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**A Review of the International European Conference
"EUROMECH - 3RD EUROPEAN
NONLINEAR OSCILLATIONS CONFERENCE"
Copenhagen - Lyngby, August 8-12, 1999,
under the patronage of HRH Princess Alexandra of Denmark**

In the period from August 8th to 12th at the Denmark Technical University (DTU) at Lyngby-Copenhagen an international conference, "EUROMECH - 3rd EUROPEAN NONLINEAR OSCILLATIONS CONFERENCE" Copenhagen - Lyngby, August 8-12, 1999 was held under the patronage of HRH Princess Alexandra of Denmark.

The scientific and program committee was constituted of world-rank scientists from all over the world, and the participants of the conference were also from around the world, and among them were: Professor **Dr. F. Pfeiffer**, from the Technical University in Munich, Germany who was the representative of ENOC scientific committee, Academician **F. Chernousko** from Moscow, Professor **Guizeppe Rega** from the University La Sapienza, Rome, Professor **F. Peterka**, from Prague, Professor **S.R. Bishop** from UCL, London, Professor **H. Troger** from Wiena, Professor **E. Kreuzer** from Hamburg...

The president of the organizing committee was Professor **Hans True**, Ph.D., (Chairman, EUROMECH Copenhagen 99, Technical University of Denmark, MIDIT modeling, Nonlinear Dynamics and Irreversible Thermodynamics, Building 305, DK 2800 LYNGBY, Tel: 45 45 25 33 51/ 45 45 25 30 16; Fax: 45 45 93 23 73, e-mail: hr@imm.dru.dk)

Mads Peter Soerensen, Ph. D., Assoc. Prof. (Department of Mathematical Modeling (IMM), The Technical University of Denmark (DTU), Bldg. 321, DK-2800 Lyngby, Denmark) a member of the ENOC organizing committee, had shown remarkable care and hospitality towards the participants and he had also shown extraordinary organizing skills and due to that his efforts in the organizational part of the conference. deserve to be specially recognized.

The scientific part of the conference consisted of plenary lectures and sections.

In the plenary part the lectures had reviewing character, and in the sections they were specialized. I will specially pint out the ideas presented at the plenary by Prof. **Ilia Blechman** in the aim to direct the research towards creating new types of *dynamically active materials* for different purposes. On that occasion he invited researchers that are interested to join him, and the invitation was especially addressed to those interested in the area of motion control.

There were the following sections: *Qualitative methods, Applications in Physics, Chaotic oscillations, Discrete Systems, Numerical methods, Continual systems, Stability, Nonlinear dynamical phenomena, synchronization, applications in mechanical and structural engineering, wave spreading, vehicle and train dynamics,*

bifurcation, control, impacts and impulses, slow and fast oscillations, friction and cutting, fluid dynamics and aerodynamics, interaction of fluid structures, random oscillations, computer shaping and symbolical methods, applications in biology, medicine and chemistry, Chaotic oscillations.

At the opening, rector of DTU held a speech in which he acquainted the participants with the history of DTU and its work. He was followed by Prof. **F. Pfeiffer** from TUM, who spoke in the name of the European society for mechanics. He talked about the first conferences on nonlinear oscillations, the first of which was held in Kiev, Ukraine, and was organized by academician **Yu. A. Mitropol'ski**.

The following publications were distributed to the participants: the Congress Proceedings, Address-book with a list of the congress participants, Conference work plan as well as a number of maps of Copenhagen, Lyngby and DTU, as well as a number of publications for tourists.

The data about ENOC Lyngby – Copenhagen 99 can be found at the Internet address: <http://www.medit.dtu.dk>.

If we have to evaluate the scientific program of the meeting than the evaluation is positive since there were many new and original lectures, as well as reviews lectures in the area of nonlinear oscillations. The conference was very successful. However, if we have in mind that the international conference ***Nonlinear Mechanics 98*** was held in Shanghai last year as well as the International Conference "***Nonlinear sciences on the border of millenniums***" dedicated to the 275th anniversary of the Russian Academy of Sciences, Saint-Petersburg, June 22-24, 1999, in Saint Petersburg some twenty days earlier, the comparison between those meeting can not be avoided, as well as with previous meetings ICNO, starting since 1969, which were before ENOC. But at the same time it needs to be pointed out that ENOC 99 had more results of application of experimental results and results based on numerical simulations done through the use of computer technology. That is mainly a characteristic of scientific meetings organized by scientists from Western European countries and from the American continent. They, pressurized by the system of research funding, give advantage to more success in experimental results, in the contrary to those organized by scientists from China and Russia which contain mathematical and theoretical results on the much higher theoretical and scientific level and with more theoretical originality.

I could not help the feeling that in the area of nonlinear sciences, many leading scientific minds from Russia work for the western-European institutes, and that the leading publishers of scientific literature from countries of Western Europe and the American continent have bought the rights to publish their scientific results, which were obtained at scientific institutes of countries of the former USSR in the period of half a century.

If we compare the results of our scientists published at the Congresses of the Yugoslav society for Mechanics, as well as the papers of our scientists and researchers working on the republic subproject "***Current problems of Mechanics and Applications***", at the Mathematical Institute of SASA, Belgrade with the results of researchers from around the world in proper field of research, I think that they do not fall behind. This needs to be pointed out because our researchers are achieving that in conditions where our libraries the newest scientific magazines and monographs, and in the conditions of a general blockade that is imposed upon Yugoslavia, and hence on its researchers. The researchers are managing to keep the pace with the world scientific progress by using

their personal contacts and the care of their colleges-scientists from abroad do get to the latest scientific information in this area.

Out of Yugoslav scientists this conference was attended by Katica (Stevanović) Hedrih with papers:

C: *Vectorial Method, Mass Moments Vectors and Rotator Vectors in Nonlinear Heavy Gyrorotor Dynamics* and

A: *Rheonomic Coordinate Method Applied to Nonlinear Vibration Systems with Hereditary Elements*.

At the exposition desk of Kluwer Academic Publishers, a large number of latest scientific publications was exposed out of which I would like to point out the following:

* IUTAM SYMPOSIUM ON NEW APPLICATIONS OF NONLINEAR AND CHAOTIC DYNAMICS IN MECHANICS Edited by Francis C. Moon, pp.562;

* IUTAM SYMPOSIUM ON ADVANCES IN NONLINEAR STOCHASTIC MECHANICS, edited by A. Nacss and S. Krenk, Norway 1995; pp.513;

* Andre Preumont: *Vibration Control of Active Structures*, 1997, pp. 260;

* Andre Preumont: *Random Vibration and Spectral Analysis*, 1994, pp. 280.

Also, the latest catalogues Kluwer Academic Publishers should be added to the above list:

* *Nonlinear Dynamics*, April 1999;

* *Multibody System Dynamics*, May 1999;

* *Dynamics and Control*, April 1999.

* *Journal of Intelligent and Robotics Systems, Theory and Applications*, may 1999.

* *Meccanica*, An international Journal of the Italian Association of Theoretical and applied Mechanics, Feb. 1999.

* *Mechanics and Materials*; * *Engineering*;

Reviewing the state of nonlinear sciences in our country, the following suggestions appear for the advancement of research in this area in our country:

1. The foundation of the Yugoslav center for ***nonlinear dynamics*** where research results would be integrated and where the transfer of knowledge in the area of nonlinear dynamics and its application to different areas of science and applications (mechanics, engineering, mechanical engineering, building technology, electronics, biology, medicine, economy, social processes, linguistics) would be conducted.
2. The financing of the work of a republic ***scientific seminar in nonlinear dynamics*** on which guest scientists from abroad would be invited.
3. The foundation of a ***laboratory for nonlinear dynamics and modeling for research in active constructions oscillations control*** at the Mechanical Engineering Faculty in Nis.
4. The purchase of ***fundamental monographs and scientific journals*** in the area of nonlinear mechanics which are published in the world in the last decade, because our libraries lack them.

Possible practical solutions on the basis of knowledge in nonlinear mechanics:

The creation of technologies on the basis of nonlinear phenomena, effects of fast and slow oscillations, under the conditions of friction. The construction of active constructions the oscillations of which are controlled. The creation of a series of products - vibrational mining machines, civil engineering and process technologies. The creation of new types of so-called dynamically active materials for different purposes.

Katica (Stevanović) Hedrih