

## President's Introduction

*This is my last foreword to a Newsletter of EUROMECH in my capacity as President of our Society but as yet, not a farewell, since I shall remain an officer of the EUROMECH Society as Vice-President. It has been an honour and pleasure to serve the Society and its members and it may be appropriate to recall a few events of my period as President.*

*In 2000 we lost the founding chairman of the EUROMECH Committee, G.K. Batchelor, and the first President of the EUROMECH Council, D.G. Crighton, both of whom are dearly missed. We have kept up the pace set by them, in that the big conferences on Solid and Fluid Mechanics have been held successfully every third year, and the Turbulence Conference every second year. These have been accompanied by the conferences on Non-linear Oscillations and Mechanics of Materials. Still, of equal importance, the EUROMECH Colloquia have continued to flourish and will reach number 444 at the end of this year. These very successful colloquia mostly continue to follow the pattern set out for the first EUROMECH Colloquium by the other founding father of EUROMECH, Dietrich Küchemann (see page 3). I doubt whether EUROMECH would have survived without his enthusiasm for mechanics, his charm and his endurance as a negotiator, which eliminated many obstacles in the way of EUROMECH. We must also remember his never ending struggle to bring European scientists together in small groups, so that they could get to know each other despite the aftermath of World War II, and the continuing blight of the Cold War. These small Colloquia also provided an ideal occasion for our younger colleagues and students to present and discuss their work and problems.*

*The EUROMECH Council has always tried to ensure that enough topics for proposals of Colloquia were available from which to choose, and that the distribution of Colloquia over the European countries was in balance. We have, I fear, not achieved the latter goal for 2003, with the great majority of Colloquia to be held in France and Germany.*

*EUROMECH has found its place among the many groups and societies concerned with both solid and fluid mechanics. Since we may expect the greatest progress in the future from co-operation outside the boundaries of mechanics, we should increase our efforts to bring together those mechanics and interdisciplinary fields for which we can assist in achieving greater scientific progress by co-operation.*

*This insight is already reflected in some of the topics of the current EUROMECH Colloquia but there is much room for improvement.*

*For the first time in 2003, the Council will award the EUROMECH Solid and Fluid Mechanics Prizes, thus recognising the scientific achievements of individual members of our community. We hope this will establish a good and long tradition. In addition, the Young Scientists Prizes (4 altogether) were awarded for the first time at the Fluid and Solid Mechanics Conferences in 2001.*

*The European Mechanics Society has about 1100 members as at October 2002. We should not be content with this number, however, and should try to convince, especially, our younger colleagues and students to support the field of their choice and their profession by becoming members of the EUROMECH Society. This should give it more power and weight when trying to convince governments and sponsors of the overall needs of Mechanics at large. I firmly believe that my successor as President, Patrick Huerre, shares my views and that he will be an excellent helmsman of our common ship.*

*Let me finally express my warmest thanks to the members of the EUROMECH Council, especially to E.J. Hopfinger and M. Okrouhlik, and to the members of the various Standing Committees for their support and assistance.*

Floreat, crescat EUROMECH.

**Hans-Hermann Fernholz**  
**President, EUROMECH**

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*This is a reprint of a report on the first colloquium in the series we now know has flourished into our own time, as written by Dietrich Küchemann. We have reached, approximately, EUROMECH 450 and it is remarkable how closely the spirit of these meetings has followed the original pattern outlined in this account. As DFK remarks at the end of the first paragraph, this is not a technical report of the kind which we now expect from the Chairpersons of colloquia, but closer to the more social content frequently encountered in a last paragraph. The technical report was prepared separately and published in the Journal of Fluid Mechanics, 1965, Vol. 23, part 4, pp. 801 – 819.*

*The report was prepared on Royal Society paper, which is the reason for the heading here, and sent to Professor Wille. The European Mechanics Society did not exist at that time – and so the Newsletter did not either, making a first appearance in August 1991.*

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## THE ROYAL SOCIETY

BRITISH NATIONAL COMMITTEE FOR THEORETICAL AND APPLIED MECHANICS

Report on the first European Mechanics Colloquium

Euromech 1

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The first in this new series of research conferences in Theoretical and Applied Mechanics was held at the Hermann Föttinger Institut für Strömungsforschung of the Technische Universität, Berlin, on April 5<sup>th</sup> and 6<sup>th</sup> 1965, under the chairmanship of Professor R. Wille. The subject of the discussion was "Boundary Layers and Jets along highly curved Walls – Coanda Effect". The following notes, prepared with the help of comments by participants, are mainly concerned with the organisational aspects of the meeting: a report on the discussion itself will be given in another note.

There were 37 participants from 8 countries: Belgium (5), France (5), Germany (15), Holland (1), Norway (1), Romania (1), Switzerland (1) and the United Kingdom (8). Thus some of the European Countries were not represented. Colleagues from Hungary and Poland reported that no work on the Coanda effect is being carried out there, but no replies were received from Bulgaria, Italy, Spain and Yugoslavia. The aim of inviting all those working in the particular field under discussion to take part must have been very nearly achieved.

The experience of attending the colloquium and the most encouraging response and the positive comments and constructive criticisms of the participants showed the writer that a colloquium of this type answered a real need. There appears to be no

doubt that the Euromech experiment of "workshop" meetings made an excellent start and deserves every support in its further development.

The subject chosen proved to be ideally suited for the purpose and the success of the meeting confirmed that the rules laid down for these colloquia are on the whole realistic. The subject was obviously "live" and also suitably restricted and definable. It became evident quite early on in the discussions that even such a restricted subject has many aspects and facets and that the individual worker finds it is difficult to be aware of them all and to obtain a balanced view. Consequently, the participants particularly appreciated the opportunity to get acquainted with the whole spectrum of the work and to assess the present status of the subject and the scope of the various activities in Europe. The need was also felt for free and open discussions to enlighten investigators about the developments presently under way and about future projects; to stimulate the emergence of fresh ideas; and to put the individual contributions and activities into perspective. It seems particularly important to bring different individuals or research teams face-to-face at an early and formative stage of the work.

The meeting was held in the Senate Room of the University, which allowed a close approximation to round-table seating. This, the full projection facilities and easy access to a large blackboard, combined with the pleasant atmosphere, led to lively discussions. The number of participants was about right and the experience showed very clearly that this should definitely be restricted to about 50 for this kind of working meeting. It was also confirmed that it is very important to invite mainly people known for their active interest in the subject and especially to encourage the participation of young people: the latter enlivened the discussions considerably and contributed in a most effective manner throughout.

The timetable included a morning session (9.00 to 13.00) and an afternoon session (14.30 to 17.30), with half-hour tea or coffee breaks in each. This proved quite workable. It appeared useful to group papers under appropriate headings and to provide a thread through the whole meeting. It was found that a good survey paper at the beginning, which outlined existing knowledge under the same group headings, helped greatly in guiding the discussions. It was also very valuable to have the same chairman throughout the meeting, although this must have been quite a strain. The right climate of informal but incisive discussions was soon established.

22 of the participants made scheduled contributions, some of them several, so that there were 29 items on the programme. In the event the time available for all of these was rather short, and the colloquium could well have been spread over 3 days. An extra day would have contributed to a more relaxed atmosphere as well as to the clarification of a number of important points which were raised but not adequately discussed. However, the time of preparation was too short in the present case to add an extra day so as to accommodate the unexpectedly large number of contributions more comfortably, but it would seem desirable for future

colloquia to discover well in advance how many contributions there are likely to be and so to provide for sufficient time.

The colloquium proved again that it is quite possible in many cases to present the relevant points of an argument in as short a time as 15 minutes. But this requires careful preparation and it would seem advisable before future colloquia to exhort contributors not to read out the usual formal paper but to remember the special purpose of these meetings, the particular points under discussion and the special audience they are addressing, and to prepare themselves accordingly with the greatest care. Although it is in the nature of these colloquia that written papers or preprints will not, in general, be distributed to the participants, it may well be possible to bring along and to pass round the table copies of, say, figures giving the main results or other relevant information. This might be further encouraged.

The language difficulties were largely overcome simply by conducting most of the proceedings in English. It could not be ascertained, however, whether or not everybody was really able to follow the discussion fully and, at future meetings, people might be encouraged even more to interrupt when they are left in the dark and, if necessary, ask for an on-the-spot translation.

Invaluable personal contacts and discussions were furthered immensely by the warm and most generous hospitality of Professor Wille and his helpers. A meeting place had been arranged for the evening before the colloquium proper and another evening was spent in Professor Wille's institute among well prepared demonstrations of the interesting work carried out there and other apparently inexhaustible sources of invigorating refreshments. Full use was made of the breaks between sessions and it would seem useful if participants could lunch together at future meetings.

It may be mentioned that the meeting was accompanied by a copious and free demonstration of sonic bangs.

Finally, the desirability of acquiring some funds for the Euromech colloquia became apparent. In the present case, Professor Wille succeeded in organising the meeting so that no extra costs arose for the participants. But this may not always be possible and it would also seem desirable to be able to support some of the participants, especially young people.

It may justifiably be hoped that this first Euromech Colloquium at Berlin has initiated a series of working conferences which will benefit both the research scientist and the advancement of knowledge.

D. KÜCHEMANN  
24<sup>th</sup> May 1965

## EUROMECH COLLOQUIA for 2003

EUROMECH Colloquia are informal meetings on specialised research topics. Participation is restricted to a small number of research workers actively engaged in the field of each colloquium. The organisation of each colloquium, including the selection of participants for invitation, is entrusted to a Chairperson. Proceedings are not normally published. Those who are interested in taking part in a colloquium should write to the appropriate Chairperson.

We give below the number, title, Chairperson and Co-chairperson, dates and location for each colloquium in 2003. Other information may be obtained from the Society's web-site on [www.euromech.cz](http://www.euromech.cz).

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### 445. *Mechanics of Material Forces*

Chairman: P. Steinmann

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Co-chairman: G.A. Maugin (Paris)

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Date & location: May 21<sup>st</sup> – 24<sup>th</sup> 2003, Kaiserslautern, Germany.

Conceptually speaking, common Newtonian continuum mechanics, which give rise to the notion of spatial (mechanical) forces, consider the response to spatial placements of 'physical particles' with respect to the ambient space. In contrast continuum mechanics as understood by Eshelby, which give rise to the concept of material (configurational) forces, is concerned with the response to material placements of 'physical particles' with respect to the surrounding material. Well-known examples of material forces are driving forces on defects such as the Peach-Koehler force, the J-integral in fracture mechanics, energy release and the like. Consideration of material forces goes back to the work of Eshelby, who investigated forces on defects, mainly in elastic materials so that this area of continuum mechanics is sometimes referred to as Eshelbian mechanics.

The concept of material forces provides a basis for the study of the tendency of a variety of defects, such as *cracks*, *dislocations*, *inclusions*, *precipitates*, *phase boundaries* and *interfaces* to move relative to the surrounding material as an active branch of research in continuum mechanics. Typical topics of interest are: material forces on defects and their kinetics, energy-momentum tensors, conservation laws, path integrals, energy release rates, the duality of the direct and inverse motion problem and 4-dimensional formalisms.

446. *High-order Methods for the Numerical Simulation of Vortical and Turbulent Flows*

Chairman: M. Schäfer

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Co-chairman: P. Bontoux (Marseille)

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Date & location: March 10<sup>th</sup> – 11<sup>th</sup> 2003, Seeheim (near Darmstadt).

The main objective is to bring together researchers with interests in theoretical, computational and applied aspects of high-order methods for the simulation of vortical and turbulent flows. Much progress has been achieved in this research field in recent years which would seem to promise to increase the possibility of reliable and efficient simulation of complex problems in fluid mechanics.

The purpose is thus to discuss recent and current research and developments relating to the subject, defining the state of the art and opening up further possibilities for intensified European co-operation in the field.

Topics will include: spectral methods, pseudo-spectral methods, spectral-element methods, high-order finite-volume, finite-difference and finite-element methods, h-p finite-element methods, wavelet-based methods, efficient solvers and preconditioners, involvement of multigrid adaptive methods, parallel computing aspects, basic flow phenomena and technical applications.

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447. *Interaction Phenomena in Turbulent Particle-laden Flows*

Chairman: M. Sommerfeld

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[www.eeri.ee](http://www.eeri.ee)

Date & location: 18<sup>th</sup> – 20<sup>th</sup> June 2003, Tallinn, Estonia.

The colloquium will provide an opportunity for European scientists to present and discuss new ideas, results and techniques in the field of two-phase particle-laden turbulent flows. Theoretical, experimental and computational studies of particulate flows are equally welcome. The presentations should focus on the physics of particle-turbulence interaction and turbulence modification, particle-wall and

particle-particle interactions, particle coalescence and agglomeration, particle deposition, dispersion and clustering in dispersed turbulent flows.

Approaches may include Eulerian continuum and Lagrangian trajectory modelling methods, statistical kinetic PDF models, one-point and two-point turbulence closures, spectral analysis, direct and large-eddy simulations, LDA and PIV measurement techniques. Applications may range from industrial two-phase fluid dynamics to phenomena in a dusty atmosphere, clouds and liquids.

Topics may include:

- Free and confined particulate turbulent flows in jets, mixing layers, channels, boundary layers, vortex tubes and chambers etc.
  - Dilute and dense particle-laden turbulent flows.
  - Models for two-phase particulate turbulent flows.
  - Direct and large-eddy simulations of particulate turbulent flows.
  - Measuring techniques in dispersed turbulent flows.
  - Heat and mass transfer in particulate turbulent flows.
  - Industrial and meteorological applications.
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#### 448. *Vortices and Field Interactions*

Chairman: M. Rossi,

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Date & location: September 8<sup>th</sup> – 12<sup>th</sup>, 2003, Paris.

Experimental visualisation as well as numerical simulation of shear flows and more general turbulent motions have identified vortices as a principal building block of fluid dynamics. These structures may interact strongly with external fields, such as gravity, sound, electric or magnetic fields. Conversely, vortices may alter the evolution of such quantities in time. Density gradients are modified because of enhanced mixing produced by a vortex; a sound field may be scattered by vorticity filaments; a magnetic field may be produced by a dynamo effect and fields can be eliminated by flux expulsion.

The interplay of vortex motion and external field dynamics may therefore result in extremely complex flows. Clearly a better understanding of these matters is of great interest since it would lead to better control of a vast range of phenomena.

The goal of the colloquium is to bring together those who work on such fundamental topics so that the different communities may identify common approaches to the various cases mentioned above. Both theoretical and

experimental aspects will be considered, while attempting to balance the two aspects as best we may. Specific topics are likely to be the main focus:

- Formation, stability and structure of vortices affected by gravity, sound, electric or magnetic fields.
- Interaction of sound with vorticity.
- Interaction between magnetic fields and vorticity.
- Mixing due to vortex motion.

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449. *Computational Aero-acoustics: from Acoustic Source Modelling to Far-field Radiated Noise Prediction*

Chairman: P. Sagaut,  
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Co-chairman: E. Manoha (Chatillon).

Date & location: September-December 2003, Paris.

The main purpose of the colloquium is to gather major European contributions dealing with computational aero-acoustics. This field is known to be of exponentially growing interest, in both automotive and aeronautical industries.

The principal topics will be:

- Prediction of noise generation. Several approaches have been developed recently – e.g. stochastic reconstruction, direct simulation, large eddy simulation, non-linear disturbance equations and linear stability analysis.
- Acoustic wave propagation, including direct simulation, linearised Euler equations
- Acoustic far-field prediction – Kirchoff integration, Lighthill-like models, FH-W model . . .
- Modelling of walls with acoustic treatment

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450. *Studies of Splashes (a century after A.M. Worthington)*

Chairman: C. Clanet,  
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Co-chairmen: D. Quéré (Paris). E-mail: quere@ext.jussieu.fr

J-M. Chomaz (Palaiseau). jmarc@ladhyx.polytechnique.fr

Date & location: September, 2003, Carry le Rouet, France.

A splash is the impact of a liquid drop on either a solid or liquid surface. They occur in very different domains over a wide range of scales, from meteorite impacts to micro-drop jet printers. These phenomena are characterised by a short time-scale which makes their experimental study difficult.

Despite the extensive literature on the subject, important questions remain open, such as the role of the surrounding fluid during the impact or the importance of the details of contact between a liquid and a solid. Drop rebounds have been observed, but the physics of the transition from the classic no-rebound situation is not understood. The importance of surface tension in small drop impact also opens the question of surfactant diffusion and its role. Extension to more complex fluids such as emulsions, or to more complex solids with rough surfaces or fibres may also be considered for their importance in applications. Finally, even if the impact of a sphere is of prime interest, study of the influence of the geometry of observed features – such as the impact of a jet, liquid curtains or colliding drops – would also have its own fascination.

This colloquium, on a scientifically open field, will give an opportunity for several European groups to exchange and interact. It offers an occasion to summarise the major improvements in the understanding of splashes which have been made in the century since the landmark study of A.M. Worthington.

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451. *Sea Wave Bottom Boundary Layers*

Chairman: E. Foti

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Date & location: October 26<sup>th</sup> – 29<sup>th</sup> 2003, Taormina, Italy.

The colloquium will provide opportunities for scientists from all over Europe to meet and discuss their current research on sea-bottom boundary layers. In particular, specific contributions for the turbulent closure for oscillatory turbulent boundary layers, models of wave-current interaction and the prediction of sediment movement are encouraged, with particular emphasis on experimental data. Moreover, unsteady boundary layers have been recognised as important in several fields of fluid mechanics ranging from aeronautical engineering to bio-fluid dynamics. The colloquium will, we hope, provide a good opportunity for cross-fertilisation among different communities.

452. *Advances in Simulation Techniques for Applied Mechanics*

Chairman: M. Arnold

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Date & location: October 6<sup>th</sup> – 10<sup>th</sup>, DLR Oberpfaffenhofen, Germany.

In engineering the classical mechanical system components are increasingly integrated with electric and hydraulic components (*mechatronics*). Novel modelling and simulation techniques are necessary to analyse the dynamic behaviour of coupled physical phenomena in these engineering systems. This includes not only systems which are continuous in time but also components discrete in time such as digital controllers. The simulation of heterogenous systems in engineering applications is either based on a unified modelling framework with modelling languages such as MODELICA or on modular techniques in a co-simulation environment.

The main objective of the colloquium is a discussion of recent advances and actual developments in these techniques for the dynamic simulation of mechatronic systems. The topics of interest include the modelling of coupling conditions, differing approaches to the modelling and dynamic simulation of coupled mechanical systems, adapted numerical solution methods, advanced case studies and industrial applications.

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453. *Internal Stresses in Polymer Composite Processing and Service Life*

Chairman: A. Vautrin

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Date & location: December 1<sup>st</sup> – 3<sup>rd</sup> 2003, Saint-Etienne, France.

The colloquium aims at gathering researchers in the mechanics, physics and chemistry of polymer matrix composites. Both thermoplastic and thermosetting polymer matrices are to be addressed. It will cover all experimental and theoretical topics related to the internal stresses in composites due to processing and in-service environmental variations.

Topics will include: dimensional stability and spring-back effects; the influence of material heterogeneity and anisotropy; manufacturing processes, stress,

temperature and fluid diffusion coupling; experimental and numerical analyses to identify and predict hygro-thermal-mechanical stress/strain state under constant or varying conditions; full-field measurement methods; accelerated ageing test analysis, design and validation; internal stress effects on static, fatigue and durability performance; failure criteria incorporating internal stresses; tests to characterise internal stress and standardisation.

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## **Report on EUROMECH 9<sup>th</sup> EUROPEAN TURBULENCE CONFERENCE**

**July 2<sup>nd</sup>-5<sup>th</sup>, 2002**

**University of Southampton**

**Ian P. Castro**

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EUROMECH's European Turbulence Conference (ETC9) held in Southampton was the 9<sup>th</sup> in the series begun in Lyon in 1986. At that meeting, which had significantly less than half the number of participants than were present in Southampton, the late Professor George Batchelor predicted in his opening remarks that turbulence specialists could look forward to many happy years of enquiry without the fear that announcement of some new development would render their efforts unnecessary. Despite (or perhaps because of!) the continually increasing number of papers on turbulence, appearing in an ever-growing variety of academic journals, it seems that not only has his prediction been amply fulfilled but that a similar prediction could be made even now – 16 years later. Fundamental understanding, although clearly greater than it was, and reasonably well summarised by the proceedings of the intervening conferences, has largely only proceeded incrementally, without any really startling breakthroughs.

Nonetheless, as at previous meetings in the series, ETC9 was characterised by a wide range of high quality and interesting contributions, covering a range of basic issues in various contexts. The objectives remained the same as ever: to bring together mathematicians, engineers and physicists working on fundamental aspects of turbulent flows. Note that the aim was not to discuss turbulence modelling – other conferences do that very well and with well over 100 Reynolds-averaged turbulence models now in existence such conferences clearly have an important role. Rather, the emphasis was on fundamentals, with a view to broadening basic understanding of turbulent flows, including those of specific industrial or environmental importance. The papers presented, whether oral (172 plus 8 plenaries) or poster (62), reflected this emphasis and were grouped under various themes. Some of the themes were reviewed by the eight invited speakers, who provided an excellent background against which the various sessions could be

viewed. As usual, the papers were chosen by the EUROMECH Turbulence Conference Committee, currently chaired by Prof. Leonhard Kleiser, at its meeting in January 2002. They were selected from a total of 322 abstracts, which was rather fewer than submitted for the previous conference. Sadly, this was probably a reflection more of the infamous 11.09.01 events (abstracts were due a month later) and the lack of guaranteed sun (cf. Barcelona in July), rather than any reduction in European turbulence activity, but at least it meant perhaps that in Southampton there was a solid collection of genuinely committed turbulence researchers!

There were about 275 registered delegates representing nearly 30 countries although, as often happens, a number of the Eastern Europeans were, mostly at the last moment, unable to attend, despite having received some financial assistance. To fit all accepted papers (orals of 15 minutes) into the 38 sessions over three-and-a-half days it was necessary to use parallel sessions but although these were mostly 'three-parallel', more than in any of the previous conferences in the series, this did not seem to detract from delegates' enjoyment of the meeting.

For such a large conference it is clearly impossible to comment on individual contributions. It could also be invidious, perhaps implying that all the others were less noteworthy! But to give a flavour of the scientific programme the session titles, (numbers of oral contributions) and names of the invited speakers are summarised below. Some additional remarks, made by Prof. Frans Nieuwstadt in his final summary statement at the Conference itself, are included (in italics) for each topic.

- Instabilities & Transition (8). J.-M. Chomaz (CNRS, open flows) and B. Eckhardt (Marburg, internal flows) gave invited talks.  
*Considerable theoretical progress has been made since Lyon.*
- Intermittency & Scaling (17). L. Biferale (Rome) gave an invited talk.  
*This topic arose out of the original 'Chaos' topic at Lyon. It helps to keep the physicists and engineers talking.*
- Structures & Vortex Dynamics (31).  
*Since Lyon, structures in turbulence have become fully accepted as being dynamically significant, but quantifiable description remains a problem. Wavelet techniques (featuring in a number of paper) may be the way forward.*
- Transport & Mixing (17).  
*Considerable progress since Lyon, with now a reasonably good understanding of mixing processes in turbulence.*
- Geophysical Turbulence (17). E. Lindborg (KTH, Stockholm) gave an invited talk.
- Two-Phase Flows (11).

*First introduced at the Lausanne conference (1996) and clearly of continuing interest and importance.*

- Turbulence Control (8). T. Bewley (UCSD) and J. Kim (USLA) gave invited talks.

*Important results now being produced but the real step towards practical application has still to be taken.*

- DNS/LES (25).

*(See below).*

- Compressible Turbulence (4).

*A loss of interest in this topic since its first introduction.*

- Separated Flows (5).

- Boundary Layers and Pipe Flows (4).

- Jets (3).

- Reacting Flows (4). N. Peters (Aachen) gave an invited talk.

*Technologically important and in which advanced measuring techniques and numerical simulations will lead to much progress.*

- Acoustics & Turbulence (7). A. Dowling (Cambridge, UK) gave an invited talk.

- Miscellaneous (11).

Just one talk will be mentioned individually. Inclusion of a topic on Acoustics & Turbulence was a new feature in the ETC series. In her invited presentation Prof. Ann Dowling confirmed the Turbulence Committee's view that with the increasing interest in aero-acoustics, of the kind in which turbulence plays a crucial role, it was important that the (so far) largely separate acoustics and turbulence communities should interact more positively. Despite the relatively low number of contributions in this area, it is hoped that the topic will remain a feature of future ETCs. It was also evident that practically all the DNS contributions in the DNS/LES sessions could have been positioned in one or another of the alternatively-titled sessions. DNS has now largely become 'simply' a tool, to be used (like laboratory experiments) for probing the nature of turbulent flows. It might be anticipated, for example, that work in the Turbulence Control area will increase further and a number of the DNS talks could certainly have been included in those sessions. In his closing summary Frans Nieuwstadt suggested that DNS/LES has in fact 'been the success story of the last 16 years'. He pointed out that the ratio of the number of papers on laboratory experiments to those on numerical simulation has changed completely, with the latter now forming a clear majority. However, whilst numerical simulation has led to a much better insight into the structure and dynamics of (low Reynolds number) turbulence, Prof. Nieuwstadt also suggested that a point of saturation is perhaps being reached - i.e. the ratio 'increase of insight to increase in available computer power' is tending to zero rather than a usefully non-zero constant. This emphasises the importance of the current trend to establish genuinely high Reynolds number laboratory facilities

- a good, new example being the proposed Nordic Wind Tunnel, which Prof. Bill George discussed in a poster at the meeting.

Unlike all other EUROMECH-sponsored meetings, the ETCs produce a published version of all the collected papers in time for the meeting itself. ETC9 was no exception - CIMNE published the 908-page book 'Advances in Turbulence IX', edited by three of the organisers. This contains all presented papers (eight pages for invited talks, four pages for orals and one page for posters). There are still copies available for purchase at the special conference price, direct from the author (£25 plus p. & p.) to whom enquiries should be directed.

Although two years seems a rather short time to expect major developments in turbulence understanding, the increasing popularity of these conferences suggests that much is still to be gained by the personal interactions and discussions generated at the ETCs, as well as by the paper preparation and presentation processes themselves. ETC9 seemed no exception and its success augurs well for the next meeting, which will be held at the Norwegian University of Science & Technology in Trondheim in early July 2004.

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### **Information for prospective chairpersons of EUROMECH colloquia**

a) EUROMECH will give three grants of 200 EURO each (total 600 EURO), for the support of young participants. The recipients should not be from the chairperson's institute. The Chairperson can either request the amount, in a letter addressed to the Treasurer, or deduct it at the end of the Colloquium from the amount of additional registration fees collected from non-members, then due to be sent to the Treasurer. The names and addresses of the grant recipients should appear in the final report.

b) EUROMECH members will be allowed a 32 EURO reduction in the registration fee. Their identification is their membership number, which may be requested by the chairperson. Non-member participants who have paid the full registration fee can become members by sending a completed membership application form to the President, (available from the chairperson or on [www.euromech.cz](http://www.euromech.cz)). The 32 EURO will in this case be credited as membership dues for the year of the Colloquium.

c) After the Colloquium or Conference the Chairperson should transfer to the Treasurer (within about 1 month after the meeting) an amount corresponding to the 32 EURO collected from the non-member participants, together with a list of participants, indicating members and non-members.

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## **Objectives of the EUROMECH Mechanics Society**

The Society is an international, non-governmental, non-profit, scientific organisation, founded in 1993. The objective of the Society is to engage in all activities intended to promote in Europe the development of mechanics as a branch of science and engineering. Mechanics deals with motion, flow and deformation of matter, be it fluid solid, under the action of applied forces, and with any associated phenomena. The Society is governed by a Council composed of elected and co-opted members.

Activities within the field of mechanics range from fundamental research on the behaviour of fluids and solids to applied research in engineering. The approaches used comprise theoretical, analytical, computational and experimental methods. The Society shall be guided by the tradition of free international scientific co-operation developed in EUROMECH Colloquia.

In particular, the Society will pursue this objective through

- The organisation of European meetings on subjects within the entire field of mechanics.
- The establishment of links between persons and organisations including industry engaged in scientific work in mechanics and in related sciences.
- The gathering and dissemination of information on all matters related to mechanics.
- The development of standards for education in mechanics and in related sciences throughout Europe.

These activities which transcend national boundaries are to complement national activities.

The Society welcomes to membership in the Society all those who are interested in the advancement and diffusion of mechanics. It also bestows honorary membership, prizes and awards to recognise scientists who have made exceptionally important and distinguished contributions.

Members may take advantage of benefits such as reduced registration fees to our meetings, reduced subscription to European Journal of Mechanics, information on meetings, job offers and other matters in mechanics. Less tangibly but perhaps even more important, membership provides an opportunity for professional identification and for helping to shape the future of our science in Europe and make it attractive to young people.