

EUROMECH

EUROPEAN MECHANICS SOCIETY

Final Report

Date:

Please send this report to the Secretary-General of EUROMECH, 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: 335

Dates: 5 JUNE - 7 JUNE
1995

Title: IMAGE TECHNIQUES AND ANALYSIS IN
FLUID - DYNAMICS

Co-Chairman: PROF. F.T.M. NIEUWSTADT

Place and country: ROMA, FACOLTA' DI INGEGNERIA - ITALY

Is there need of another colloquium on the same subject? Which year? YES 1997 or 1998

Finance

Conference fee: 110 \$ + 40 \$ (EUROMECH) The fee included: ABSTRACT VOLUME
5 COFFEE BREAKS

Funding: MURST, CNR, TSI GmbH, DANTEC, QUANTA (see reverse for details) 2 LUNCHES
SOCIAL DINNER

Accommodation (type and cost): HOTEL DELTA (****, FOUR STARS, COST = 110 \$
IN SINGLE ROOM)

Meals: LUNCHES AND ONE DINNER INCLUDED IN THE FEE

Participation

Number of participants from each country:

| | | | | | |
|----------------|----------|---------------|-----------|-------------|-----------|
| Austria | _____ | Germany | <u>14</u> | Rumania | _____ |
| Belgium | _____ | Great Britain | <u>6</u> | Russia | _____ |
| Bielorussia | _____ | Greece | _____ | Slovakia | _____ |
| Bosnia | _____ | Hungary | _____ | Slovenia | _____ |
| Bulgaria | _____ | Ireland | _____ | Spain | <u>2</u> |
| Croatia | _____ | Italy | <u>13</u> | Sweden | <u>1</u> |
| Czech Republic | <u>1</u> | Latvia | _____ | Switzerland | <u>2</u> |
| Denmark | <u>2</u> | Lithuania | _____ | Ukraine | _____ |
| Estonia | _____ | Netherlands | <u>4</u> | Yugoslavia | _____ |
| Finland | _____ | Norway | _____ | Others | <u>4</u> |
| France | <u>5</u> | Poland | <u>1</u> | Total | <u>55</u> |
| Georgia | _____ | Portugal | _____ | | |

Please turn

Scientific Report

Scientific activities of the Colloquium took place in three different days divided into five sessions:

1. Flow visualization, Holography and Doppler Global
2. Particle Image Velocimetry I
3. Particle Image Velocimetry II
4. Short Presentations
5. Liquid Crystals and Laser Induced Fluorescence

Each session was addressed by an Expert in the field except for the first (unfortunately Prof. Merzkirch was not able to be present due to operation for a detachment of the retina). Each Invited Lecture was followed by 10-15 minutes of stimulating discussion and questions. Invited Lecturers were asked to chair the Session immediately following their Presentation leaving as much time as possible for discussions. About 30 Papers were presented in the sessions (all oral presentations both short, i.e. 10 minutes, and standard, i.e. 20 minutes); about 5 minutes of discussion and questions followed each Paper presentation. Coffee and lunch breaks (served close to the Colloquium Main Room) and the Social Dinner contributed to the exchange of impressions and comments between the Participants to the Colloquium.

In the first Session three Papers concerned with Flow Visualization on a model airplane, on a stratified flow and on a convective flow from two leading groups in France and UK and from a Japanese University. One paper on Doppler Global Velocimetry were also given (no one was able to present the paper on Holographic Interferometry).

In the second Session, introduced by an overall lecture on basic principles of Digital Particle Image Velocimetry (DPIV) by J. Westerweel (Technical University (TU) of Delft), advanced application of DPIV especially to detect vortical structures in complex flow field were presented. Three of the major University groups in Experimental Fluid-Dynamics (TU Berlin, TU Delft and TU Denmark) and two other German teams (DLR Gottingen and Freie University Berlin) participated to the Session.

The third Session concerned with the use of DPIV for the study of full three-dimensional (3D) fields. The subject was introduced by R.J. Adrian (University of Illinois) with an extensive and detailed overview of evaluable recent results. Applications of 3D DPIV were presented by Universities (Swiss Federal Institute of Technology, University of Warwick, Osaka Institute of Technology), DLR (Germany) and RWTH (Germany). A brief presentation of the Activities of a joint group for application of PIV to large wind tunnels (GARTEUR) was given by M. Stanislas (the GARTEUR Workshop and Meeting followed the Colloquium, June 8-9 1995).

The fourth Session was introduced by a Lecture from G. Carlomagno (University of Naples) on Infrared Thermography. It was followed by a Short Presentation Session where 9 Papers were presented (no one was able to present the paper 'Image processing on a low budget': this Session was particularly stimulating for comments and discussions). Papers from Exhibitors (see below) and three papers from the Host Institution (University of Rome) were included in this Session.

The fifth and final Session concerned with Liquid Crystals (LC) and Laser Induced Fluorescence (LIF): it was introduced by a Lecture by J. Stasiek (City University of London). Four papers on LC were presented from: Ruhr University in Bochum, Centre of Mechanics in Warszawa, University of Surrey and TU Freiberg. Three papers on LIF concluded the Colloquium: from ONERA, CNRS in France and from DLR in Germany.

All abstracts are collected in a volume that has been distributed at the Colloquium and that is sent to the Secretary of the Euromech Council. Authors are invited to submit a full length paper for a Special Issue of Applied Scientific Research by Kluwer Publishers within September 1st 1995.

Some of the major Industries and Companies involved in Image Analysis hardware and software production have been invited to exhibit their recent products in a room close to the Colloquium Main Room. The following companies decided to accept the Invitation:

- TSI GmbH, from Germany (showing their recent PIV products and presenting a short paper);
- DANTEC Measurement Systems, from Denmark (showing their PIV products and presenting a short paper);
- QUANTA SYSTEM srl, from Italy (showing their PIV products and presenting a short paper);

Each of these Company sponsored the Organization of the Colloquium with an Exhibition Fee.

The Colloquium was also sponsored by MURST (Italian Office for Universities and for Scientific and Technology Research) and by CNR (National Research Council). Collected funds (Sponsors and Registration Fee of Participants) were used for covering Travel Costs of Invited Lecturers, Coffees and Lunches, the Social Dinner, Printing Costs for the Abstract Volumes, Mailing, Administrative and General Expenses.

Please use additional pages if needed and sign at the end.