



# NEWSLETTER

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**President's Address**

**From the Office of the Secretary-General**

**IUTAM Symposia 2004 and 2005**

**IUTAM Summer School 2004 and 2005**

**International Congress, XXI ICTAM, Warsaw, August 2004**

**IUTAM Home Page:**

**<http://www.iutam.net>**

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**International Union of Theoretical and Applied Mechanics**

**N-2004-1**

**June 2004**

## President's Address

This is an important year for IUTAM for two reasons. First, as you will be well aware, the 21st International Congress of Theoretical and Applied Mechanics will be held in Warsaw, 15-21 August 2004. The first ICTAM was held in Delft in 1924, so we celebrate both a 21st and an 80<sup>th</sup> anniversary. The XXI ICTAM has attracted a record number of papers, and I want to record my personal thanks to the International Papers Committee for their very hard work in the exceptionally difficult task of selecting the papers that will be presented in Lecture and Seminar Presentation sessions -- see later in this Newsletter for details of Invited Lectures, Mini-Symposia, and the 60 Pre-nominated Sessions. If you have not yet registered, there is still time to do so online at <<http://ictam04.ippt.gov.pl>>. I hope that all readers of this Newsletter will be able to attend and benefit from this outstanding Congress which is to be held in a city of such great charm and character.

The second reason to celebrate is that, as I reported in the previous IUTAM Newsletter (November 2003), ICSU (the International Council for Science) has awarded a grant of \$100k to IUTAM for the support of an exciting new initiative in Capacity Building, namely the foundation of AIMS (the African Institute for Mathematical Sciences) in Cape Town, South Africa. Part of this grant has already been very effectively spent in funding a Workshop on Capacity Building, which was held at AIMS, 13-16 April 2004. IUTAM was represented at this Workshop by Professor Hassan Aref (a member of our Working Party on Capacity Building in the Mechanical Sciences) and Professor Jean Salencon, as well as by the Secretary-General of IUTAM and myself. Theoretical and applied mechanics is well represented in the graduate one-year diploma course that is currently being taught at AIMS. A talented and well-motivated cohort of students from all over Africa are now near to completion of this pioneering diploma, and there are already over 160 applicants for the 45 places that will be available for the new course starting in September 2004. It is good that IUTAM is actively involved in this capacity-building project, which it is hoped will serve as a beacon for the future development of science and technology in Africa.

We may hope that, through AIMS, IUTAM may be able to exert positive influence on the development of science education and research in Africa, and that our African colleagues in theoretical and applied mechanics will

be encouraged to participate more actively both in IUTAM activities, and in the AIMS initiative. See <<http://www.aimsforafrica.org>> for current developments.

Keith Moffatt  
President, IUTAM

### **From the Office of the Secretary-General**

#### *IUTAM website developments:*

- \* The Presidents/Chairs and the Secretaries (and their co-ordinates) of the *Adhering Organizations* have been added to the Address List of the IUTAM website.
- \* Information on the scopes and on the 2003 reports of the *IUTAM Working Parties* has been made accessible via the page on Working Parties of the IUTAM website.
- \* The *integrated calendar of upcoming events* of IUTAM and its Affiliated Organizations, launched about a year ago, is well functioning. In particular, the inclusion of the events calendars of CISM and of EUROMECH is worth mentioning.
- \* For convenience, in the *Symposia Calendar* on the IUTAM website the listings of IUTAM Symposia organized in 1996 and 1997 have been added (those from 1998 to date were already present).

#### *IUTAM Working Parties:*

As agreed during the previous meeting of the General Assembly in Cambridge, UK, in August 2002, the Working Parties will be subject to evaluation during the 2004 meeting of the General Assembly. In view of this, the General Assembly has accepted to allow the Chairpersons of the Working Parties to attend the meeting General Assembly in Warsaw as nonvoting observers.

#### *Proposals for IUTAM Symposia and Summer Schools for 2006 and 2007:*

The call for proposals has resulted in 26 proposals for Symposia and 2 proposals for Summer Schools. These proposals are now subject to evaluation by the Symposia Panels and they will be discussed at the General Assembly in Warsaw.

Dick van Campen  
Secretary-General, IUTAM

## IUTAM Symposia 2004

### **04-1 (GA.02-12) IUTAM Symposium on Size effects on Material and Structural Behavior at Micron- and Nanometer-Scales**

Place: **Hong Kong, China**  
Date: **May 30 – June 4, 2004**  
Chairman: **Prof. P. Tong**  
Hong Kong University of Science & Technology,  
Department of Mechanical Engineering, Clear Water  
Bay, Hong Kong  
**Email: pintong@ust.hk**

IUTAM Representative on Scientific Committee: Prof. L. B. Freund

### **04-2 (GA.02-11) IUTAM Symposium on Mechanics of Biological Tissue**

Place: **Graz, Austria**  
Date: **June 27 - July 2, 2004**  
Chairman: **Prof. G. Holzapfel**  
Institute for Structural Analysis, Computational  
Biomechanics, Schiesstattgasse 14/B, A-8010 Graz,  
Austria  
**Email: gh@biomech.tu-graz.ac.at**  
Co-Chairman: **Prof. R.W. Ogden**  
University of Glasgow, Department of Mathematics,  
Glasgow G12 8QW, UK,  
**Email: rwo@maths.gla.ac.uk**

IUTAM Representative on Scientific Committee: Prof. J. Engelbrecht

**04-3 (GA.02-04) IUTAM Symposium on Non-Uniqueness of Solutions to the Navier-Stokes Equations and their Connection with Laminar-Turbulent Transition**

Place: **Manchester, UK**  
Date: **August 9 – 11, 2004**  
Chairman: **Prof. T. Mullin**  
Manchester University, Department of Physics,  
Manchester M13 9PL, UK  
**Email:** tom@reynolds.ph.man.ac.uk

IUTAM Representative on Scientific Committee: Prof. W. Schiehlen

**04-4 (GA.02-02) IUTAM Symposium on One Hundred Years of Boundary Layer Research**

Place: **Göttingen, Germany**  
Date: **August 12 - 14, 2004**  
Chairman: **Prof. G.E.A. Meier**  
Institute of Aerodynamics and Flow, DLR Aerospace  
Center, Bunsenstrasse 10, 37073 Göttingen, Germany  
**Email:** g.e.a.meier@dlr.de

IUTAM Representative on Scientific Committee: Prof. H.K. Moffatt

**04-5 (GA.02-07) IUTAM Symposium on Elastohydrodynamics of Rough Surfaces**

Place: **Cardiff, UK**  
Date: **September 1 - 3, 2004**  
Chairman: **Prof. R.W. Snidle**  
Cardiff University, School of Engineering, Cardiff CF  
24 0YF, UK  
**Email:** snidler@cf.ac.uk

IUTAM Representative on Scientific Committee: Prof. D.H. van Campen

**04-6 (GA.02-14) IUTAM Symposium on Mechanics and Reliability of Actuating Materials**

Place: **Beijing, China**  
Date: **September 1 - 3, 2004**  
Chairman: **Prof. W. Yang**  
Tsinghua University, Department of Engineering  
Mechanics, Beijing 100084, China  
**Email: yw-dem@tsinghua.edu.cn**

IUTAM Representative on Scientific Committee: Prof. J. Salençon

**04-7 (GA.02-06) IUTAM Symposium on Recent Advances in Disperse Multiphase Flow Simulation**

Place: **Argonne National Laboratory, Illinois, USA**  
Date: **October 4 – 7, 2004**  
Chairman: **Prof. S. Balachandar**  
University of Illinois at Urbana-Champaign, Department  
of Theoretical and Applied Mechanics, 216 Talbot Lab,  
Urbana, IL 61801, USA  
**Email: s-bala@uiuc.edu**  
Co-Chairman: **Prof. A. Prosperetti**  
Johns Hopkins University, Department of Mechanical  
Engineering, 122 Latrobe Hall, 34th & Charles Streets,  
Baltimore, MD 21218, USA,  
**Email: Prosperetti@jhu.edu**

IUTAM Representative on Scientific Committee: Prof. H.K. Moffatt

**04-8 (GA.02-01) IUTAM Symposium on Elementary Vortices and Coherent Structures: Significance in Turbulence Dynamics**

Place: **Kyoto, Japan**  
Date: **October 26 - 28, 2004**  
Chairman: **Prof. S. Kida**

Theory and Computer Simulation Center, National  
Institute for Fusion Science, Oroshi-cho 322-6, Toki,  
509-5292, Japan  
**Email:** Kida@toki.theory.nifs.ac.jp

IUTAM Representative on Scientific Committee: Prof. H.K. Moffatt

**04-9 (GA.02-05) IUTAM Symposium on Laminar-Turbulent  
Transition**

**Place:** Bangalore, India  
**Date:** December 13 – 17, 2004  
**Chairman:** Dr. R. Govindarajan  
Jawaharlal Nehru Centre for Advanced Scientific  
Research, Fluid Dynamics Unit, Jakkur, Bangalore 560  
064, India  
**Email:** rama@jncastr.ac.in

IUTAM Representative on Scientific Committee: Prof. R. Narasimha

### **IUTAM Symposia 2005**

**GA.02-16 IUTAM Symposium on Multiscale Modelling of  
Damage and Fracture Processes in Composite  
Materials**

**Place:** Kazimierz Dolny, Poland  
**Date:** May 23 – 27, 2005  
**Chairman:** Prof. T. Sadowski  
Technical University of Lublin, Department of Applied  
Mechanics, Nadbystrzycka 36, PL 20-618 Lublin,  
Poland  
**Email:** tsks@archimedes.pol.lublin.pl

IUTAM Representative on Scientific Committee: Prof. J. Salençon

**GA.02-08**                    **IUTAM Symposium on Mechanical Behavior and  
Micro-mechanics of Nanostructured Materials**

Place:                    **Beijing, China**  
Date:                    **June 27 – 30, 2005**  
Chairman:              **Prof. Y. Bai**  
Chinese Academy of Sciences, Institute of Mechanics,  
Beijing 100080, China  
**Email:** Baiy1@lnm.imech.ac.cn

IUTAM Representative on Scientific Committee: Prof. L. B. Freund

**GA.02-10**                    **IUTAM Symposium on Impact Biomechanics-from  
Fundamental Insights to Applications**

Place:                    **Dublin, Ireland**  
Date:                    **July 4 - 8, 2005**  
Chairman:              **Dr. M. Gilchrist**  
National University of Ireland - Dublin, Department of  
Mechanical Engineering, Belfield, Dublin 4, Ireland  
**Email:** Michael.Gilchrist@ucd.ie

IUTAM Representative on Scientific Committee: Prof. D.H. van Campen

**GA.02-13**                    **IUTAM Symposium on Vibration Control of  
Nonlinear Mechanisms and Structures**

Place:                    **Munich, Germany**  
Date:                    **July 18 – 22, 2005**  
Chairman:              **Prof. H. Ulbrich**  
TU München, Lehrstuhl Angewandte Mechanik,  
Boltzmannstrasse 15, 85748 Garching, Germany  
**Email:** ulbrich@amm.tu-muenchen.de

IUTAM Representative on Scientific Committee: Prof. W. Schiehlen



**GA.02-09**                    **IUTAM Symposium on Multiscale Problems in  
Multibody System Contacts**Place:                    **Stuttgart, Germany**Date:                    **October 4 – 7, 2005**Chairman:              **Prof. P. Eberhard**University of Stuttgart, Institute B of Mechanics,  
Stuttgart, Germany**Email: eberhard@mechb.uni-stuttgart.de**

IUTAM Representative on Scientific Committee: Prof. W. Schiehlen

**GA.02-15**                    **IUTAM Symposium on Topological Design  
Optimization of Structures, Machines and Materials  
- Status and Perspectives**Place:                    **Aalborg and Lyngby, Denmark**Date:                    **October 26 – 29, 2005**Chairman:              **Prof. M.P. Bendsoe**Technical University of Denmark, Department of  
Mathematics, Building 303, DK-2800 Lyngby, Denmark**Email: M.P.Bendsoe@mat.dtu.dk**Co-Chairman:        **Prof. N. Olhoff**Aalborg University, Institute of Mechanical Engineering  
Pontoppidanstraede 101, DK-9220 Aalborg East,  
Denmark**Email: no@ime.auc.dk**Co-Chairman:        **Prof. O. Sigmund**Technical University of Denmark, Department of  
Mechanical Engineering, Section of Solid Mechanics,  
Building 404, DK-2800 Lyngby, Denmark**Email: sigmund@mek.dtu.dk**

IUTAM Representative on Scientific Committee: Prof. N. Olhoff

**GA.02-03 IUTAM Symposium on Flow Control with Mems**

Place: **London, UK**  
Date: **2005, no dates available yet**  
Chairman: **Dr. J.F. Morrison**  
Department of Aeronautics, Imperial College, London  
SW7 2BY, UK  
**Email: j.morrison@ic.ac.uk**

IUTAM Representative on Scientific Committee: Prof. C. Cercignani

**IUTAM Summer Schools****2004 IUTAM Summer School on Biomechanics of Cells and Moleculars**

Place: **Beijing, China**  
Date: **July 12 - July 17, 2004**  
Coordinator: **Prof. J. Fang, Beijing University, Department of  
Mechanics & Engineering Science, Beijing 100871, PR  
China**  
**Email: Prof. Jing Fang, jfang@pku.edu.cn**

**2005 IUTAM-CISM Summer School on Dispersion of Particles in  
Turbulent Flows**

Place: **Udine, Italy**  
Date: **2005, no dates available yet**  
Coordinators: **Prof. Alfredo Soldati, Udine, Italy  
Prof. Michael Reeks, Ispra (Va), Italy**  
**Email: Alfredo Soldati, soldati@uniud.it**

**XXI International Congress of  
Theoretical and Applied Mechanics  
15 – 21 August 2004, Warsaw, Poland  
(Home Page, <http://ictam04.ippt.gov.pl>)**

The International Congresses on Theoretical and Applied Mechanics (**ICTAM**), organized every four years by IUTAM, bring together scientists from all over the world for the purpose of exchanging information about recent developments in the field. Participation is unrestricted.

Below, the final state of affairs is given with respect to the opening and closing lectures, the mini symposia and the pre-nominated sessions.

***Opening Lecturer:***

Prof. L. van Wijngaarden (The Netherlands): *Interplay between air and water*

***Closing Lecturer:***

Prof. K. Sobczyk (Poland): *Stochastic dynamics of engineering systems*

***Mini-Symposia:***

Symbol	Session subject	Chairs
MS1	Smart materials and structures	N. Sottos (USA), J. Holnicki-Szulc (Poland)
MS2	Tissue, cellular and molecular biomechanics	P. Janmey (USA), D. Barthes-Biesel (France), A. Hoger (USA)
MS3	Mechanics of thin films and nanostructures	K. Kim (USA), Z. Suo (USA), H. Jensen (Denmark)
MS4	Microfluids P. Tabeling (France),	R. Adrian (USA), J. Santiago (USA)
MS5	Microgravity flow phenomena	J. Legros (Belgium), G. Neitzel (USA), I. Alexander (USA)
MS6	Atmosphere and ocean dynamics	J. Sommeria (France), M. McIntyre (UK)

**Sectional Lecturers:**

Symbol	Title	Author
SL1	Multibody dynamics: bridging for multidisciplinary applications	J. Ambrosio (Portugal)
SL2	Rapid formation of strong gradients and diffusion in the transport of scalar and vector fields	K. Bajer (Poland)
SL3	Near-critical point hydrodynamics and microgravity	D. Beysens (France)
SL4	Suspensions: From Micromechanics to Macroscopic Behavior	J. Brady (USA)
SL5	Nanoscale mechanics of biological materials	H. Gao (Germany)
SL6	Variational and multiscale methods in turbulence	T. Hughes (USA)
SL7	Non-Newtonian fluid mechanics using molecular theory	R. Keunings (Belgium)
SL8	Nonlinear dynamics in ocean engineering	E. Kreuzer (Germany)
SL9	A bridge between the micro- and mesomechanics of laminates, fantasy or reality	P. Ladeveze (France)
SL10	Turbulence and large-eddy simulations	M. Lesieur (France)
SL11	Probability phenomena in perturbed dynamical systems	A. Neishtadt (Russia)
SL12	Mechanics of rubberlike solids	R. Ogden (UK)
SL13	Some issues in active vibration control of smart structures	A. Preumont (Belgium)
SL14	Ocean circulation and its influence on climate	P. Rhines (USA)
SL15	Microviscoelasticity of cells: cells as viscoplastic bodies	E. Sackmann (Germany)
SL16	Electrokinetics & electrohydrodynamics in microfluids	D. Saville (USA)
SL17	Problems in astrophysical fluid dynamics	E. Spiegel (USA)
SL18	Scaling in quasi-2D turbulence experiments in a rotating flow	H. Swinney (USA)

**PRE-NOMINATED SESSIONS****Fluid Mechanics**

Symbol	Session subject	Chairs
FM1	Biological fluid dynamics	M. Gharib (USA), F. vd Vosse (Netherl)
FM2	Boundary layers	P. Duck (UK), A. Kluwick (Austria)

FM3	Combustion and flames	N. Peters (Germany), P. Wolanski (Poland)
FM4	Complex and smart fluids	B. Khusid (USA), A. Yarin (Israel)
FM5	Compressible flow	H. Hornung (USA)
FM6	Computational fluid dynamics	L. Kleiser (Switzerland), W. Schroeder (Germ.)
FM7	Convective phenomena	G. De Vahl Davis (Australia), K. Zhang (UK)
FM8	Drops and bubbles	J. Eggers (UK), A. Prosperetti (USA)
FM9	Environmental fluid dynamics	H. Huppert (UK), R. Narasimha (India)
FM10	Experimental methods in fluid mechanics	A. Leder (Germany), J. Westerweel (Netherl.)
FM11	Flow control	J. Freund (USA), M. Gad-el-Hak (USA)
FM12	Flow in porous media	A. Mojtabi (France), V. Nikolaevskiy (Rus.)
FM13	Flow instability and transition	P. Monkewitz (Switz.), P. Huerre (France)
FM14	Flow in thin films	N. Aksel (Germany), V. Shkadov (Russia)
FM15	Fluid mechanics of materials processing	F. Dupret (Belgium), R. Moreau (France)
FM16	Fluid mechanics of suspension	R. Bonnecaze (USA), E. Guazzelli (France)
FM17	Granular flows	R. Behringer (USA), I. Goldhirsch (Israel)
FM18	Low-Reynolds-number flow	R. Davis (USA), C. Pozrikidis (USA)
FM19	Magnetohydrodynamics	P. Davidson (UK), A. Thess (Germany)
FM20	Multiphase flows	S. Balachandar (USA), J. Magnaudet (France)
FM21	Solidification and crystal growth	M. Worster (UK), M. Glicksman (USA)
FM22	Stirring and mixing	H. Aref (USA), E. Villermaux (France)
FM23	Topological fluid mechanics	P. Boyland (USA), K. Ohkitani (Japan)
FM24	Turbulence	O. Metais (France),

		R. Moser (USA)
FM25	Vortex dynamics	E. Krause (Germany), G. van Heijst (Netherl.)
FM26	Waves	W. Melville (USA), V. Shrira (UK)

### ***Solid Mechanics***

Symbol	Session subject	Chairs
SM1	Computational solid mechanics	T. Belytschko (USA), P. Wriggers (Germany)
SM2	Contact and friction mechanics	I. Goryacheva (Russia), A. Klarbring (Sweden), G. Szefer (Poland)
SM3	Control of structures	F. Chernousko (Russia), S. Pellegrino (UK)
SM4	Damage mechanics	M. Chrzanowski (Pol.), P. Steinmann (Germany)
SM5	Dynamic plasticity of structures	N. Jones (UK), T. Wierzbicki (USA)
SM6	Elasticity	R. Kienzler (Germany), L. Wheeler (USA)
SM7	Experimental methods in solid mechanics	I. Emri (Slovenia), J. Freire (Brazil)
SM8	Fatigue	J. Dominguez (Spain), K. Reifsnider (USA)
SM9	Fracture and crack mechanics	D. Gross (Germany), A. Needleman (USA)
SM10	Functionally graded materials	R. Batra (USA), G. Paulino (USA)
SM11	Impact and wave propagation	A. Norris (USA), K. Wilmski (Germ.)
SM12	Material instabilities	D. Bigoni (Italy), H. Petryk (Poland)
SM13	Mechanics of composites	S. Adali (South Africa), N. Fleck (UK)
SM14	Mechanics of phase transformations (jointly with IACM)	F. Fischer (Austria), A. Molinari (France)
SM15	Mechanics of porous materials	W. Ehlers (Germany), J. Huyghe (Netherlands)
SM16	Mechatronics	W. Schiehlen (Germ.), M. Tomizuka (USA)
SM17	Multibody dynamics	M. Geradin (Italy), F. Pfeiffer (Germany)

SM18	Plasticity and viscoplasticity	E. vd Giessen (Netherl.), P. Perzyna (Poland)
SM19	Plates and shells	E. Ramm (Germany), H. Mang (Austria)
SM20	Rock mechanics and geomechanics	Z. Mroz (Poland), I. Vardoulakis (Greece)
SM21	Solid mechanics in manufacturing	B. Heimann (Germany), T. Inoue (Japan)
SM22	Stability of structures	Z. Gaspar (Hungary), S. Kyriakides (USA)
SM23	Stochastic micromechanics	Y. Brechet (France), Y. Shibutani (Japan)
SM24	Structural optimization	K. Choi (USA), J. Herskovits (Brazil)
SM25	Structural vibrations	I. Blekhman (Russia), K. Popp (Germany)
SM26	Vehicle dynamics	S. Iwnicki (UK), R. Sharp (UK)
SM27	Viscoelasticity and creep	A. Cocks (UK), N. Ohno (Japan)

***Topics involving both fluid and solid mechanics***

Symbol	Session subject	Chairs
FSM1	Acoustics	T. Geers (USA), N. Peake (UK)
FSM2	Chaos in fluid and solid mechanics	I. Mezic (USA), G. Rega (Italy)
FSM3	Continuum mechanics	K. Rajagopal (USA), G. Saccomandi (Italy)
FSM4	Fluid-structure interaction	J. Grue (Norway), M. Paidoussis (Canada)
FSM5	Mechanics of foams and cellular materials	S. Hilgenfeldt (Netherl.), D. Weaire (Ireland)
FSM6	Multiscale phenomena in mechanics	A. Carpinteri (Italy), C. Miehe (Germany)
FSM7	Education in mechanics	R. Engel (USA), B. Karihaloo (UK)

### **Notice on IUTAM Symposia**

The IUTAM Symposia are reserved to invited participants. Those wishing to participate in an IUTAM Symposium are therefore advised to please contact the Chairman of the Scientific Committee in due time in advance of the meeting.

As from January 1996, Kluwer Academic Publisher is the preferred publisher of the refereed proceedings of the IUTAM Symposia (in rare cases the Proceedings are published as special issues of appropriate journals). A listing of all the published volumes may be found on the IUTAM website.

Prior to the publication by Kluwer, a short report of an IUTAM symposium may be found on the IUTAM website, as published in the IUTAM Annual Reports (<http://www.iutam.net/iutam/Publications/index.php/3>).

**IUTAM** is a member of **ICSU**

### **Notice on availability of IUTAM Newsletter**

The IUTAM Newsletter is available (free of charge) to whom it concern upon request from the IUTAM Secretary-General.

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**<http://www.iutam.net>**

or: **<http://www.iutam.org>** or: **<http://www.iutam.info>**