properties of the nonlinear mechatronic systems.
- Sensor, actuator selection with respect to positioning requirements and control design criteria.

Very interesting results were presented in the field of vehicle dynamics, where the use of mechatronic subsystems are wide applied and in the field of the active damping of various mechanical systems.

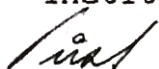
The discussions to all contributions were very live and proved that the relatively small number of participants interested in one topic was advantageous.

In the discussion, the need of further development of the theory of mechatronic systems with respect to the nonlinear properties was emphasized as well as the need of research and development of sensors and actuators specially for the mechatronic systems.

In my opinion the Colloquium Euromech 318 "Stability and Vibration of Mechatronic Systems" was successful meeting and the aims of the Colloquium to provide opportunities for scientists to meet and discuss common problems were fulfilled.

The budget of the Colloquium was balanced due to the support of the Czech Society for Mechanics and Institute of Thermomechanics.

August 9, 1994


Dr. Ladislav Púst
chairman of the Colloquium
Euromech 318

COLLOQUIUM THEMES AND OBJECTIVES

Mechatronics is the engineering domain consisting of the research, developments and applications of many science and technology branches, especially mechanical engineering, electronics, control and computer sciences, etc.

This colloquium will be concentrated only to narrow problems of the dynamic properties of the mechatronic systems: the stability and vibrations of the complex systems in which the mutual interactions between the mechanical and non mechanical subsystems take place. The connection of mechanical systems with the control subsystems, feedback elements and external sources of energy substantially influence the dynamic properties of the mechatronic systems represented by their frequency spectrum, damping capacity and stability. Such effects are especially pronounced when nonlinear characteristics of the mechanical or the non mechanical components are taken into account.

Emphasis of the colloquium will be put on the vibrations and stability behaviour of controlled mechanical systems with the special consideration on the combined dynamics of mechanical and non mechanical components and on feasible sensors and actuator realisations.

Topics:

- ♦ **Modelling the dynamics of mechanical and non mechanical systems and their interactions.**
- ♦ **Stationary and transient responses of the mechatronic systems on the external excitation.**
- ♦ **Control design with regard to performance, stability and vibration criteria.**
- ♦ **Dynamic properties of the nonlinear mechatronic systems.**
- ♦ **Sensor, actuator selection with respect to positioning requirements and control design criteria.**

SUBMISSION OF CONTRIBUTIONS

Participation in the Euromech colloquium is on the invitation of the Chairman and the number of

participants is aimed at about 50. Selection of contributions will be made on the basis of short abstract submitted by the prospective participants.

Abstract of proposed papers (in length of 1 page only), with full address should be submitted to the chairman or secretary as soon as possible but **not later than January 31, 1994**. Authors will be notified of acceptance by **March 31, 1994**. A booklet of the abstracts will be distributed to the participants on the registration at the time of the colloquium.

VENUE AND ACCOMMODATION

The venue for the colloquium is the Institute of Thermomechanics in Prague. Two lecturing rooms are available, one for 40 and the other for 80 people, equipped with the standard overhead, slide projector, and video recorder. Accommodation will be arranged in the Academy hotel within an easy walking distance from the Institute.

Breakfast, lunches and dinners will be served in the restaurant on the campus. Social programme for delegates will include banquet and a chamber concert.

COLLOQUIUM FEES

The colloquium registration fees will be include: accommodation for four nights, breakfasts, lunches, dinners and coffees for all three days of the colloquium. The social programme is also included. **Colloquium fees are 230 USD.**

In case of additional requests concerning accommodation, please contact the secretary.

OFFICIAL LANGUAGE

The colloquium language is English and all abstracts should be written in English.

NOTE:

After this colloquium, in June 6-8, 1994, the EUROMECH colloquium 320 "MULTIBODY SYSTEMS: Advanced Algorithms and Software Tools" closely related to our topic will be organised in Prague, too.