

REPORT 2002

INTERNATIONAL UNION OF THEORETICAL AND
APPLIED MECHANICS

REPORT 2002



Eindhoven University of Technology
THE NETHERLANDS

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Bureau: Officers and Members

The following members of the Bureau of IUTAM have been elected for the period 1 November 2000 to 31 October 2004:

Officers

Professor H.K. Moffatt (UK)	President
Professor W. Schiehlen (Germany)	Vice-President
Professor L.B.Freund (USA)	Treasurer
Professor D.H. van Campen (Netherlands)	Secretary-General

Members

Professor C. Cercignani (Italy)	elected	(2000)
Professor J. Engelbrecht (Estonia)		(1996)
Professor R. Narasimha (India)		(2000)
Professor J. Salencon (France)		(2000)

Secretariat

IUTAM-Secretariat, Department of Mechanical Engineering,
Eindhoven University of Technology, 5600 MB Eindhoven, The Netherlands
Telephone: +31 40 247 2710, Telefax: +31 40 243 7175
E-mail: sg@iutam.net
Internet: <http://www.iutam.net> or <http://www.iutam.org> or <http://www.iutam.info>

Past Officers

<i>Elected</i>	<i>President</i>	<i>Vice-President</i>	<i>Treasurer</i>	<i>Secretary</i>
1948	J. Péres (France)	R.V. Southwell (UK)	H.L. Dryden (USA)	J.M. Burgers (Netherlands)
1952	H.L. Dryden (USA)	J. Péres (France)	G. Temple (UK)	F.A. v. d. Dungen (Belgium)
1956	F.K.G. Odqvist (Sweden)	H.L. Dryden (USA)	G. Temple (UK)	M. Roy (France)
1960	G. Temple (UK)	F.K.G. Odqvist (Sweden)	W.T. Koiter (Netherlands)	M. Roy (France)
1964	M. Roy (France)	G. Temple (UK)	W.T. Koiter (Netherlands)	H. Görtler (Germany)
1968	W.T. Koiter (Netherlands)	M. Roy (France)	H. Görtler (Germany)	F.I. Niordson (Denmark)
1972	H. Görtler (Germany)	W.T. Koiter (Netherlands)	D.C. Drucker (USA)	F.I. Niordson (Denmark)

1976	F.I. Niordson (Denmark)	H. Görtler (Germany)	D.C. Drucker (USA)	J. Hult (Sweden)
1980	D.C. Drucker (USA)	F.I. Niordson (Denmark)	E. Becker (Germany)	J. Hult (Sweden)
1984	J. Lighthill (UK)	D.C. Drucker (USA)	L.v. Wijngaarden (Netherlands)	W. Schiehlen (Germany)
1988	P. Germain (France)	J. Lighthill (UK)	L.v. Wijngaarden (Netherlands)	W. Schiehlen (Germany)
1992	L.v. Wijngaarden (Netherlands)	P. Germain (France)	B.A. Boley (USA)	F. Ziegler (Austria)
1996	W. Schiehlen (Germany)	L.v. Wijngaarden (Netherlands)	L.B. Freund (USA)	M.A. Hayes (Ireland)

Past Congress Presidents

<i>Nr.</i>	<i>Year</i>	<i>Place</i>	<i>Congress-President</i>
1	1924	Delft, The Netherlands	C.B. Biezeno
2	1926	Zürich, Switzerland	E. Meissner
3	1930	Stockholm, Sweden	A.F. Enström
4	1934	Cambridge, UK	C.E. Inglis
5	1938	Cambridge, USA	K.T. Compton
6	1946	Paris, France	H. Villat
7	1948	London, UK	R.V. Southwell
8	1952	Istanbul, Turkey	K. Erim
9	1956	Brussels, Belgium	F.H. van den Dungen
10	1960	Stresa, Italy	G. Colonnetti
11	1964	Munich, Germany	H. Görtler
12	1968	Stanford, USA	N.J. Hoff
13	1972	Moscow, USSR	N.I. Muskhelishvili
14	1976	Delft, The Netherlands	W.T. Koiter
15	1980	Toronto, Canada	F.P.J. Rimrott
16	1984	Lyngby, Denmark	F. Niordson
17	1988	Grenoble, France	P. Germain and M. Piau
18	1992	Haifa, Israel	J. Singer
19	1996	Kyoto, Japan	T. Tatsumi
20	2000	Chicago, USA	H. Aref

Adhering Organizations

Argentina (1959)

Asociacion Argentina de Mecanica Computacional
Güemes 3450, 3000 Santa Fe
Chairman: Dr. S.R. Idelsohn
Contact: Dr. S. R. Idelsohn
Representatives in IUTAM: Dr. S. R. Idelsohn

Australia (1964)

The Australian National Committee for Theoretical and Applied Mechanics of the
Australian Academy of Sciences
GPO Box 783, Canberra City, ACT 260
Chairman: Prof. N. Phan-Thien
Contact: Prof. N. Phan-Thien
Representatives in IUTAM: Prof. N. Phan-Thien, Prof. R.I. Tanner

Austria (1951)

Austrian National Committee for Theoretical and Applied Mechanics of the Austrian
Academy of Sciences
Dr.-Ignaz-Seipel-Platz 2, A-1010 Wien
Chairman: Prof. H. Troger
Deputy Chairman: Prof. A. Kluwick
Contact: Prof. A. Kluwick
Representatives in IUTAM: Prof. A. Kluwick

Belgium (1949)

The National Committee for Theoretical and Applied Mechanics of the Class of Sciences
of the Royal Belgian Academy
Hertogsstraat 1, B-1000 Brussels
President: Prof. Dirk Vandepitte
Vice-President: Prof. Guy Campion
Secretary: Prof. Roland Decuypere
Contact: Prof. R. Keunings
Representatives in IUTAM: Prof. R. Keunings, Prof. A.H. Cardon and Prof.
D. Vandepitte

Brazil (1982)

Associação Brasileira de Ciências Mecânicas
Avenida Rio Branco 124/18° andar, 20040-001 Rio de Janeiro
Prof. Leonardo Goldstein
Contact: Prof. L. Bevilacqua
Representatives in IUTAM: Prof. L. Bevilacqua

Bulgaria (1969)

Bulgarian National Committee on Theoretical and Applied Mechanics of the Bulgarian Academy of Sciences

1, 15 novembre str.

BG-1040 Sofia

President: Prof. A. Baltov

Secretary: Doc. Dr. Evtim Toshev

Contact: Prof. A. Baltov

Representatives in IUTAM: Prof. H.N. Kuyumdzhev

Canada (1963)

The National Research Council of Canada,

Montreal Road, Ottawa, Canada K1A 0R6

President: Dr. A. Carty

National Committee for IUTAM, Chairman: Prof. S.B. Savage

Contact: Prof. S.B. Savage

Representatives in IUTAM: Prof. D. Weaver, Prof. F.P.J. Rimrott, Prof. S.B. Savage and Prof. J. Hansen

Chile (1996)

The Chile National Committee on Theoretical and Applied Mechanics

Academia Chilena de Ciencias, Almirante Montt 454, Santiago, Chile

President: Prof. E. Tirapegui

Contact: Prof. F. Lund

Representatives in IUTAM: Prof. F. Lund

China (1980)

The Chinese Society of Theoretical and Applied Mechanics

15 Zhong Guan Cun Road, Beijing 100080

President: Prof. Er-Jie Cu

Contact: Prof. Y.S. He

Representatives in IUTAM: Prof. Y. Bai, Prof. Y.S. He, Prof. W. Yang, Prof. Z. Zheng

China-Hong Kong (1996)

The Hong Kong Society of Theoretical and Applied Mechanics (HKSTAM)

Department of Building & Construction, City University of Hong Kong Kowloon Tong, Kowloon, HK

President: Prof. A.Y.T. Leung (CityU)

Vice-President: Prof. K.T. Chau (PolyU)

Secretary: Dr. Jane W.Z. Lu (CityU)

Contact: Dr. J.W.Z. Lu

Representatives in IUTAM: Prof. P. Tong

China-Taipei (1980)

The Society of Theoretical and Applied Mechanics

Institute of Applied Mechanics, National Taiwan University, Taipei, Taiwan 106

President: Prof. C.-S. Yeh

Secretary: Prof. T.T. Wu

Contact: Prof. T.T. Wu

Representatives in IUTAM: Prof. W.-H. Chen, Prof. C.-S. Yeh

Croatia (1994)

Croatian Society of Mechanics

Ivana Lucica 5, HR-10000 Zagreb, Croatia.

President: Prof.dr.sc. Franjo Matejcek

Contact: Prof. I. Alfrevic

Representatives in IUTAM: Prof. I. Alfrevic

Czech Republic (1993) (former Czechoslovakia from 1949 – 1993)

The National Committee of Theoretical and Applied Mechanics

Academy of Sciences of the Czech Republic, Institute of Thermomechanics, Dolejskova 5, CZ-18200 Prague 8

Chairman: Dr. R. Dvorák

Secretary: Prof. M. Okrouhlik

Contact: Dr. R. Dvorák

Representatives in IUTAM: Dr. R. Dvorák

Denmark (1949)

National Committee for Theoretical & Applied Mechanics,

The Royal Danish Academy of Sciences and Letters, H.C. Andersens Boulevard 35, DK-1553 Copenhagen V.

President: Prof. B. Munk Olsen

Secretary: Prof. Ole Hansen

Contact: Prof. P. A. Madsen

Representatives in IUTAM: Prof. P. A. Madsen, Prof. N. Olhoff

Egypt (1976)

Academy of Scientific Research and Technology

Egyptian Committee of Theoretical and Applied Mechanics 101 Kasr El Eini Street, Cairo, Egypt.

ECTAM Chairman: Prof. M.K. Ismail

Secretary General: Prof. Z.Z. Momeh

Contact: Prof. M. K. Ismail

Representatives in IUTAM: Prof. M. K. Ismail

Estonia (1992)

Estonian Committee for Mechanics,
Akadeemia tee 21, EE-12618 Tallinn
Chairman: Prof. J. Engelbrecht
Contact: Prof. J. Engelbrecht
Representatives in IUTAM: Prof. J. Engelbrecht

Finland (1952)

The Finnish National Committee on Mechanics
Helsinki University of Technology, P.O.Box 4100, FIN-02015 HUT, Finland
Chairman: Prof. Mauri Määttänen
Secretary: Prof. Juha Paavola
Contact: Prof. M. Määttänen
Representatives in IUTAM: Prof. M. Määttänen, Prof. J. Paavola

France (1949)

Comité National Français de Mécanique
Académie des Sciences, 23, quai Conti, F-75006 Paris
President: Prof. Gérard Iooss
Secretary: Prof. Olivier Maisonneuve
Contact: Prof. G. Iooss
Representatives in IUTAM: Prof. D. Barthès-Biesel, Prof. P. Suquet, Prof. S. Zaleski and Prof. A. Zaoui

Georgia (2000)

National Committee of Theoretical and Applied Mechanics
I. Vekua Institute of Applied Mathematics of Tbilisi State University, 2 University Str.
Tbilisi 0143
Co-Chairmen: Prof. G. Jaiani, Prof. D. Danelia
Secretary-General: Prof. G. Kipiani
Contact: Prof. G. Jaiani
Representatives in IUTAM: Prof. G. Jaiani

Germany (1950)

Deutsches Komitee für Mechanik (DEKOMECH)
Lehrstuhl für Technische Mechanik, Universität Erlangen-Nürnberg, Egerlandstraße 5,
D-91058 Erlangen
Chairman: Prof. G. Kuhn
Secretary: Prof. P. Steinmann
Contact: Prof. P. Steinmann
Representatives in IUTAM: Prof. U. Gabbert, Prof. C. Miehe, Prof. W. Schröder and Prof. S. N. W. Wagner

Greece (1979)

Hellenic Society for Theoretical and Applied Mechanics

National Technical University of Athens, Laboratory of Steel Structures, 42 Patission street, GR-10682 Athens

President: Prof. A.N. Kounadis

Secretary: Prof. D.E. Beskos

Contact: Prof. D.E. Beskos

Representatives in IUTAM: Prof. A.N. Kounadis

Hungary (1948)

Hungarian National Committee for IUTAM

Department of Structural Mechanics, Budapest University of Technology and Economics, Műegyetem rkp. 3, H-1521 Budapest

President: Prof. S. Kaliszky

Secretary: Prof. G. Stepan

Contact: Prof. S. Kaliszky

Representatives in IUTAM: Prof. S. Kaliszky

India (1950)

National Committee for Theoretical and Applied Mechanics of the Indian National Science Academy

Bahadur Shah Zafar Marg, New Delhi - 110 002

Chairman: Dr. M.L. Munjal

Contact: Prof. M. L. Munjal

Representatives in IUTAM: Prof. N.K. Gupta, Prof. T. Kant and Prof. M. L. Munjal

Ireland (1984)

Irish National Committee for Theoretical and Applied Mechanics

Royal Irish Academy, 19 Dawson Street, Dublin 2

Chairman: Prof. P. O'Donoghue

Secretary: Dr. J.J. Grannell

Contact: Prof. P.E. O'Donoghue

Representatives in IUTAM: Prof. P.E. O'Donoghue

Israel (1950)

The Israel Society of Theoretical and Applied Mechanics

Dept. of Mechanical Engineering, Technion-Israel Institute of Technology, Haifa 32000

President: Prof. S.R. Bodner

Contact: Prof. S. R. Bodner

Representatives in IUTAM: Prof. S. R. Bodner, Prof. I. Goldhirsch

Italy (1949)

Associazione Italiana di Meccanica Teorica ed Applicata

Piazza Leonardo da Vinci 32, I-20133 Milano

President: Prof. A. Morro

Secretary: Prof. C. Cingini

Contact: Prof. A. Morro

Representatives in IUTAM: Prof. G. Maier, Prof. C. Cercignani, Prof. P. Podio-Guidugli and Prof. F. Vatta

Japan (1951)

The National Committee for Theoretical and Applied Mechanics

Science Council of Japan, 7- 22-34 Roppongi, Minato-ku, Tokyo 106-8555

Chairman: Prof. T.Kambe

Contact: Prof. T. Kambe

Representatives in IUTAM: Prof. T. Kambe, Prof. H. Kitagawa, Prof. T. Kobayashi and Prof. E. Watanabe

Korea, Republic of (1989)

Korean Society of Theoretical and Applied Mechanics

Department of Aerospace Engineering, Seoul National University, Seoul 151-742

President: Prof. Jung Yul Yoo

Secretary: Prof. Seung Jo Kim

Contact: Prof. J.Y. Yoo

Representatives in IUTAM: Prof. J.Y. Yoo

Latvia (1992)

Latvian National Committee for Mechanics

Latvian Academy of Sciences, Akademijas laukums 1, Riga LV-1524

President: Prof. V. Tamuzs

Vice-President: Prof. O. Lielausis

Contact: Prof. V. Tamuzs

Representatives in IUTAM: Prof. V. Tamuzs

Morocco (1998)

Société Marocaine des Sciences Mécaniques

Madinat Al Irfane, Rabat Institut, Rabat

President: Professor J. Khalid Naciri

Contact: Prof. M. Belhaq

Representatives in IUTAM: Prof. M. Belhaq

Netherlands (1952)

Dept. for Mechanics of the Royal Institution of Engineers in the Netherlands
c/o Philips Research Laboratories, Building WB-1-57, Prof. Holstlaan 4, NL 5656 AA
Eindhoven.

President: Dr. J.F. Dijkstra

Contact: Dr. J. F. Dijkstra

Representatives in IUTAM: Prof. J. A. Battjes, Prof. D.H. van Campen, Dr. J. F.
Dijkstra

New Zealand (1979)

The Royal Society of New Zealand

P.O. Box 598, Wellington

President: Sir Gil Simpson

Chief Executive Officer: Dr. S.C. Thompson

Contact: Prof. J. Astley

Representatives in IUTAM: Prof. J. Astley

Norway (1949)

National Committee on Theoretical and Applied Mechanics

Norwegian Acad. Sciences and Letters, Dept. of Maths, University of Oslo, P.O.Box
1053, Blindern, N-0316 Oslo 3

President: Prof. B. Gjjevik

Contact: Prof. B.N. Gjjevik

Representatives in IUTAM: Prof. B.N. Gjjevik

Poland (1952)

Committee for Mechanics of the Polish Academy of Sciences

ul. Swietokrzyska 21, PL-00 049 Warszawa

Chairman: Prof. G. Szefer

Contact: Prof. W. Gutkowski

Representatives in IUTAM: Prof. W. Gutkowski, Prof. G. Szefer

Portugal (1968)

Portuguese Society of Theoretical, Applied and Computational Mechanics

Laboratorio Nacional de Engenharia Civil, Avenida do Brasil 101, 1700-066 Lisboa

President: Prof. C. Mota Soares

Vice-Presidents: Prof. J.A.C. Martins, Prof. Raimundo Delgado

Contact: Prof. J. A. C. Martins

Representatives in IUTAM: Prof. J. A. C. Martins

Romania (1956)

Romanian Academy, Department of Mathematics, Romanian National Committee of Theoretical and Applied Mechanics
Calea Victoriei 125, 71102 Bucharest, Romania
Head of Department: Dr. G. Marinoschi
Contact: Prof. N.D. Cristescu
Representatives in IUTAM: Prof. N.D. Cristescu

Russia (1956) (former USSR from 1956 – 1991)

Russian National Committee on Theoretical and Applied Mechanics
Prospekt Vernadskogo 101 : 1 , Moscow 119526
President: Prof. G.G. Chernyi
Secretary: Prof. G.K. Mikhailov
Contact: Prof. G.K. Mikhailov
Representatives in IUTAM: Prof. G. G. Chernyi, Prof. D.M. Klimov, Prof. G.K. Mikhailov and Prof. N.F. Morozov

Saudi Arabia (1988)

King Abdulaziz City of Science and Technology (KACST)
Directorate of Technology and International Cooperation P.O. Box 6086, Riyadh 11442
President: Dr. Saleh A. Al-Athel
Director: Mr. Fahad Huraib
Contact: Mr. F.S. Huraib
Representatives in IUTAM: Dr. S. A. Al-Athel

Slovakia (1993)

The Slovak Society for Mechanics
Council of Scientific Societies, Stefánikova 49, SK-811 04 Bratislava
President: Prof. J. Brilla
Contact: Prof. J. Brilla
Representatives in IUTAM: Prof. J. Brilla

Slovenia (1994)

Slovene Mechanics Society, Faculty of Mechanical Engineering
University of Maribor, Smetanova 17, 2000 Maribor
President: Prof. Leopold Skerget
Secretary: Prof. Jure Marn
Contact: Prof. J. Marn
Representatives in IUTAM: Prof. L. Skerget

South Africa (1994)

National Research Foundation (NRF), Association for Theoretical and Applied Mechanics (SAAM)

South African ICSU Secretariat, P.O. Box 2600, Pretoria 0001

President: Dr. I. Gledhill

Contact: Prof. C. G. du Toit

Representatives in IUTAM: Prof. C. G. du Toit

Spain (1950)

Instituto Nacional de Tecnica Aeroespacial

Carretera de Ajalvir km. 4,00, Torrejón de Ardoz, 28850 Madrid

Contact: Mr. A. Moratilla

Representatives in IUTAM: Mr. A. Moratilla

Sweden (1950)

Swedish National Committee for Mechanics

Chalmers University of Technology, SE-412 96 Gothenburg

President: Prof. L. Josefson, Department of Applied Mechanics

Secretary: Prof. L. Davidson, Department of Thermo and Fluid Dynamics

Contact: Prof. L. Davidson

Representatives in IUTAM: Prof. B. Storåkers, Prof. A. Boström and Prof. B. Lundberg

Switzerland (1950)

Board of the Federal Institutes of Technology (Rat der Eidgenössischen Technischen Hochschulen)

ETH-Zentrum, CH-8092 Zürich

President: Prof. F. Waldvogel

Secretary-General: Dr. S. Brändli

Contact: Prof. P. A. Monkewitz

Representatives in IUTAM: Prof. J. Dual, Prof. P. A. Monkewitz

Turkey (1977)

Turkish National Committee of Theoretical and Applied Mechanics

Istanbul Teknik Üniversitesi, Fen-Edebiyat Fakültesi, Maslak 80626 Istanbul

President: Prof. Yalçın Aköz

Secretary-General: Prof. Mehmet Ali Tasdemir

Contact: Prof. M.A. Tasdemir

Representatives in IUTAM: Prof. E.S. Suhubi

UK (1948)

The Royal Society

6 Carlton House Terrace, London SW1Y 5AG

Executive Secretary of the Royal Society: Mr. Stephen Cox

Chairman of UK Panel for IUTAM: Prof. P.W. Carpenter

Secretary of UK Panel for IUTAM: Prof. B.L. Karihaloo

Contact: Prof. B.L. Karihaloo

Representatives in IUTAM: Prof. C.R. Calladine, Prof. P.W. Carpenter, Prof. N. Jones and Prof. T.J. Pedley

Ukraine (1995)

National Committee of Ukraine on Theoretical and Applied Mechanics

S.P. Timoshenko Institute of Mechanics, 3 Nesterov Str.

Kyiv 03680

Chairman: Prof. A.N. Guz

Secretary-General: Prof. J.J. Rushchitsky

Contact: Prof. J.J. Rushchitsky

Representatives in IUTAM: Prof. A.N. Guz

USA (1949)

The U.S. National Committee on Theoretical and Applied Mechanics

The National Academies, 500 Fifth Street NW, Washington, DC 20001

Chair: Prof. Wolfgang G. Knauss

Vice-Chair: Prof. David B. Bogy

Secretary: Prof. Carl T. Herakovich

Contact: Prof. C.T. Herakovich

Representatives in IUTAM: Prof. W.G. Knauss, Prof. H. Aref, Prof. T. Belytschko, Prof. C.T. Herakovich and Prof. L.G. Leal

Viet Nam (1990)

Vietnamese Association of Mechanics (VAM)

Hoi Co Hoc Vietnam, 264 Doi Can, Hanoi

President: Prof. Nguyen Van Dao

Secretary: Prof. Do Sanh

Contact: Prof. N. Van Dao

Representatives in IUTAM: Prof. N. Van Dao

Yugoslavia (1952)

Yugoslav Society of Mechanics

Fac. of Mechanical Engineering, University of Belgrade, 27. Marta 80, YU-11120

Belgrade

President: Prof. D.D. Ruzic

Secretary: Prof. M. Nedeljkovic

Contact: Prof. D.D. Ruzic

Representatives in IUTAM: Prof. D.D. Ruzic

Affiliated Organizations

CISM (1970)

International Centre for Mechanical Sciences
Palazzo del Torso, Piazza Garibaldi, I-33100 Udine, Italy
Director: Prof. G. Bianchi
President: Avv. Vinicio Turello
Secretary-General: Prof. B. Schrefler
Rectors: Prof. M. Sayir, Prof. W. Schneider and Prof. M.G. Velarde
Contact: Prof. G. Bianchi
Representative of CISM in IUTAM: Prof. G. Bianchi
Representative of IUTAM in CISM: Prof. L. van Wijngaarden
Representative of CISM in IUTAM-CC: Prof. M.G. Velarde

ICHMT (1972)

International Centre for Heat and Mass Transfer
Mechanical Engineering Dept.
Middle East Technical University, 06531 Ankara, Turkey
President: Prof. Maurizio Cumo
Secretary-General: Prof. F. Arinc
Contact: Prof. F. Arinc
Representative of ICHMT in IUTAM: Prof. F. Arinc
Representative of IUTAM in ICHMT: Dr. R. Dvorák

ICR (1974)

International Committee on Rheology
Prof. D.F. James, Dept. of Mechanical and Industrial Engineering, University of Toronto,
Toronto, Ont M5S 3G8, Canada
Chairman: Prof. K. Walters
Secretary: Prof. D.F. James
Contact: Prof. D.F. James
Representative of ICR in IUTAM: Prof. L.G. Leal
Representative of IUTAM in ICR: Prof. F. Niordson
Representative of ICR in IUTAM-CC: Prof. L.G. Leal

IAVSD (1977)

International Association for Vehicle System Dynamics
Prof. Michael Valásek, Department of Mechanics, Faculty of Mechanical Engineering,
Czech Intern. University in Prague, Kalovo Nanesti 13, 121 35 Praha 2, Czech Republic
Secretary: Prof. M. Valásek
Contact: Prof. M. Valásek
Representative of IAVSD in IUTAM: Prof. P. Lugner
Representative of IUTAM in IAVSD: Prof. W. Schiehlen
Representative of IAVSD in IUTAM-CC: Prof. P. Lugner

EUROMECH (1978)

European Mechanics Society

Institute of Thermomechanics, Dolejskova 5, Prague 8 Czech Republic

President: Prof. P. Huerre

Secretary General: Prof. M. Okrouhlik

Contact: Prof. M. Okrouhlik

Representative of EUROMECH in IUTAM: Prof. P. Huerre

Representative of IUTAM in EUROMECH: Prof. W. Schiehlen

ISIMM (1978)

International Society for the Interaction of Mechanics and Mathematics

Prof. K. Wilmanski, Weierstrass Institute, Berlin, Germany

President: Prof. I. Müller

Secretary: Prof. K. Wilmanski

Contact: Prof. K. Wilmanski

Representative of ISIMM in IUTAM: Prof. M.A. Hayes

Representative of IUTAM in ISIMM: Prof. G. Iooss

Representative of ISIMM in IUTAM-CC: Prof. M.A. Hayes

ICF (1978)

International Congress on Fracture

Prof. T. Yokobori, School of Science and Engineering, Teikyo University, Toyosatodai 1-1, Utsunomiya, 320, Japan

Founder President: Prof. T. Yokobori

President: Prof. Yiu-Wing Mai

Secretary-General: Prof. A.T. Yokobori, Jr.

Contact: Prof. B.L. Karihaloo

Representative of ICF in IUTAM: Prof. B.L. Karihaloo

Representative of IUTAM in ICF: Prof. J.B. Leblond

Representative of ICF in IUTAM-CC: Prof. B.L. Karihaloo

ICM (1982)

International Congress on Mechanical Behaviour of Materials,

Prof. F. Ellyin, Dept. of Mechanical Engineering, University of Alberta, Edmonton, Canada T6G 2G8

President: Prof. F. Ellyin

Secretary: Dr. J. Wolodko

Contact: Prof. F. Ellyin

Representative of ICM in IUTAM: Prof. F. Ellyin

Representative of IUTAM in ICM: Prof. S. R. Bodner

Representative of ICM in IUTAM-CC: Prof. F. Ellyin

AFMC (1982)

Asian Fluid Mechanics Committee

Prof. Masaru Kiya, President Kushiro National College of Technology, Kushiro 084-0916, Japan

Chairman: Prof. Masaru Kiya

Contact: Prof. M. Kiya

Representative of AFMC in IUTAM: Prof. M. Kiya

Representative of IUTAM in AFMC: Prof. I. Imai

IACM (1984)

International Association for Computational Mechanics

Prof. E. Oñate, International Center for Numerical Methods in Engineering, Edificio C-1, Gran Capitán s/n, E-08034 Barcelona, Spain

President: Prof. E. Oñate

Secretary: Prof. S. Idelsohn

Contact: Dr. S. R. Idelsohn

Representative of IACM in IUTAM: Prof. J. T. Oden

Representative of IUTAM in IACM: Prof. E. R. de Arantes e Oliveira

Representative of IACM in IUTAM-CC: Prof. T. Belytschko

CACOFD (1992)

Caribbean Congress of Fluid Dynamics

c/o The Department of Math and Computer Science, The University of the West Indies, St. Augustine, Trinidad, West Indies

President: Prof. F. Malpica

Secretary: Dr. W. Mellows

Contact: Prof. H. Ramkissoon

Representative of CACOFD in IUTAM: Prof. H. Ramkissoon

Representative of IUTAM in CACOFD: Prof. D.D. Joseph

IABEM (1994)

International Association for Boundary Element Methods

Prof. M. Bonnet, CNRS et École Polytechnique, Laboratoire de Mécanique des Solides, École Polytechnique, 91128 Palaiseau cedex, France

President: Prof. M. Bonnet

Secretary: Prof. R. Callego

Contact: Prof. M. Bonnet

Representative of IABEM in IUTAM: Prof. M. Bonnet

Representative of IUTAM in IABEM: Prof. G.C. Kuhn

ISSMO (1996)

International Society for Structural and Multidisciplinary Optimization

Prof. G. Rozvany, Department of Structural Mechanics, Budapest University of Technology and Economics, Muegyetem rkp. 3, Kmf 35, H-1521 Budapest, Hungary

President: Prof. N. Olhoff

Secretary: Prof. V. Toropov

Contact: Prof. N. Olhoff

Representative of ISSMO in IUTAM: Prof. G. Rozvany

Representative of IUTAM in ISSMO: Prof. N. Olhoff

Representative of ISSMO in IUTAM-CC: Prof. M.P Bendsøe

HYDROMAG (1996)

International Association for Hydromagnetic Phenomena and Applications

Prof. S. Asai, Dept of Mat. Sciences, University of Nagoya, Furo-cho, Chikusa-ku, Nagoya 464-0, Japan

President: Prof. R. Moreau

Secretary General: Prof. A. Thess

Contact: Prof. A. Thess

Representative of HYDROMAG in IUTAM: Prof. R. Moreau

Representative of IUTAM in HYDROMAG: Prof. H.K. Moffatt

Representative of HYDROMAG in IUTAM-CC: Prof. R. Moreau

IIAV (1997)

International Institute of Acoustics and Vibration

Prof M. J. Crocker. Dept. of Mechanical Engineering, 201 Ross Hall, Auburn University, Auburn, AL 36849 USA

President: Prof. C.H. Hansen

Secretary: Prof. J.W. Verheij

Contact: Prof. M. J. Crocker

Representative of IIAV in IUTAM: Prof. M. J. Crocker

Representative of IUTAM in IIAV: Prof. J. D. Achenbach

ICA (1998)

International Commission for Acoustics

Prof. Suk Wang Yoon, Sung Kyun Kwan University, Department of Physics, 300 Chunchun-dong, Suwon 440-746, Republic of Korea

President: Dr. Gilles Daigle

Secretary General: Prof. Suk Wang Yoon

Contact: Prof. S.W. Yoon

Representative of ICA in IUTAM: Prof. S.H. Crandall

Representative of IUTAM in ICA: Prof. A. Boström

ICTS (2002)

International Congresses on Thermal Stresses

Prof. Richard B. Hetnarski, St. Raphael, Apt. 1209, 7117 Pelican Bay Blvd.

Naples, Fl 34108, USA

President: Prof. R.B. Hetnarski

Secretary-General: Prof. T.R. Tauchert

Contact: Prof. R.B. Hetnarski

Representative of ICTS in IUTAM: Prof. R.B. Hetnarski

Representative of IUTAM in ICTS: Prof. M. Abe

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Prof. Niels Olhoff	Denmark	Representative in ISSMO
Prof. Juha Paavola	Finland	
Prof. Timothy Pedley	UK	

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Prof. Paolo Podio-Guidugli	Italy	
Prof. Friedrich Rimrott	Canada	
Prof. Dobroslav Ruzic	Yugoslavia	
Prof. Jean Salençon		Bureau member
Prof. Stuart Savage	Canada	
Prof. Werner Schiehlen		Bureau member Representative in EUROMECH, in IAVSD
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Prof. Dirk Vandepitte	Belgium	
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Prof. Siegfried Wagner	Germany	
Prof. Eiichi Watanabe	Japan	
Prof. David Weaver	Canada	
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Prof. Chau-Shioung Yeh	China-Taipei	
Prof. Jung Yul Yoo	Republic of Korea	
Prof. Stephane Zaleski	France	
Prof. Andre Zaoui	France	
Prof. Zhemin Zheng	China	

Observers to the General Assembly

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Prof. Faruk Arinc	Turkey	ICHMT
Prof. Giovanni Bianchi	Italy	CISM
Prof. Marc Bonnet	France	IABEM
Prof. Stephen H. Crandall	USA	ICA
Prof. Malcolm Crocker	USA	IIAV
Prof. Fernand Ellyin	Canada	ICM
Prof. Patrick Huerre	France	EUROMECH
Prof. Bhushan Karihaloo	UK	ICF
Prof. Peter Lugner	Austria	IAVSD
Prof. Rene Moreau	France	HYDROMAG
Prof. Tinsley Oden	USA	IACM
Prof. Harold Ramkissoon	West Indies	CACOFD
Prof. George Rozvany	Hungary	ISSMO

Members of the Congress Committee

<i>Member</i>	<i>Country</i>	<i>Year*</i>	<i>Remarks</i>
Prof. Hassan Aref	USA	2004	Member of XCCC
Prof. Ted Belytschko	USA	2006	Representative of IACM
Prof. Martin P. Bendsøe	Denmark	2004	Representative of ISSMO
Prof. D. Beskos	Greece	2006	
Prof. David Bogy	USA	2004	
Prof. Dick van Campen	Netherlands	2004	
Prof. David Durban	Israel	2004	
Prof. Fernand Ellyin	Canada	2006	Representative of ICM
Prof. Juri Engelbrecht	Estonia	2004	
Prof. Norman Fleck	UK	2006	
Prof. Ben Freund	USA	2004	
Prof. Graham Gladwell	Canada	2004	
Prof. Peter Gudmundson	Sweden	2004	
Prof. Michael Hayes	Ireland	2006	Representative of ISIMM
Prof. Tsutomu Kambe	Japan	2004	
Prof. Bhushan Karihaloo	UK	2004	Representative of ICF
Prof. Alfred Kluwick	Austria	2006	
Prof. Valery Kozlov	Russia	2006	
Prof. Edwin Kreuzer	Germany	2006	
Prof. Yu Ku	USA		
Prof. Gary Leal	USA	2004	Representative of ICR
Prof. Peter Lugner	Austria	2004	Representative of IAVSD
Prof. Fernando Lund	Chile	2004	
Prof. Keith Moffatt	UK	2004	Chairman Member of XCCC
Prof. Peter A. Monkewitz	Switzerland	2004	
Prof. Rene Moreau	France	2004	Member of XCCC Representative of HYDROMAG
Prof. Niels Olhoff	Denmark	2004	Member of XCCC
Prof. Timothy Pedley	UK	2004	Secretary Member of XCCC
Prof. Bernhard Schrefler	Italy	2006	Member of XCCC
Prof. Kazimierz Sobczyk	Poland	2006	
Prof. Pierre Suquet	France	2004	
Prof. Eernie Tuck	Australia	2006	

<i>Member</i>	<i>Country</i>	<i>Year*</i>	<i>Remarks</i>
Prof. Manuel G. Velarde	Spain	2006	Representative of CISM
Prof. Eiichi Watanabe	Japan	2006	
Prof. Feng-Gan Zhuang	China	2004	

*Year where stated, indicates end of term (applies to members elected after 1972)

Members of the Symposia Panels

The Bureau of IUTAM in 1977 set up two panels charged with the duty of scanning proposals made for IUTAM Symposia in the fields of fluid and solid mechanics. In 1992 that duty was extended to include scanning of proposals for IUTAM Summer Schools. The following members have been elected in 2000 for the period up to and including the 2004 meeting of the General Assembly

Fluid Mechanics

Prof. Dan Henningson
Prof. Patrick Huerre
Prof. Tsutomu Kambe
Prof. Gary Leal
Prof. D. Howell Peregrine

Solid Mechanics

Prof. Jan D. Achenbach
Prof. Felix Chernousko
Prof. Wolfgang Ehlers
Prof. Viggo Tvergaard
Prof. John Willis

Members of the Working Parties

Based on the assessment of IUTAM, the General Assembly in Cambridge, UK (August 2002) agreed to establish nine Working Parties.

A Working Party in a certain subfield of the mechanics is meant to structure the overlapping activities between IUTAM on the one hand and the relevant Affiliated Organizations and sister International Unions on the other. Also, Working Parties should identify important growth areas of the field.

More detailed background information on Working Parties, including their Terms of Reference, is given in the IUTAM Report on Working Parties, whose latest revision is dated March 2003. A pdf version of the report can be downloaded from the IUTAM website.

A listing of the Working Parties and their current membership is given below.

WP-1 : Non-Newtonian Fluid Mechanics and Rheology

Members: Prof. J. R. A. Pearson, UK (chair); Prof. L.G. Leal, USA; Prof. D.V. Boger, Australia; Prof. R. Keunings, Belgium

WP-2 : Dynamical Systems and Mechatronics

Members: Prof. R. S. Sharp, UK (chair); Prof. L. Chernousko, Russia; Prof. F. Pfeiffer, Germany; Prof. M. Tomizuka, USA

WP-3 : Mechanics of Materials

Members: Prof. S. R. Bodner, Israel (chair); Prof. C.T. Herakovich, USA; Prof. T. Inoue, Japan; Prof. J.B. Leblond, France

WP-4 : Materials Processing

Members: Prof. R. Moreau, France (chair); Prof. R.M. McMeeking, USA; Prof. S. Asai, Japan; Prof. C.W. Macosko, USA

WP-5 : Computational Fluid and Solid Mechanics (this WP acts as link between IUTAM and IACM)

Members: Prof. E. R. de Arantes e Oliveira, Portugal (chair); Prof. J. T. Oden, USA; Prof. T. Belytschko, USA; Prof. Y.K. Cheung, China-Hong Kong; Dr. S. R. Idelsohn, Argentina

WP-6 : Biomechanics

Members: Prof. D. Barthès-Biesel, France (chair); Dr. G.A. Holzapfel, Austria; Prof. J.E. Bechtold, USA; Prof. K. Tanishita, Japan

WP-7 : Nano- and Micro-Scale Phenomena in Mechanics

Members: Prof. W. Yang, China (chair); Dr. M.G. Worster, UK; Prof. F. Ellyin, Canada;
Prof. Y. Huang, USA

WP-8 : Geophysical and Environmental Mechanics

Membership yet to be decided

WP-9 : Education in Mechanics and Capacity Building

Members: Prof. B.L. Karihaloo, UK (chair); Prof. H. Aref, USA; Prof. Y. Bai, China;
Prof. M.H.A. Hassan, Sudan

Donations in 2002

Donations given to IUTAM Symposia are recorded under the heading “Financial Support” of the Reports of Symposia and Summer Schools held in 2002.

IUTAM is grateful to UNESCO and ICSU for providing a grant of \$ 4,975 for the support of the following activities:

IUTAM/ISSMO Symposium on Evolutionary Methods in Mechanics,
Cracow, Poland 24 – 27 September 2002

IUTAM Summer School on Mechanics of Heterogenous Materials
Beijing, China 2-5 September 2002

IUTAM Representation in ICSU and its Scientific Committees

<i>Acronym</i>	<i>Organization/Scientific Committee</i>	<i>Representative of IUTAM</i>
ICSU	International Council for Science	Prof. H. K. Moffatt
COSPAR	Committee on Space Research	Prof. G. G. Cheryni
SCOPE	Scientific Committee on Problems of the Environment	vacant
SCOR	Scientific Committee on Oceanic Research	Prof. W. Fennel

Reports of IUTAM Symposia held in 2002

02-1 IUTAM Symposium on Micromechanics of Fluid Suspensions and Solid Composites Austin, Texas, USA 3 – 5 April 2002

a) Scientific Committee

R. Bonnetcaze (USA, Chair), G. Rodin (USA, Co-Chair),
Z. Hashin (Israel, Co-Chair), B. Freund (USA, IUTAM Repres.), A. Acrivos (USA),
J. Brady (USA), E. Guazzelli (France), N. Phan-Thien (Singapore), P. Suquet (France),
J. Willis (United Kingdom)

b) Short summary of scientific progress achieved

This IUTAM symposium focused on bringing together fluid and solid mechanicians working on various aspects of fluid suspensions and solid composites. These multiphase materials are ubiquitous in nature and of course are at the forefront of modern fluid and materials processing. The major aim of the symposium was for the two communities to share their perspectives and experimental, theoretical and computational techniques on these classes of problems. Secondary aims were to promote inter-disciplinary work that integrates experimental, computational, and analytical components, and identify major open problems, critical experiments, and benchmarks.

The topics covered in the Symposium included:

- Large-scale micromechanical simulations
- Localization, boundary layers, size and statistical effects
- Imaging and experimental characterization
- Non-linear behavior

Twenty-four oral presentations were presented in this Symposium. The major aim of bringing the two groups together to share their perspectives was clearly met. Many participants remarked on how interesting and stimulating were the talks from their colleagues from other disciplines. The secondary aims were only partially met, but overall the Symposium was successful judging from the oral feedback of the participants.

c) Countries represented and number of participants

The meeting attracted 40 participants from 8 countries:

Austria, Canada, Denmark, France, Russia, The Netherlands, United Kingdom, USA

d) Publication of Proceedings of the Symposium

The proceedings of selected papers in the symposium will be published in a special issue of the *Philosophical Transactions: Mathematical, Physical & Engineering Sciences* in May 2003.

e) Financial supports

The Symposium was sponsored by the following organizations:

- . International Union of Theoretical and Applied Mechanics
- . Texas Institute of Computational and Applied Mathematics
- . University of Texas
- . Frank A. Liddell Fellowship in Chemical Engineering

We are grateful for the support of our sponsors.

f) Scientific program

Day 1 Talks

- J. Brady, *Accelerated Stokesian dynamics*
- A. Zinchenko, *Large-scale simulations of concentrated emulsion flows*
- A. Sangani, *Effect of bubble-wall interactions on properties of bubble suspensions*
- E. Asmolov, *Numerical simulation of sedimenting homogeneous suspension*
- H. Böhm, *Unit cell studies on the thermomechanical behavior of discontinuously reinforced metal matrix composites*
- M. Bornert, *Pattern-based modelling of composite materials; principles, applications and limitations*
- G. Milton, *The complete characterization of the possible (average stress, average strain) pairs in a porous solid*
- R. Davis, *Solid-solid contacts due to surface roughness and their effects on suspension behavior*
- J. Fortin, *A micromechanic study of granular material*

Day 2 Talks

- W. Drugan, *An exact Hashin-Shtrikman nonlocal constitutive equation for random linear elastic composite materials*
- P. Ponte Castaneda, *Field fluctuations in nonlinear homogenization and applications to localization in porous media*
- A. Acrivos, *Statistical properties of sheared suspensions from numerical simulation*
- D. Joseph, *Slip velocity and lift*
- X. Li, *Simulation of suspension film flow down an inclined plane*
- A. Cherkaev, *Dynamics and failure of structures with reserved resistance*

R. Lipton, *Homogenized failure criteria and the design of composite structures for maximum strength and stiffness*

T. Zohdi, *Genetic design of solids possessing random particulate microstructure*

M. Ostoja-Starzewski, *Random formation versus inelastic response of paper*

I. Sevostianov, *Explicit correlation between anisotropic elastic and conductive properties for materials containing annular cracks*

Day 3 Talks

J. Morris, *Band dynamics in free surface-induced segregation of a suspension*

J.-P. Matas, *Influence of particles on the transition to turbulence in a pipe flow*

J. van Mier, *Development of shrinkage microcracks in model concretes: experimental evaluation of time and length scales*

O. Sigmund, *Design of extremal materials for stability and wave-propagation*

A.B. Movchan, *Discrete and continuous dynamic structures, filtering and polarization of elastic waves*

Report composed by Roger Bonneau

02-2 IUTAM Symposium on Unsteady Separated Flows
Toulouse, France, 8 - 12 April 2002**a) Scientific Committee**

M. Braza (France, Chair), C. Cercignani (Italy), S. J. Cowley (UK), J. P. Dussauge (France), B. J. Geurts (Netherlands), C. Hirsch (Belgium, Chair), F. Hussain (USA, Chair), G. E. Karniadakis (USA), C. Norberg (Sweden), W. Rodi (Germany)

b) Short summary of scientific progress achieved

The present IUTAM Symposium concerned an important domain of Theoretical and Applied Mechanics nowadays. It focused on the important problem of flow separation. It aimed to achieve a unified approach, which regroups the knowledge coming from theoretical, experimental, numerical simulation and modelling aspects for unsteady separated flows in respect to incompressible and compressible regimes. The subject areas covered important themes in the domain of the fundamental research as well as in the domain of Applications. They received a great deal of impetus from international research groups, stimulated by major contracts related to this topic, involving main industrial companies especially in Aeronautics in various countries and by heading Government Programs. This symposium brought together the groups of researchers working on the problems related to the understanding and to the prediction of unsteady, separated flows. The meeting addressed physical aspects of the dynamics of unsteady separation in incompressible flows and under the compressibility effects, as well as the state of the art of methods for modelling this kind of flows in high Reynolds numbers. The physical understanding of these dynamics on the purposes of efficient turbulence modelling of this class of flows is a serious problem in a number of engineering applications, including Aeronautics, Aeroelasticity, space and land vehicles.

Scientist working in experimental investigation of unsteady separated flows and those working in the numerical simulation and turbulence modelling of these flows attended this Symposium and stimulated the discussion and the advancing in the knowledge of the related physical mechanisms. In this way, the symposium contributed to a better insight of this important category of flows from a fundamental and applied research point of view by a synergy among the three main approaches: theoretical, experimental and prediction methods.

The main objectives of this symposium, summarized below, have been fulfilled. The chairmen and the local organizing committee received a great deal of very favorable comments from the participants, among whom there were the most outstanding scientists in the field. These comments are kept in the archives of the symposium, which has been among the few ones that regrouped twelve invited conferences, as well as a targeted industrial session in the field.

The topics covered in the Symposium included:

- Theoretical aspects of flow separation and analytical approaches
- Instability and Transition studies related to the onset of separation and to its control
- Experimental techniques for a better understanding of the dynamics of separation
- Compressibility effects related to unsteady separation
- Direct Numerical Simulation of unsteady separated flows
- Turbulence modelling approaches adapted to the physics of unsteady separation
- LES, RANS and hybrid approaches

Forty-two oral presentations and six poster sessions were included in this Symposium. Judging by the response of the participants, the Symposium was highly successful and all the objectives were achieved completely.

e) Countries represented and number of participants

The meeting attracted 140 participants from 12 countries: Australia, Denmark, France, Germany, Italy, Japan, China, The Netherlands, Hungary, Russia, UK, USA.

d) Publication of Proceedings of the Symposium

A volume of abstracts and a CD-Rom with the full papers presented at the symposium had been prepared and distributed to all the participants.

A dedicated volume of a selection of the papers presented at this symposium is to be published by Kluwer in the Journal “Flow, Turbulence and Combustion”. This volume is under final preparation.

e) Financial supports

The Symposium was sponsored by the following organisations:

- International Union of Theoretical and Applied Mechanics
- Institut de Mécanique des Fluides de Toulouse, UMR 5502 CNRS-INP/ENSEEIH-UPS
- Centre National de la Recherche Scientifique
- Institut National Polytechnique de Toulouse, École Nationale Supérieure d'Électrotechnique, d'Électronique, d'Informatique, d'Hydraulique et des Télécommunications
- Université Paul Sabatier
- European Research Community on Flow Turbulence And Combustion
- The European Commission
- Association Universitaire de Mécanique/Association

- Française de Mécanique
- Hôpitaux de Toulouse
- Conseil Régional Midi-Pyrénées
- European Aeronautic Defence and Space Company

We are grateful to our sponsors for their contribution to the success of this symposium.

f) Scientific program

Opening lecture, P. Bearman and G. Owen, *Experimental studies of the unsteady three-dimensional separated flow around bluff bodies*

Session A - Experimental Techniques for a better understanding of the dynamics of separation

T. Weier, G. Gerbeth, G. Mutschke, O. Lielausis, G. Lammers, *Control of flow separation using electromagnetic forces*

H. Djeridi, M. Braza, R. Perrin, G. Harran, E. Cid, S. Cazin, *Near-wake turbulence properties around a circular cylinder at high Reynolds number*

Keynote lecture, T. Sarpkaya, *Taylor-Görtler instability and separation on a cylinder in sinusoidally oscillating flow*

Sejeong Jeon, Jinil Park, Woo Puyng Jeon, Haecheon Choi, *Active control of flow over a sphere for drag reduction*

Keynote lecture, C.H.K. Williamson and R. Govardhan, *Unsteady separated flow modes due to vortex-induced vibration*

J. Carberry, J. Sheridan, D. Rockwell, *Cylinder oscillations beneath a free surface*

K.B. Skaugset and C.M. Larsen, *Direct Numerical Simulation and Experimental Investigation on Vortex Shedding and VIV Modification Using Radial Water Jets along a Circular Cylinder"*

Posters

A. Spohn and P. Gillieron, *Flow separations generated by a simplified geometry of an automotive vehicle*

Y. L. Lau, R. M. C. So, R. C. K. Leung, *Coupled flow-induced vibration of a cylinder/plate system*

O.N. Ramesh and H.P. Hodson, *Effect of roughness on unsteady separation over a high lift aerofoil*

T. G. Elizarova , I. S. Kalachinskaya, R. Weber , J. Hureau,

J.-C. Lengrand, *Backward-facing step flow. Experimental and numerical approach*

X.L. Xie, W.W. Ma, H.L. Zhou, *Experimental Study of Parameter Evolutions and Spatiotemporal Correlations of Counter-axial Shear Flows*

X.L. Xie, W.W. Ma, H.L. Zhou, *Compared Study of Dynamic Behaviors of Counter- and Co-axial Shear Flows*

J.F. Largeau, V. Morinière, J. Peube, *Experimental investigation of flow over a forward-facing step* (Winner of the “best poster award”)

Session B - Theoretical aspects of flow separation and analytical approaches

Keynote lecture, A. Ruban, *Collision phenomena in interactive and classical boundary layers*

R.I. Bowles, F.T. Smith, C. Davies, *On the effects of the adverse pressure gradients in boundary layer separation*

Linzhong Li and F.T. Smith, *Computation on unsteady separating slender flows*

Keynote lecture, J.D.A. Walker, *Unsteady separation processes at high Reynolds number and their control*

B. Pier, *Periodic vortex shedding from obstacles: theoretical prediction of the Strouhal number*

G. Haller, Yong Wang, Hayder Salman, *Control of Lagrangian Coherent Structures*

Posters

J.Ph. Brazier, S. Mélous, J. Perraud, *Stability analysis of the flow past a flap edge with a fence*

E. Amromin, S. Kovinskaya, V. Sofronov, *Unsteady separated flow on bottom of shipping channels*

Session C - Instability and Transition studies related to the onset of separation and to its control

Keynote lecture, P. Huerre, *Nonlinear periodic states and local resonance in separated wake flows*

D.J. Olinger, M.A. Demetriou, G. Balasubramanian,

M.P. Davies, *Low-order modelling of cylinder wakes*

O. Rediniotis, *Control of flow separation via compact, high-power synthetic jet actuators*

I. Robertson, S.J. Sherwin, P.W. Bearman, L. Li, *Prediction of fluid/structure interaction for rotating and translating bluff bodies*

Keynote lecture, M.S. Triantafyllou, A.H. Techet,

F.S. Hover, *Separation and turbulence control in biomimetic flows*

Seung-Jin Baek and Hyung Jin Shung, *Feedback control of a circular cylinder wake with rotational oscillations*

Y. Hoarau, D. Faghani, M. Braza, R. Perrin, D. Anne-Archard, D. Ruiz, *Direct Numerical Simulation of the three-dimensional transition to turbulence in the incompressible flow around a wing*

O. Marxen, M. Lang, U. Rist, S. Wagner, *A combined experimental /numerical study of unsteady phenomena in a laminar separation bubble*

A. Miliou, S.J., Sherwin and J.M.R Graham, *Wake topology of curved cylinders at low Reynolds number*

Poster

S. Mittal, *Instabilities in uniform flow past a rotating cylinder*

Session D - Compressibility effects related to unsteady separation

Invited review lecture, J.D.A. Walker, *Supersonic boundary-layer separation and the influence of a compliant surface*

Anh Thi Nguyen, H. Deniau, S. Girard, T. Alziary de Roquefort, *Unsteadiness of flow separation in an over-expanded supersonic nozzle*

J. Ch. Robinet, *Convective-absolute transition on compressible non isothermal shear layers*

S. Bourdet, A. Bouhadji, M. Braza, F. Thiele, *Direct Numerical Simulation of three-dimensional transition to turbulence in the transonic flow around a wing*

D. Caruana, A. Mignosi, M. Corrège, C. Robitaille, *Separated flow and buffet control*

P. Dupont, J.F. Debiève, *Unsteadiness in a separated shock boundary layer interaction*

C. Pilinski, A. Nebbache, *Unsteady separated two-throat nozzle flow*

Posters

F. Scarano and B. van Oudheusden, *piv investigation of unsteady behaviour in a compressible base flow*

G.S. Cohen and F. Motallebi, *Control of shock-induced separation by sub-boundary layer vortex generators*

A.Kourta and R. Sauvage, *Computation of compressible mixing layer*

Y. Hoarau, B. Koobus, M. Braza, A. Dervieux, *Large Eddy Simulation of shock reflection with TVD shock capturing and high order filter*

Session E - Statistical Turbulence Modelling (RANS) and hybrid approaches (RANS-LES) for unsteady separation prediction

Keynote lecture, Launder, B., *Some principles for modelling turbulent separated flows*

F. Furlano, E. Goncalves, R. Houdeville, E. Coustols, *Unsteady RANS computations: simulation of the buffeting over an airfoil*

Y. Hoarau, M. Braza, P. Rodes, G. Tzabiras, C. Allain, E. Berton, D. Favier, C. Maresca, *Turbulence modelling of unsteady aerodynamic flows with a pronounced periodic character*

E. Guilmineau and P. Queutey, *Numerical simulation of turbulent unsteady separated flow around a square cross-section cylinder in the proximity of a solid wall*

Invited review lecture, P. Spalart, *Grid Design for Detached-Eddy Simulations*

S. Schmidt and F. Thiele, *Detached eddy simulation of airfoil flow*

M. Baragona and H. Bijl, *Bubble bursting and unsteady laminar separation*

Poster

S. Tardu and P. da Costa, *Experiments and modelling of turbulent wall flows subjected to imposed velocity oscillations with and without adverse pressure gradient*

Session F - Direct and Large-Eddy Simulation of unsteady separated flows

Keynote lecture, U. Piomelli, and E. Balaras, *Direct numerical simulation of wake-induced transition in flat-plate boundary layers*

J. Neumann and H. Wengle, *DNS and LES of passively controlled turbulent backward-facing step flow*

Dongjoo Kim, Giwoong Yun and Haecheon Choi, *Large eddy simulation of turbulent flow over a sphere*

J.G. Wissink and W. Rodi, *DNS of a laminar separation bubble in the presence of oscillating inflow*

V. Butty, I. Chatziprodromou, Y. Ventikos, V. Makhijani, D.Poulikakos, *The Effect of pulsatility on the haemodynamics of anatomically accurate arterial flows with aneurysms*

Keynote lecture, K. Hourigan, P. Reichl, M. Thompson, *The Unsteady Wake of a Circular Cylinder near a Free Surface*

P. Ploumhans, G. Daeninck, G. Winckelmans, *Simulation of three-dimensional bluff-body flows using the vortex particle and boundary element methods*

A. Abba, C. Cercignani, L. Valdetaro, *Large eddy simulation of turbulent obstacle flow*

Posters:

D.G.E. Grigoriadis, J.G. Bartzis, A. Goulas, *Efficient large eddy simulations of turbulent flows using the immersed boundary concept (NP)*

V.A. Gushchin, A.V. Kostomarov, P.V. Matyushin, E.R. Pavlyukova, *Direct numerical simulation of unsteady separated fluid flows around a sphere (NP)*

E. Creusé, I. Mortazavi, *Study and manipulation of vortex flows over steps*

Session G - Prediction of separated flows in unsteady aerodynamics, a sound basis for interdisciplinary applications; Industrial technology session

Keynote lecture, P. Spalart, L.Hedges, M. Shur, A. Travin, *Simulation of Active Flow Control on a Stalled Airfoil*

M. Strelets, *Detached Eddy Simulation of Massively Separated Flows*

F. Chalot and M. Ravachol, *LES Calculations using unstructured grids*

M. Henshaw, *An overview of the industrial requirements for modelling and simulating unsteady separated flows*

T. Rung, F. Thiele, U. Bunge, A. Orellano, *Rational Approaches Towards Engineering Turbulence Modelling - An Industrial Perspective*

Keynote lecture, N. Satofuka, *Numerical Simulation of Unsteady Compressible and Incompressible Flows*

W. Fritz, S. Leicher, *Time Accurate Numerical Simulation of Unsteady Vortical Flow Over Moving Delta Wings*

J. Forsythe, K. Squires, K. Wurtzler, P. Spalart, *Detached-Eddy Simulation of Massively Separated Flows Over Aircraft*

K. Squires, J. Forsythe, K. Wurtzler, P. Spalart, *Unsteady Aerodynamics of Manoeuvring Vehicles at High Reynolds Numbers*

D. Lucor and G. Karniadakis, *Effects of Oblique Inflow in Vortex-Induced Vibrations*

Report composed by Marianna Braza

02-3 IUTAM Symposium on Dynamics of Advanced Materials and Smart Structures
Yamagata, Japan, May 20 - May 24, 2002

a) Scientific Committee

U. Gabbert (Germany), A. S. Kovaleva (Russia), N. Noda (Japan), W. Schiehlen, (Germany, IUTAM repres.), V. V. Varadan (U. S. A.), K. Watanabe (Japan, Chair), F. Ziegler (Austria, Co-Chair)

b) Short summary of scientific progress achieved

Smart materials and structures, which have self-sensing, diagnosis and actuating systems, are of growing research interest. Smart materials and structures are inherently equipped with sensors and actuators to achieve their designed performance in the changing environment. They have very complex structural properties and mechanical responses. Many engineering problems, such as interface and edge phenomena, mechanical and electro-magnetic interaction/coupling and sensing and actuating techniques are arising now. Because of the multi-disciplinary nature of these problems, researchers and scientists from a very wide field of science and technology are concerned in these fields. In this symposium a fusion of advanced materials and smart structures is intended towards their intelligence and discussions on mechanical, and thermo/electro-mechanical behavior of the materials and structures and on their shape and stress controllability were addressed by researchers from a sufficiently wide range of different subject disciplines.

While the Proceedings of the related IUTAM Symposium on “Smart Structures and Structronic Systems”, edited by U. Gabbert and H.-S. Tzou, have just been published, the second in a row of IUTAM Symposia in this emerging technology does not only reflect the progress made in the last two years but extends the scope to include Bio-mimetic Structures and important observations of active natural flora. Thus, it was intended not only to keep the consecutiveness to that, but also to include newly developing areas.

The symposium was held at Yonezawa Conference Hall from May 20-24. All 50 invited and extensively discussed lectures are categorized in five main consecutively held Sessions:

(1) Advanced materials, (2) Sensors and actuators, (3) Smart structure concept, (4) Controllability for shape and vibration and (5) Bio-mimetic structures. Nine keynotes, 33 oral lectures and 8 posters were presented. It has become our common understanding that the ultimate smart structure is the living bio-structure, much more work should be performed on the bio-structures and the information drawn from the biological system should be transformed to our technical development.

c) Countries represented and number of participants

Austria (4), Canada (1), China (1), Czech (1), Estonia (1), Germany (3), Italy (3), Japan (42), Korea (1), Malaysia (1), Poland (4), Russia (3), Saudi Arabia (1), Singapore (1), S. Africa (1), UAE (1), UK (1), USA (8).
Total number of registered attendee 78.

d) Publication of Proceedings of the Symposium

A booklet of refereed two-page abstracts was distributed at the Symposium. The Proceedings of the Symposium, edited by K. Watanabe and F. Ziegler, will be published by Kluwer Academic Publishers in late 2002, as a book in the Series of Solid Mechanics and Its Applications.

e) Financial supports

- . International Union of Theoretical and Applied Mechanics
- . Japan Ministry of Education, Culture, Sports and Technology
- . Yamagata Prefecture
- . Yonezawa City
- . Yonezawa Chamber of Commerce and Industry
- . The Asahi Glass Foundation
- . Commemorative Association for the Japan World Exposition (1970)
- . Intelligent Cosmos Academic Foundation
- . The Iwatani Naoji Foundation
- . The Mikiya Science and Technology Foundation
- . Nippon Sheet Glass Foundation for Materials Science and Engineering
- . Suzuki Foundation
- . Yonezawa Kogyo-Kai
- . Yoshida Foundation for Science and Technology

f) Scientific program

Keynote lecture (1) **Y. Nyashin** and V. Kiryukhin, *Shape and Stress Control in Elastic and Inelastic Structures*.

Sensor and Actuator

G. Jeronimidis, *Smart Actuation from Coupling between Active Polymer Gels and Fibrous Structures*.

J.-J. Lee, S.-H. Kim and D.-C. Seo, *Application of Newly Developed Transmission-type EFPI Optical Fiber Sensors to Smart Structures*.

A. Iwasaki, A. Todoroki and T. Sugiya, *Remote Smart Damage Detection via Internet with Unsupervised Statistical Diagnosis*.

J. Qiu, J. Tani and H. Takahashi, *High-Performance PZT and PNN-PZT Actuators*.

Keynote lecture (2) F. Casciati, *Dynamics of Structural Systems with Devices Driven by Fuzzy Controllers.*

Active Control of Smart Structures

K. Schlacher and A. Kugi, *Active Control of Smart Structures using Port Controlled Hamiltonian Systems.*

A. Kovaleva, *Control of Structures by Means of High-Frequency Vibration.*

Keynote lecture (3) W. Chang and **V. V. Varadan**, *Model Reduction and Robust Controllers for Complex Adaptive Structures.*

Control and modeling

I.S. Sadek, J.C. Bruch, Jr., J.M. Sloss, and S. Adali, *Integral Approach for Velocity Feedback Control in Thin Plate with Piezoelectric Patches.*

J. Feng, *Large Deviations, Hamilton-Jacobi Equations and Stochastic Modeling of Surface Processes.*

M. Sunar, *Modeling of Piezoelectric/Magnetostrictive Materials for Smart Structures.*

Keynote lecture (4) R. Lerch, *Numerical Modeling of Sensing and Actuating Electromechanical Transducer.*

Dynamics of Advanced Materials

V. Kafka and **D. Vokoun**, *Shape Memory: Heterogeneity: Thermodynamics.*

L. Faravelli, *A Model for the Constitutive Law of Shape Memory Alloy Structural Components under Dynamic Loading.*

N. Rajapakse and S. X. Xu, *Energy Release Rate Criteria for Piezoelectric Solids.*

S. Biwa, Y. Watanabe, S. Idekoba and N. Ohno, *Wave Scattering and Attenuation in Polymer-Based Composites: Analysis and Measurements.*

R. Heuer, *Free Large Vibrations of Buckled Laminated Plates.*

H. Liu, **Z. B. Kuang** and Z. M. Cai, *Application of Transfer Matrix Method in Analyzing the Inhomogeneous Initial Stress Problem in Prestressed Layered Piezoelectric Media.*

Poster presentation

N. Sumi, *Wave Propagation in Piezoelectric Circular plate under Thermo-Electro-Mechanical Loading.*

Y. Ootao and Y. Tanigawa, *Transient Piezothermoelasticity for Cylindrical Composite Panel.*

M. Ishihara, O. P. Niraula and N. Noda, *The Analysis of Transient Thermal Stresses in Piezothermoelastic Semi-infinite Body with an Edge Crack.*

S. Itou, *Transient Dynamic Stress Intensity Factors around a Rectangular Crack in a Nonhomogeneous Interfacial Layer Between Two Dissimilar Elastic Half-Spaces.*

K. Watanabe and T. Takeuchi, *A Green Function for a Radially Inhomogeneous Elastic Solid.*

F. Ashida and T. R. Tauchert, *Exact Solution for a Thermoelastic Problem of Wave Propagations in a Piezoelectric Plate.*

T. Hata, *Stress-Focusing Effect in a Spherical Inclusion Embedded in an Infinite Medium Caused by Instantaneous Phase Transform.*

M. Kurashige, H. Kato, C. Matsunaga and K. Imai, *Anisotropy in Packing Structure and Elasticity of Sintered Spherical Particles.*

Keynote lecture (5) H. Murakami and Y. Nishimura, *Infinitesimal Mechanism Modes of Tensegrity Modules.*

Biomimetic Smart Structures

T. Kosawada, *Mechanics of Plasma Membrane Vesicles in Cells.*

H. Kobayashi, M. Daimaruya and H. Fujita, *Unfolding of Morning Glory Flower as A Deployable Structure.*

S. N. Gorb, *Bio-Mimetic Smart Microstructures: Attachment Devices in Insects as Possible Source for Technical Design.*

V. Kiryukhin and Y. Nyashin, *Application of Stress and Strain Control Theory to Living Tissues.*

Keynote lecture (6) T. R. Tauchert and F. Ashida, *Control of Thermally-Induced Structural Vibration via Piezoelectric Pulses.*

Control of Thermal Vibration

Y. Tanigawa, R. Kawamura and R. B. Hetnarski, *Thermally Induced Vibration of an Inhomogeneous Beam due to a Cyclic Heating.*

S. S. Vel and **R. C. Batra**, *Exact Solution for Cylindrical Thermoelastic Deformations of Functionally Graded Thick Plates.*

X. Wang and N. Hasebe, *Complex Variable Solution of Plane Problem for Functionally Graded Materials.*

B. Sapinski, *Non-Parametric Representation of MR Linear Damper Dynamic Behaviour.*

Keynote lecture (7) U. Gabbert, H. Koppe, F. Seeger, and T. N. Trajkov, *Overall Design and Simulation of Smart Structures.*

Simulation of Smart Structures

Y. Shibuya and S. Watanabe, *Numerical Simulation for Control of Progressive Plastic Buckling with Defects on Axisymmetric Shell Structure.*

A. Chattopadhyay, R. P. Thornburgh and A. Ghoshal, *Transient Analysis of Smart Structures Using a Coupled Piezoelectric- Mechanical Theory.*

A. Berezovski and G. A. Maugin, *Simulation of Impact-Induced Martensitic Phase-Transition Front Propagation in Thermoelastic Solids.*

Keynote lecture (8) G. R. Liu, C. Cai, K. Y. Lam and V. K. Varadan, *A Review of Simulation Methods for Smart Structures with Piezoelectric Material.*

Modeling of Advanced Materials

F. Ubertini, *Finite Element Models for Linear Electroelastic Dynamics.*

S. Govindjee, *Application of Quasi-Convexity in Evolutionary Modeling and Simulation of Shape Memory Alloys*.

Keynote lecture (9) H. Irschik and U. Pichler, *Maysel's Formula for Small Vibrations Superimposed upon Large Static Deformations of Piezoelectric Structures*.

Active Damping

A. Tylikowski, *Active Damping of Parametric Vibrations of Mechanical Disturbed Systems*.

J. Holnicki-Szulc, *High-Performance Impact Absorbing Materials- The Concept, Design Tools and Applications*.

M. A. E. Kaunda, *A Self-Sensing Active Constrained Layer Damping Treatment for Composite Structures and Determination of Lamé's Constants*.

P. M. Przybylowicz, *Active Damping of Torsional Vibration in a Piezoelectric Fiber Composite Shaft*.

Report composed by K. Watanabe and F. Ziegler

**02-4 IUTAM Symposium on Asymptotics, Singularities and Homogenisation in Problems of Mechanics
Liverpool, UK, 8 - 11 July 2002**

a) Scientific Committee

A. B. Movchan (UK, Chairman), I. D. Abrahams (UK), A. G. Aslanyan (Russia), D. Bigoni (Italy), H. Gao (Germany), K. Z. Markov (Bulgaria), R. C. McPhedran (Australia), J. Salencon (France), W. Wendland (Germany)

b) Short summary of scientific progress achieved

The objective of the Symposium was to provide cross-linking of research activities in intensively developing areas of applied mathematics, continuum mechanics and theoretical physics involving asymptotic analysis and studies of singularities near non-smooth boundaries.

Asymptotic analysis has proved to be one of the most powerful tools in singularly perturbed problems of mechanics and during recent years there were some new exciting developments in high order homogenisation theory, models of dynamic fracture, propagation of waves in composites and lattice models in mechanics of defects. In many of these areas rigorous asymptotic techniques can be engaged to produce a substantial breakthrough in longstanding problems. Phenomena of very different physical nature can be described in many instances by mathematical models of similar type. Examples include elastic and electromagnetic waves, dislocation dynamics and fluid motion along interface boundaries.

The idea of bringing international experts in these fields together worked very well and the Symposium proved to be a great success. It initiated interesting new developments on the interfaces between applied mathematics, mechanics and theoretical physics.

The topics covered in the Symposium included:

- Perturbation problems for partial differential equations and their applications in mechanics
- Homogenisation theory in models of composite structures
- Fracture. Mathematical models of cracks in solids
- Wave propagation, scattering
- Models of photonic and phononic band gap composite materials
- Models of dislocations in lattice structures
- Asymptotic and numerical models of imperfect interfaces

Forty-four oral presentations and two poster sessions were given during the four days of the Symposium. Judging by the response of the participants the Symposium was highly successful and all the objectives were achieved completely.

c) Countries represented and number of participants

The meeting attracted 72 participants from 12 countries:

Australia, Denmark, France, Germany, Italy, Japan, Mexico, The Netherlands, Poland, Russia, UK, USA.

d) Publication of Proceedings of the Symposium

The Proceedings will be published by Kluwer Academic Publishers in 2003 (editor: A. B. Movchan).

e) Financial supports

The Symposium was sponsored by the following funding bodies:

- International Union of Theoretical and Applied Mechanics
- European Office of Aerospace Research and Development, Air Force Office of Scientific Research, United States Air Force Research Laboratory
- London Mathematical Society
- Kluwer Academic Publishers
- University of Liverpool

We wish to thank our sponsors for their contribution to the success of the Symposium.

f) Scientific program

Welcome address by J.W. Bruce Pro-Vice-Chancellor of Liverpool University

Lectures, 8 July

J.R. Willis, *Dynamic perturbation of a propagating crack: implications for crack stability*

H. Gao, *Extending fracture mechanics concepts to biological nanocomposite materials*
D. Bigoni¹, E. Radi, D. Capuani, *Instabilities and near tip crack fields in elastic, incompressible*

A.J.M. Spencer, *Exact singular solutions for an inhomogeneous thick elastic*

Yu.A. Antipov, V.V. Silvestrov, *Method of hyperelliptic surfaces for vector functional-difference*

F.J. Sabina, J. Bravo-Castillero, R. Rodriguez-Ramos, R. Guinovart-Diaz, *Analysis of fibre-reinforced materials via the asymptotic homogenization*

M. Gei, E. Radi, *Near-Tip fields of mode III steady-state crack propagation in elastic-plastic strain gradient*

- A. Cherkaev, *Damageable structures of waiting links*
 I.S. Jones, *Methods of assessment of thermal striping fatigue damage*
 O. Obrezanova, A.B. Movchan, J.R. Willis, *Dynamic crack stability*
 I. Monetto, W.J. Drugan, *On micromechanics-based non-local modeling of elastic matrices containing non-spherical heterogeneities*

Poster Session I, 8 July

- M.D. Hughes, K. Chen, *Fast iterative solution of coupled 3-dimensional fluid-structure interaction problems*
 G.T. Piliposian, P.G. Appleby, *A simple model of the origin and transport of ^{222}Rn and ^{210}Pb in the atmosphere*
 S.B. Platts, N.V. Movchan, *Filtering and polarisation of elastic waves by 2D phononic crystals*
 P.G. Appleby, A. Ploger, L. Camarero, *The transport of fallout radionuclides in a high mountain lake*
 A. Selsil, A.B. Movchan, N.V. Movchan, *Asymptotic analysis of heat transfer in a system of channels connected by thin conducting walls*
 G.S. Mishuris, K. Kolk, G. Kuhn, *3D Singularities and its application to fatigue crack growth simulation*
 S.E. Mikhailov, J. Orlik, *Asymptotic homogenisation in strength and durability analysis of composites*
 M.L. Shendeleva, *Wave analogies in thermal wave reflection and refraction at an interface*
 V.N. Biktashev, *Envelope equations for modulated non-conservative waves*
 M. Brun, D. Bigoni, D. Capuani, *Boundary elements for non-linear elasticity*
 E. Babenkova, J. Kaplunov, *The two-term asymptotic expansion in the case of low-frequency vibrations of elongated elastic rectangular*
 C.G. Poulton, S. Guenneau, A. Nicolet, A.B. Movchan, *Investigation of the coupling between light and sound waves in periodic structures with finite element and Rayleigh methods*
 R. Suckley, V.N. Biktashev, *Geometry of the slow manifold in the Hodgkin-Huxley system of equations*
 C.J. Powles, *Supersonic leading-edge noise*
 J.B. Lawrie, R. Kirby, *Analysing the performance of a dissipative silencer: a mode-matching approach*
 I.M. Mohamed, J.B. Lawrie, *A parametric investigation of the acoustic power in a two dimensional waveguide with membrane bounded cavity*
 M. Perelmuter, *Fracture criterion for cracks with bridged zone*

Lectures 9 July

- I.D. Abrahams, *On the approximate factorization of Wiener-Hopf kernels with applications in structural acoustics*

- R.C. McPhedran, N. Nicorovici, C.G. Poulton, L.C. Botten, *Localized states in photonic crystals: A multipole method*
- J.S. Jensen, O. Sigmund, *Periodic band gap structures as optimal designs*
- F.Zolla, S. Guenneau, *Artificial ferro-magnetic anisotropy: Homogenization of 3D finite photonic crystals*
- S.T. Kolaczowski, *Catalytic combustion: making the connection between the physical/chemical processes and the mathematical model of the reactor*
- V. Karlin, *Nonmodal instability as the mechanism of acceleration of cellular flames*
- C.G. Poulton, A. Spence, *Numerical methods for the solution of non-linear eigenvalue problems arising in electromagnetism*
- M. Hori, T. Ichimura, H. Nakagawa, *Application of homogenization techniques to two earthquake problems*
- A. Fadili, J.R.A. Pearson, P.M.J. Tardy, *Stochastic homogenisation of fluid flows in heterogeneous porous media*
- E. Sanchez-Palencia, *On a kind of singular perturbations for transmission problems*
- S. Sorokin, O.A. Ershova, S.V. Grishina, *Asymptotic analysis of vibrations and wave propagation in sandwich plates with parametric stiffness modulation*
- P.G. Martinsson, G. Rodin, *Boundary algebraic equations for lattice problems*
- J. Sanchez-Hubert, H. Ranarivelo, *Asymptotics of laminated shells. Membrane - bending coupling and numerical implementation*

Lectures, 10 July

- L. Berlyand, *Discrete network approximation for effective properties of high contrast random highly packed solid and fluid composites*
- L.E. Fraenkel, *A diffusing vortex circle in a viscous fluid*
- C.J. Chapman, *The asymptotic theory of fluid-structure interaction with heavy fluid loading*
- J. Sivaloganathan, *Singular minimisers, configurational forces and implications for fracture in nonlinear elasticity*
- E. Cherkaev, *Coupled effective properties of a random mixture*
- S. Vladimirov, *Dynamics of charged rotators and lattice waves in a plasma environment*
- C.M. Linton, *Embedding formulas and singularities in acoustic scattering*

Lectures, 11 July

- A. Lacey, *Singular behaviour of solutions to some parabolic models of shear-band formation*
- D.F. Parker, *Stretch, flexure and twist in finite elasticity*
- Y. Fu, Y.P. Lin, *A WKB analysis of the buckling of an everted neo-Hookean cylindrical tube*
- H. Ockendon, *Models for the textile industry*
- R. Craster, Yu. V. Obsonov, *Model multi-phase composites*

W.J. Drugan, *Comparisons of exact and gradient-approximate nonlocal constitutive equations from a Hashin-Shtrikman-Willis variational principle for random elastic composite materials*

A. Nicolet, S. Guenneau, F. Zolla, C. Geuzaine, B. Kuhlmeiy, G. Renversez, *Numerical investigation of photonic crystal fibres by means of finite elements and matrix of diffraction methods*

B. Gralak, A. Tip, *Calculation of dispersion relation in absorptive photonic crystals*

S.E. Mikhailov, I.V. Namestnikova, *Non-local approach to fatigue crack initiation and propagation*

G. Mishuris, *Asymptotic behaviour of mode III interface crack for various thin nonhomogeneous anisotropic interfaces*

A.G. Aslanyan, A.B. Movchan, O. Selsil, *Estimates for the first six eigenfrequencies for a massive body supported by thin cylindrical rods*

J. Kaplunov, V. Kovalev, M. Wilde, *Asymptotic analysis of higher order peripheral modes in acoustic wave scattering by elastic cylinders and spheres*

K. Khusnutdinova, *Non-linear dynamics of bi-layer and coupled Klein-Gordon equations*

Poster Session II, 11 July

D.A. MacDonald, *On linear vortex breakdown in a slowly-varying tube impulsively rotated about its axis with constant angular velocity*

P.J. Message, *The use of asymptotic series for Lie series generating functions in deriving multiple Fourier series expressions for orbital perturbations*

O. Avila-Pozos, *Propagation of elastic waves along interfaces in layered beams*

S. Guenneau, C.G. Poulton, A.B. Movchan, *Oblique propagation of electromagnetic and elastic waves for an array of cylindrical fibres*

D.J. Hasanyan, G.T. Piliposyan, A.H. Kamalyan, M.I. Karakhanyan, *Some dynamical problems for a functionally inhomogeneous elastic material, including anti-plane deformations*

V.V. Zalipaev, *Summation of Gaussian beams in 3D problems of radiation and scattering of elastic waves*

S. Haq, *Models of dislocation in lattice structures*

D. Esparza, N.V. Movchan, *Effect of interface bonding on the stress singularity at the vertex of a thin conical inclusion*

S.C. Hawkins, K. Chen, *Preconditioning for finger pattern matrices arising from wavelet discretisations of boundary integral equations*

J.P. Bercial, *Asymptotic analysis of wave equation in a 3D layer containing a dynamic crack*

J. Servant, S. Guenneau, A.B. Movchan, C.G. Poulton, *Scattering by a single circular cylinder in oblique incidence*

I.S. Jones, O. Selsil, A.B. Movchan, *A thermoelasticity problem in a domain with an edge crack: Asymptotic analysis*

Report composed by Alexander B. Movchan.

**02-5 IUTAM Symposium on Complementary-Dual Variational Principles
in Nonlinear Mechanics
Shanghai, China, August 13-16, 2002**

a) Scientific Committee

D.Y. Gao (USA, Co-Chair), K. Hackl (Germany), G. Maier (Italy), N.Q. Son (France), R.W. Ogden (UK), N. Olhoff (Denmark, IUTAM Representative), D.J. Steigmann (USA), C.-C. Wu (China), W. Zhong (China, Chair)

b) Short summary of scientific progress achieved

The concepts of duality, complementarity and symmetry play more and more important roles in modern mechanics, theoretical physics, engineering optimization, control theory and computational methods.

Much research has been devoted to the developments of complementary and dual variational principles in the last forty years. The theory is well developed in several directions, for example in linear/nonlinear optimization and variational problems, finite deformation theory, quantum mechanics, elasto-plastic fracture mechanics, penetration mechanics, shear bands, phase transitions and shape memory alloys, and finite element methods, etc., the complementary-dual variational methods have made substantial contributions.

Apart from providing a more complete picture of variational methods, complementary-dual formulations often provide useful bounds on some important parameters of interest. Recently, the complementary-dual variational methodology and associated computational methods have been found more and more important in theoretical physics, nonsmooth/ nonconvex mechanics and large-scale structural analysis and design.

The IUTAM symposium was held jointly with the Fourth International Conference on Nonlinear Mechanics in Baolong Hotel, Shanghai from August 13-16. This symposium brought together, for the first time, engineers, physicists and mathematicians from a variety of scientific disciplines who are working on duality, complementarity and symmetry in nonlinear science and computational methods.

The speakers in this symposium presented progress made in their respective areas of study with theory, methods, algorithms and applications in general nonlinear mechanics, including the following areas:

- nonsmooth & nonconvex mechanics: bifurcation and buckling problems, chaotic systems, phase transitions and hysteresis, super-conductivity and shape memory

- alloys, contact and fractural mechanics, stress concentrations, penetration and shear bands, composite materials,
- finite deformation field theory,
 - nonconvex and non-conservative Hamilton systems,
 - engineering optimization and control,
 - plastic limit analysis, design and shakedown theory,
 - analytic solutions for general nonlinear partial differential equations,
 - computational mechanics, numerical models and algorithms,
 - nonlinear mathematical programming,
 - adaptive systems and “smart” structures.

c) Countries represented and number of participants

Australia (1), Austria (1), Belgium (1), China (4), Czech (1), France (6), Germany (1), Greece (1), Hong Kong (1), Italy (1), Japan (2), Netherlands (1), Portugal (1), Russia (1), Singapore (1), Switzerland (2), UK (3), USA (7).

Total number of registered attendee: more than 300 (for the joined meetings with ICNM-IV)

d) Publication of Proceedings of the Symposium

- The Proceedings of refereed four-page extended abstracts was published by Shanghai University.
- The Proceedings of IUTAM Symposium on Duality, Complementarity and Symmetry in Nonlinear Mechanics, edited by David Gao, will be published by Kluwer Academic Publishers in late 2003.

e) Financial supports

- International Union of Theoretical and Applied Mechanics
- National Science Foundation, USA
- Shanghai University
- National Natural Science Foundation of China

f) Scientific program

Keynote Lectures, August 13

D.H. van Campen, *Some aspects of nonlinear dynamics of discontinuous mechanical systems*

K.P. Chong, *Mechanics and materials research and challenges in the twenty-first century*

I. Ekeland, *The least action principle and its duals*

Technical sessions

- X. Li and S. Pan, *Duality for Entropy Optimization and Its Applications*
D.Y. Gao, *Duality, Complementarity and Triality: Unifying Mechanics, Scientific Computations and Human Understanding*
H. Yoshimura, *On the duality principle for dynamics of constrained mechanical systems*
Q.S. Nguyen, *On shakedown theorems in hardening plasticity*
H. Nguyen-Dang and D.K. Vu, *Mathematical Duality in Kinematical Shakedown Analysis of*
Q. C. He, *Polar Duality and Limit Analysis in Micromechanics*

Technical sessions, August 14

- Q.-P. Sun, *Deformation Instability during Phase Transformation in Shape Memory Alloys: Experiment and Simulation*
D. Gao, J.-F. Li and D. Viehland, *Tri-duality Solutions to Landau-Ginzburg Equation for Imperfect Ferroelectrics*
W. Dai and R. Nassar, *A Linear Finite Difference Scheme for Solving a Nonlinear Micro Heat Transport Equation in Symmetric Thin Film*
M. Thera, *Well-positioned closed convex sets and well-positioned closed convex functions*
C-S. Man, *Flow Stress Anisotropy in Textured Sheet Metals*
C. Vallee, M. Hjjaj, D. Fortune, G. de Saxce, *Duality Extended By Generalising the Legendre-Fenchel-Moreau Transformation*
F.Y.M. Wan, *Bifurcation Analysis of Spherical Shells*
K.A. Lazopoulos, *Beam bending and buckling for materials with non-local spatial dependence*
T.C. Gasser and G.A. Holzapfel, *On the mathematical modeling of three-dimensional delamination processes of laminated composites*
R.J. Greechie, *The Models for the Logical Foundations of Quantum Mechanics: Effect Algebras*
G.H.M. Van der Heijden, *Constrained rods: from drill strings to DNA supercoils*
V. S. Zarubin and E.E. Krasnovski, *Application of the dual variational statements for error estimation of approximate solutions of thermomechanics problems*

Technical sessions, August 15

- C.-C. Wu, *Finite Element Dual Analysis in Piezoelectric Crack Estimation*
P. Vsnini and R. Nascimbene, *Computing FEM solutions of plasticity problems via nonlinear mixed variational inequalities.*
D. Gao and P. Lin, *Primal-Dual Finite Element Analysis for Ginzburg-Landau Superconductivity*
T.S. Ratiu, *Averaged Euler equations and second grade fluids with free slip Navier boundary*

D. Motreanu, *Minimax theory, duality and applications*

M. Tajiri, *Periodic Soliton Resonances*

C. Glocker, *Newton's and poisson's impact law for the non-convex case of re-entrant*

R. Nassar and W. Dai, *Numerical Modeling and Optimization for Depositing Symmetric 3-D Microstructures by Laser-induced Chemical Vapor Deposition*

M. Hjjaj and S.W. Sloan, *Extension of limit analysis theorems to incompressible material with a non-associated flow rule*

J. Haslinger, *Duality in Optimal Shape Design*

R. Ogden, *Generating exact solutions in compressible nonlinear*

Plenary Sessions, August 16

A. Jeffrey, *Hyper-elastic media, acceleration waves and a latered half-space*

G.A. Maugin, *Essential concepts and applications of eshlbian nonlinear material mechanics*

Report Composed by David Y. Gao

**02-6 IUTAM Symposium on Nonlinear Stochastic Systems
Urbana-Champaign, 25-31 August 2002****a) Scientific Committee**

N. Sri Namachchivaya (USA, Co-Chair), Y. K. Lin (USA, Co-Chair), S.T. Ariaratnam (Canada), Pierre Bernard (France), R. Narayana Iyengar (India), Peter V.E. McClintock (UK), Arvid Naess (Norway) and Werner Schiehlen (Germany).

b) Short summary of scientific progress achieved

Advances in nonlinear stochastic dynamics have been rapid in the past decade, with applications to almost all fields of engineering. The overall goal of these investigations has been to formulate and develop methods of analysis for complex interactions between noise and inherent nonlinearities in real mechanical and structural systems, and to suppress undesirable vibrations, which can lead to failure. It has brought about an enormous increase in the number of scientists working in this area, along with the discovery of many important new phenomena.

Progress in theoretical research (stochastic flow, Lyapunov exponent, multiplicative ergodic theory, stochastic bifurcation theory, large deviations, chaos theory, etc.) has also led to the development of reliable numerical algorithms for computing standard statistical measures of response and stability in random dynamical systems, system identification and stochastic control, and to a better understanding of nonlinear phenomena. Practical applications of these new fundamental results are beginning to appear across the entire spectrum of mechanics; for example, stability of aircraft at high angles of attack, wave propagation in random media, mixing and transport phenomenon in fluid mechanics, and queuing networks. Some of the results are even contrary to intuition, such as stabilization by noise and stochastic resonance.

The range of subjects in which nonlinearity and noise play a significant role is enormous, too large for a symposium of modest size to cover adequately at any one time. For the purpose of promoting common interest in the emerging areas of nonlinear and stochastic dynamics, the Symposium brought together forty-six speakers and ten poster presenters from the engineering, physics and applied mathematics communities, from twelve countries.

The five lead lectures were given by S.T. Ariaratnam (Waterloo, Canada), Ludwig Arnold (Bremen, Germany), P.R. Kumar (Urbana, USA), Walter Wedig (Karlsruhe, Germany), Kurt Wiesenfeld (Atlanta, USA).

In addition to the invited speakers and poster presenters, there were twenty participants mainly from the United States and Canada, from the areas of Engineering, Mechanics, Physics and Applied Mathematics.

The Symposium provided a forum for the discussion of developments in nonlinear and stochastic dynamics and reviewed both fundamental theory and its applications in structural and mechanical engineering, physics, signal-processing, and other areas of science and technology.

Subject areas included, but were not limited to:

- Multi-scale phenomena in stochastic dynamics
- Stability and bifurcations of stochastic systems
- Control estimation of nonlinear stochastic systems
- Modeling and random vibrations
- Computational methods in stochastic and chaotic dynamics.

For the engineering and physics community, the Symposium provided the opportunity to obtain first-hand information on recent developments in related mathematical areas, and to point out directions for further research. The applied mathematics community benefited primarily from the opportunity to obtain information on various possible applications.

c) Countries represented and number of participants

The Symposium had seventy-six participants, which included fifteen University of Illinois scientists and graduate students. The Symposium brought together participants from the engineering, physics and applied mathematics communities, from Canada (8), China (1), Czech Republic (1), France (1), Germany (10), India (1), Italy (1), Norway (1), Russia (3), Slovenia (1), South Africa (1), United Kingdom (3) and United States (44).

d) Publication of Proceedings of the Symposium

The Proceedings of the Symposium will be published under the title IUTAM Symposium on Nonlinear Stochastic Dynamics by Kluwer Academic Publishers; the official designated publisher of IUTAM Proceedings. Each paper included in the Proceedings of the Symposium was subjected to two reviews, with the aim of achieving a standard of the Proceedings that is comparable to the standard of refereed journals in the field. The camera ready copy of the proceedings has been sent to Kluwer Academic Publishers.

e) Financial supports

The Symposium was made possible through the support of IUTAM, the US National Science Foundation under Grant No. 0129587, and the University of Illinois at Urbana-Champaign.

f) Scientific program**Stochastic Approximations: Theory and Applications****Session 1 - Multi-scale Stochastic Systems**

Ludwig Arnold, Lead Speaker, *Linear and Nonlinear Diffusion Approximation of the Slow Motion with Two Time Scales*

Rachel Kuske, *Multi-Scale Analysis of Noise-Sensitivity Near a Bifurcation*

Session 2 - Stochastic Averaging

Mark Freidlin, *Averaging Principle for Deterministic and Stochastic Perturbations*

Pierre Bernard, *Stochastic Averaging: Some Methods and Proofs*

Richard Sowers, *Stochastic Averaging Near Homoclinic Orbits via Singular Perturbations: A Singular Perturbations Proof*

Session 3 - Response to Non-Gaussian/Non-Stationary Excitations

Mircea D. Grigoriu, *Dynamic Systems Driven by Poisson and Lévy White Noise*

Radislaw Iwankiewicz, *Dynamical Systems with Multiplicative Random Impulse Process Excitation*

Guoqiang Cai, *Response Spectral Densities of Systems Under Both Additive and Multiplicative Excitations*

Session 4 - Random Vibration of Nonlinear Systems

Christian Bucher, *Solutions of the First-Passage Problem by Importance Sampling*

Mustapha Fofana, *An Illustrative Reduction Approach in Machining Dynamics*

Stochastic Stability and Nonlinear Phenomena**Session 5 - Stochastic Stability and Stabilization - I**

S. T. Ariaratnam, Lead Speaker, *Stochastic Stability of Coupled Systems Possessing Internal Resonance*

Volker Wihstutz, *On Stabilizing the Double-oscillator by Mean Zero Noise*

W. Q. Zhu, *Lyapunov Exponent and Stability of Optimally Controlled Quasi Partially Integrable Hamiltonian Systems*

Session 6 - Stochastic Bifurcations and Noisy Bursting

Peter H. Baxendale, *Lyapunov Exponents and Stability for the Stochastic Duffing-Van Der Pol Oscillator*

Adi R. Bulsara, *Stochastic Dynamics in a Class of 2D Oscillators Near a Bifurcation*

Huw G. Davies, *Slow Sweep Through a Period-Doubling Cascade: an Example of a Noisy Parametric Bifurcation*

Session 7 - Stochastic Stability and Bifurcation

Mikhail F. Dimentberg, *Stochastic Lotka-Volterra Systems*

Wei-Chau Xie, *Stability of a Two-Dimensional System Under Combined Harmonic and Real Noise Parametric Excitations*

Jiri Naprstek, *Flutter Instability Influenced by Parametric Random Noises*

Session 8 - Stochastic Modelling

Werner Schiehlen, *Multiscale Impact Models: Interaction Between Multibody Dynamics and Wave Propagation*

Raouf A. Ibrahim, *Deterministic and Stochastic Characterization of Friction-induced Vibration in Disc Brakes*

Evening Panel Session - Future Directions in Random Dynamical Systems

Speakers: Peter McClintock, Fritz Colonius, Peter Imkeller, Lutz Schimansky-Geier, Ludwig Arnold, Mark Freidlin, Adi Bulsara, Sean Meyn

Report composed by Sri Namachchivaya

**02-7 IUTAM Symposium on Transsonic IV
Göttingen, Germany, September 02 – 06, 2002****a) Scientific Committee**

J. Delery (France), J. Fulker (UK), M. Hafez (USA), N. Hirose (Japan), A. Kluwick (Austria), A. Kuzmin (Russia), K. Moffatt (UK, IUTAM), H. Sobieczky (Germany, Chair), Z. Zhu (China).

b) Short summary of scientific progress achieved

This Symposium was the 4th in a series during the last 40 years, showing proof of continuing importance of transonics for aerospace and turbomachinery applications. With theory and modelling well understood in steady flow, progress has been achieved in unsteady flow and its application in aeroelastics. New concepts in viscous - inviscid interaction and flow control were presented suggesting the development of adaptive configurations. The status of wind tunnel testing at high Reynolds numbers was documented.

With operational methods for controlling flows with reduced shock waves, the focus of new work shifts toward strategies for design and optimization of aircraft in the transonic and the high speed regime. Supersonic aircraft design is influenced by the transonic flight phase and sonic boom control requires the understanding of shock waves interacting with transonic phenomena. Finally, results for transonic effects in multiphase flows have been presented, with consequences for applications in turbomachinery component development.

The symposium has demonstrated that with advanced computers and flow analysis software available our refined knowledge base can be used for a faster and more systematic development of new generation aircraft and turbomachinery components.

c) Countries represented and number of participants

Austria (2), Brasil (1), China (2), Czech Rep. (7), France (7), Germany (22), India (1), Japan (2), Netherlands (1), Poland (1), Russia (1), UK (5), USA (12)

d) Publication of Proceedings of the Symposium

A Book "Symposium Transsonicum IV" with 55 contributions and ~400 pages will be published by Kluwer Academic Publishers in 2003.

e) Financial supports

The symposium was funded by

- DLR German Aerospace Center (host)
- IUTAM
- Kluwer Academic Publishers

f) Scientific program

1. Inviscid flow models

Steady flows

- Zierep, J.: *New Results for the Normal Shock in Inviscid Flow at a Curved Surface*
 Hunter, J.K., Tesdall, A.M.: *Transonic Solutions for the Mach Reflection of Weak Shocks*
 Kuz'min, A.G.: *Interaction of a Shock Wave with the Sonic Line*
 Liu, D.D., Mignolet, M.: *Transonic Wedge / Cone Flow Solutions Using Perturbed Potential and Euler*
 Prasad, P.: *Upstream Propagating Curved Shock in a Steady Transonic Flow*
 Hafez, M.: *Non-Uniqueness in Transonic Flows*

Unsteady flows

- Caughey, D.A.: *Unsteady Transonic Flow past "Non-unique" Airfoils*
 Bur, R., Berthouze, P.: *Forced Oscillation of a Shock-Wave in a Transonic Channel Flow*
 Tang, L., Liu, D.D., Chen, P.C.: *Nonlinear Aerodynamic Effects on Transonic LCO Amplitude of a Supercritical Airfoil*
 Schwamborn, D., Weinman, K.: *On the Influence of Turbulence Modelling on Steady and Unsteady Flows*

Aeroelastics

- Ballmann, J., Boucke, J., Braun, C.: *Aeroelastic Sensitivity in the Transonic Regime*
 Castro, B. M., Jones, K. D., Platzer, M. F., Weber, S., Ekaterinaris, J. A.: *Numerical Investigation of Transonic Flutter and Modeling of Wind Tunnel Interference Effects*
 Chen, P.C., Liu, D.D.: *Efficient Transonic Method for Aeroelastic Applications Including Aircraft/Stores*
 Liu, G.-L.: *A Unified Variational Formulation of Aeroelasticity Problem for Coupled 'Fluid-Wing' Vibration System in 3-D Unsteady Transonic Flow*

2. Viscous flows

Viscous-inviscid interaction

- Delery, J.M.: *The Different Facets of an Old but Always Present Concern: Shock-Wave/Boundary Layer Interaction*

Jones, K.D., Platzer, M.F., Rodriguez, D.L., Guruswamy, G.: *On the Effect of Area Ruling on Transonic abrupt Wing Stall*

Kluwick, A., Braun, S., Gittler, P.: *Transonic, Laminar High Reynolds Number Flow in Slender Channels*

Ruban, A.I., Türkyilmaz, I., Buldakov, E.V.: *Viscous-Inviscid Interaction and Boundary-Layer Separation in Transonic Flows*

Ryzhov, O.S., Bogdanova-Ryzhova, E.V.: *Boundary Layer Instabilities in Transonic Range of Velocities*

Zierep, J., Bohning, R., Doerffer, P.: *Perforated Plate Aerodynamics for Passive Shock Control*

Internal flows

Dvorak, R.: *Internal Transonic Flows*

Safarik, P., Luxa, M.: *Transonic Flow past Plane Cascades: Experimental Data Analysis*

Dobes, J., Fürst, J., Fort, J., Halama, J., Kozel, K.: *Numerical Simulation of Transonic Flow in Steam Turbine Cascades - the Role of Numerical Viscosity, Grid Type and Approximation of Boundary Conditions*

Gerolymos, G.A., Vallet, I.: *Reynolds-Stress Modelling for Transonic Shock-Wave/Boundary-Layer Interaction*

Experimental techniques

Hefer, G.: *ETW - A Facility for High Reynolds Number Testing*

Meier, G. E. A., Stasicki, B.: *Density Measurement of Large Scale Transonic Flow Fields*

Rein, M., Erdi-Betchi, A., Klinkov, K.V.: *Transonic Flow Phenomena of the Cold Spray Deposition Process*

3. Numerical methods

CFD new analysis and design approaches

Jameson, A., Caughey, D.A.: *Development of Computational Techniques for Transonic Flows: An Historical Perspective*

Hirose, N.: *Transonic Aerodynamics Research Retro- and Prospective in Japan*

Bramkamp, F., Ballmann, J.: *Implicit Euler Computations on Adaptive Meshes for Steady and Unsteady Transonic Flows*

Eberle, A.: *Efficient and Refined Transonic Flow Analysis Using a New Flux Vector Splitting Scheme*

Fort, J., Fürst, J., Jirasek, A., Kladrubsky, M., Kozel, K.: *Numerical Solution of 2D and 3D Transonic Flows over an Airfoil and Wing*

Hafez, M.: *Alternative Formulations for Transonic Flow Simulations*

Rachwalski, J., Magagnato, F., Gabi, M.: *The Buffer Layer Technique Applied to Transonic Flow Calculations*

Design and Optimization tools

Li, P., Om, D.: *Design Applications in the Industry*

Daumas, L., Dinh, Q.V., Kleinveld, S., Roge, G.: *How to Take in Account Deformation in a CAD-Based Euler Optimization Process?*

Holst, T.L., Pulliam, T.H.: *Transonic Wing Shape Optimization Using a Genetic Algorithm*

Jameson, A.: *Optimum Transonic Wing Design Using Control Theory*

Lutz, T., Sommerer, A., Wagner, S.: *Parallel Numerical Optimisation of Adaptive Transonic Airfoils*

Zhu, Z.: *Computation of Biobjective/Bidisciplinary Optimization*

4. Flow control and adaptive configurations

Flow control

Fulker, J.L.: *A Review of Research at QinetiQ on the Control of Shock Waves*

Smith, A.N., Babinsky, H., Fulker, J.L., Ashill, P.R.: *Experimental Investigation of Transonic Airfoil Shock / Boundary Layer Interaction Control Using Streamwise Slots*

Tulita, C., Raghunathan, S., Benard, E.: *Control of Transonic Periodic Flow on NACA 0012 Aerofoil by Contour Bumps*

Corre, C., Renaud, T., Lerat, A.: *Transonic Flow Control Using a Navier-Stokes Solver and a Multi-Objective Genetic Algorithm*

Adaptive Configurations

Geißler, W., Koch, S.: *Adaptive Airfoil*

Trenker, M., Hannemann, M., Sobieczky, H.: *Surface Parameterization for Configuration Adaptation*

5. Supersonic flows

Supersonic Transport Design Aerodynamics

Matsushima, K., Yamasaki, W., Nakahashi, K.: *Transonic Design of SST - To Employ Japanese SST as a Candidate for Near Sonic Transport*

Sobieczky, H., Li, P., Seebass, R.: *Transonic Methods for Oblique Flying Wing SST*

Sonic Boom: Analysis and Optimization

Cheng, H.K., Hafez, M.M.: *The Superboom as a Tricomi Problem: Extensions and Applications*

Coulouvrat, F., Marchiano, R., Thomas, J.-L.: *Numerical and Experimental Simulation of Sonic Boom Focusing*

Argrow, B., Farhat, C., Maute, K., Nikbay, M.: *Linear-Theory-Based Shape Optimization for Sonic Boom Minimization*

Nadarajah, S.K., Kim, S., Jameson, A., Alonso, J.J.: *Sonic Boom Reduction Using an Adjoint Method for Supersonic Transport Wing-Body Configurations*

6. Real gas effects**Multiphase flow**

Put, A., Kelleners, P.H., Hoeijmakers, H.W.M.: *Development of a Numerical Method for Simulating Transonic Multiphase Flows*

Schnerr, G.H., Goodheart, K.: *Unsteady Nonadiabatic Transonic Two-Phase Flow*

Dissociation

Hornung, H.G., Leyva, I.A.: *The Sonic Line and Shock Detachment in Hypervelocity Cone Flow*

Report composed by Helmut Sobieczky

**02-8 IUTAM Symposium on Reynolds Number Scaling in Turbulent Flow
Princeton, NJ, USA, 11-13 September 2002****a) Scientific Committee**

A. Smits (USA, Co-Chair), H. Fernholz (Co-Chair), K.R. Sreenivasan (Co-Chair), P. Bandyopadhyay (USA), D.M. Bushnell (USA), W.K. George (USA), J. Hunt (England), N. Kasagi (Japan), Y. Nagano (Japan), F.T M Nieuwstadt (Netherlands), I. Procaccia (Israel), R.M.C. So (Hong Kong), C. Wark (USA), T. Tatsumi (Japan, IUTAM repres.)

b) Short summary of scientific progress achieved

The behavior of turbulence at high Reynolds number is interesting from a fundamental point of view, in that most theories of turbulence make very specific predictions in the limit of infinite Reynolds number. From a more practical point of view, there exist many applications that involve turbulent flow where the Reynolds numbers are extremely large. For example, large vehicles such as submarines and commercial transports operate at Reynolds numbers based on length of the order of 10^9 , and industrial pipe flows cover a very wide range of Reynolds numbers up to 10^7 . Many very important applications of high Reynolds number flow pertain to atmospheric and other geophysical flows where extremely high Reynolds numbers are the rule rather than the exception, and the understanding of climate changes and the prediction of destructive weather effects hinges to some extent on our appreciation of high-Reynolds number turbulence behavior.

The important effect of Reynolds number on turbulence has received a great deal of recent attention. The objective of the Symposium was to bring together many of the world's experts in this area to appraise the new experimental results, discuss new scaling laws and turbulence models, and to enhance our mutual understanding of turbulence.

Papers were presented in the following areas: similarity scaling, high Reynolds number asymptotics, isotropic and homogeneous turbulence, simulation and modeling of high Reynolds number flows, control of high Reynolds number flows, and applications of Reynolds number scaling.

The Symposium provided a stimulating forum for scientists from a wide variety of backgrounds, and produced many useful interactions. Although the Symposium started on a somber note (the opening day was the first anniversary of the September 11, 2001 terrorist attacks in the US), there was a friendly and relaxed atmosphere throughout the proceedings, which helped to stimulate intense and productive exchanges.

c) Countries represented and number of participants

Australia (3), Canada (2), England (6), France (2), Germany (8), Israel (1), Italy (1), Japan (18), Netherlands (2), Spain (2), Sweden (8), Taiwan (2), USA (34).

d) Publication of Proceedings of the Symposium

The proceedings will be published by Kluwer Academic Publishers in 2003 (editor: A. J. Smits).

e) Financial supports

The organizers extend their thanks to the following for sponsorship of this IUTAM Symposium:

- . International Union of Theoretical and Applied Mechanics
- . Kluwer Academic Publishers
- . Princeton University

f) Scientific program**Session 1****Invited talks**

F.T.M. Nieuwstadt and J.C.R. Hunt, *Characteristics of High-Reynolds Number Turbulence in the Atmosphere*

R.J. Adrian, *Scaling and the relationship to structure*

Oral Presentations

M. Buschmann, M. Gad-el-Hak, *Reynolds-number-dependent scaling law for turbulent boundary layers*

K. Knobloch, H. Fernholz, *Statistics, Correlations, and Scaling in a Canonical, Incompressible Turbulent Boundary Layer with $Re_{\square} < 1.15 \times 10^5$*

I. Marusic, G.J. Kunkel, *Turbulence intensity similarity laws for high Reynolds number boundary layers*

J. Jimenez, J.C. del Alamo, O. Flores, *Large-scale organization of the turbulent wall region*

K. Iwamoto, Y. Suzuki, N. Kasagi, *Nonlinear interaction of coherent structures in wall turbulence at low-to-moderate Reynolds numbers*

H.M. Nagib, C. Christophorou, P. A. Monkewitz, J.M. Österlund, *Higher Reynolds Number Boundary Layer Data on a Flat Plate in the NDF*

Poster Presentations

- M. Hayakawa, *Empirical Assessment on the Mean Flow Similarity of Flat Plate Turbulent Boundary Layers*
- M.S. Borgas, B.L. Sawford, *Simple Lagrangian models for anomalous high Reynolds number scaling of scalar structure functions*
- O. Kitoh, K. Nakabayashi, *Similarity Law of Turbulence Intensity Distribution for Channel Flow*

Session 2**Invited talks**

- B. Sawford, M. Borgas and P.K. Yeung, *Lagrangian modeling of turbulent diffusion in the atmosphere -- recent developments*
- J. Klewicki and M. Metzger, *Studies of high Reynolds number turbulence in the atmospheric surface layer over the salt plain of western Utah*

Oral Presentations

- U. Högström, J.C.R. Hunt, A. Smedman, *Theory and measurements for turbulence spectra and variances in the atmospheric neutral surface layer*
- M. Oberlack, S. Guenther, *New Scaling Laws of Shear-Free Turbulent Diffusion and Diffusion-Waves*
- S.C. Morris, J.F. Foss, *Similarity Scaling of the Transverse Vorticity in a High Reynolds Number Single Stream Shear Layer*
- S. de Bruyn Kops, K.B. Winters, J.J. Riley, *Reynolds and Froude Number Scaling in Stably-Stratified Flows*
- J.F. Foss, S.C. Morris, M.C. Maher, R.J. Prevost, *Comparative Measures of the Velocity and Vorticity Statistics from High R_λ (300-850) Turbulence Fields: Atmospheric Boundary Layer and a Single Stream Shear Layer*
- M. Metzger, J. Klewicki, P. Priyadarshana, *Reynolds number dependencies in the behavior of boundary layer axial stress and scalar variance transport*

Poster presentations

- R. Worthington, J.F. Morrison, R.P. Hoxey, *Pressure Fluctuations and Vortical Structures in the Atmospheric Surface Layer*
- A. Smedman, U. Högström, J.C.R. Hunt, *Effects of Shear Sheltering in a Slightly Stable Atmospheric Boundary Layer With Strong Shear*
- M. Skote, D.S. Henningson, *Reynolds number scaling in separated turbulent boundary layers*
- K. Bobba, J.C. Doyle, M. Gharib, *A Reynolds number independent model for turbulence in Couette Flow*
- P. Hancock, *Scaling of the near-wall layer beneath reattaching separated flow*

Session 3: Superfluid Helium Minisymposium**Invited Talks**

R. Donnelly, *The fundamentals of superfluid helium*

J. Vinen, *Superfluid turbulence: experiments, physical principles, and outstanding problems*

C. Beranghi, *Superfluid turbulence: vortex reconnections and numerical simulations*

Oral Presentations

S. Kida, S. Goto, T. Makihari, *Enhancement of Mixing by Vortex Clusters*

A. Priyadarshana, J.C. Klewicki, *Reynolds number scaling of wall layer velocity-vorticity products*

M. Tsubokura, T. Tamura, *Scaling of the large-scale motions in fully developed turbulent channel flow*

F. Durst, E.S. Zanoun, H. Nagib, *The Mean Velocity Profile of Two-Dimensional Fully-Developed Turbulent Plane-Channel Flows*

Poster Presentations

S. Jung, J. Aubert, C.N. Baroud, H.L. Swinney, *Nonextensivity in turbulence in a rapidly rotating fluid*

S.C. Ling, H.P. Pao, *A unified theory for the origin of turbulence and its subsequent evolution*

R.M. Kerr, *Variance budgets in Rayleigh-Bernard convection*

B. Chabaud, B. Hebral, S. Pietropinto, P.-E. Roche, C. Baudet, Y. Gagne, C. Poulain, B. Castaing, Y. Ladam, P. Lebrun,

O. Pirotte, *Very high Reynolds number turbulence with low-temperature gaseous helium*

Session 4**Invited talks**

C. Meneveau, B. Tao, C. Higgins, J. Katz, M.B. Parlange, *Alignment trends of vectors and tensors in turbulence: from laboratory duct flows to the atmospheric surface layer*

Y. Kaneda, T. Ishihara, *Spectra of Fourth Order Velocity Moments in Homogeneous Isotropic Turbulence: Direct Numerical Simulation and Lagrangian Theory*

Oral Presentations

P.K. Yeung, S. Xu, M.S. Borgas, B.L. Sawford, *Scaling of multi-particle Lagrangian statistics in Direct Numerical Simulations*

R.D. Moser, P. Zandonade, *Development of High Reynolds Number Optimal LES Models*

Y. Tsuji, *Similarity Scaling and Statistics of Pressure Fluctuation*

T. Nakano, T. Gotoh, *Convection, Pressure and Dissipation in Three-Dimensional Turbulence*

A. Gutierrez Rubino, J.F. Morrison, R.P. Hoxey, A.J. Smits, *A Quantitative Estimate of 'Inactive' Motion*

Poster presentations

- N. Rimbart, O. Séro-Guillaume, *Dependence of Levy Statistics with Reynolds Number*
 L. Castillo, X. Wang, *The Asymptotic Profiles in Forced Convection Turbulent Boundary Layers*
 L. Castillo, R.B. Cal, *Scaling of Turbulent Boundary Layers With Suction and Blowing*
 B. Lindgren, Y. Tsuji, A.V. Johansson, *Universality of Probability Density Distributions in the Log-Layer in High Reynolds Number Turbulent Boundary Layers*
 J.G. Brasseur, C. Johansson, A. Smedman, U. Hogstrom, *Similarity Structure of the Convective Boundary Layer Analyzed with Combined Large-eddy Simulation and Experimental Data*
 R. Lindken, J. Westerweel, F.T.M. Nieuwstadt, *A micro-PIV system for measurements in a high Reynolds number wind tunnel at 200 bar*

Session 5**Invited talks**

- I. Procaccio, *Anisotropy in Turbulence: Universal Exponents in the Restoration of Isotropy*
 V. Yakhot, *Reynolds number scaling of Large Eddy Simulations of strongly non-linear fluids*

Oral Presentations

- F. Toschi, A. Lanotte, L. Biferale, *Homogeneous and non-isotropic, stationary and decaying turbulence*
 T. Miyauchi, M. Tanahashi, S. Iwase, *Coherent fine scale eddies and energy dissipation rate in homogeneous isotropic turbulence up to $Re_\lambda = 220$*
 L.J. Jiang, T. S. Yang, S.S. Shy, *Four-Dimensional Measurements of The Structure of Dissipative Scales in An Aqueous Near-Isotropic Turbulence*
 E. Villermaux, *Random mixing, space dimension, and Reynolds number*
 W.K. George, H. Wang, *The spectral transfer in isotropic turbulence*
 B.R. Pearson, P.A. Krogstad, G.R. Johnson, *Re dependence of the Kolmogorov constant and scaling*

Poster Presentations

- H. Miura, *Suppression of vortical motions by acoustic waves in weakly compressible decaying isotropic turbulence*
 J. Lewalle, *Analytical approach to intermittency and scaling in finite Re incompressible turbulence*
 J. Cleve, T. Dziekan, M. Greiner, *Reynolds number dependence of the intermittency exponent in fully-developed turbulence*
 T.S. Yang, S.S. Shy, *A Gas-Phase Near-Isotropic Turbulence and Its Wavelet Analysis for Studying Fine-Scale Intermittency*
 B. Eckhardt, J. Schumacher, A. Jachens, R. Pandit, *Derivative moments and correlations in homogeneous shear flows*

Session 6**Invited talks**

A. Johansson, B. Lindgren, J.M. Osterlund, *Mean Profile and Two-Point Correlation Distribution Laws in the Outer Region of High Re Turbulent Boundary Layers – Symmetry Methods in the Light of Experimental Data*

K. Sreenivasan, *Reynolds and Schmidt number scaling from experiment and simulations*

Oral Presentations

B.J. McKeon, J.F. Morrison, W. Jiang, J. Li, A.J. Smits, *Additional measurements and analysis of high Reynolds number fully-developed turbulent pipe flow*

M.B. Jones, N. Nishizawa, M.S. Chong, I. Marusic, *Scaling of the turbulent boundary layer at high Reynolds numbers*

R. Abstiens, W. Schröder, W. Limberg, *Hot-wire measurements of two point correlations in the flat plate boundary layer at high Reynolds numbers*

M. Wosnik, T.G. Johansson, *On the experimental sorting of competing theories for wall-bounded turbulent flows*

Y. Nagano, T. Houra, *Scaling of Near-Wall Structures in Turbulent Boundary Layers Subjected to Adverse Pressure Gradient*

Poster presentations

S. Mochizuki, H. Osaka, T. Kameda, *An experimental study of a self-preserving boundary layer with a power-law variation of free-stream velocity*

T. Buffin-Bélanger, A.G. Roy, *The effects of the Reynolds number on the turbulent flow structure around pebble clusters in a gravel-bed river*

W. Brewer, *Investigating Reynolds scaling of tip-leakage vortex flow via unstructured RANS simulations*

V.J. Kaku, M.C. Boufadel, A.D. Venosa, *Evaluation of Mixing Energy in the Swirling and Baffled Flasks*

J. Park, C. Henoeh, K.S. Breuer, *Drag Reduction in Turbulent Flows using Lorentz Force Actuation*

C.H. Bruneau, H. Kellay, *Coexistence of two cascades in two-dimensional turbulence*

Report composed by Alexander J. Smits

**02-9 IUTAM Symposium on Evolutionary Methods in Mechanics
Cracow, Poland, 24-27 September 2002****a) Scientific Committee**

T. Burczynski (Poland, Co-Chairman), A. Osyczka (Poland, Co-Chairman), K. Deb (India), J. Engelbrecht (Estonia, IUTAM repres.), D.E. Grierson (Canada), R. Haftka (USA), P. Hajela (USA), S. Kundu (Japan), I.C. Parmee (UK).

b) Short summary of scientific progress achieved

The objective of the Symposium was to provide an international forum for facilitating the exchange of information among researchers involved in computational intelligence methods based on evolutionary nature in mechanics.

Recently evolutionary methods have become the most effective tools for solving specific kinds of problems in mechanics, especially in structural and multidisciplinary optimization. The meeting was devoted to both theoretical and practical developments of computational mechanics methods drawing their inspiration from nature with particular emphasis on evolutionary models of computation such as genetic algorithms, evolutionary strategies, classifier systems, evolutionary and genetic programming and other evolutionary computation techniques in mechanics.

The symposium put special emphasis on evolutionary optimization in various fields of mechanics. The subject of evolutionary optimization has recently experienced a remarkable growth. New concepts, approaches and applications were proposed and exploited to provide efficient tools for solving a variety of optimization problems in mechanics.

The topics covered in the Symposium included:

- evolutionary methods in shape and topology optimization
- evolutionary methods in size and material optimization
- evolutionary methods in multicriteria optimization
- evolutionary methods in inverse problems of engineering mechanics
- evolutionary methods in biomechanics
- coupling of evolutionary methods and neural networks in mechanics
- methods of artificial intelligence in mechanics based on evolutionary computing
- other unconventional applications in mechanics

Thirty-six oral presentations were delivered during the four days of the Symposium. Judging by the response of the participants the Symposium achieved its aims admirably.

c) Countries represented and number of participants

There have been 50 participants from 18 countries:

Belgium, Brasilia, Canada, France, India, Israel, Italy, Japan, Korea, Mexico, Poland, Portugal, Singapore, Slovenia, Spain, Taiwan, UK, USA.

d) Publication of Proceedings of the Symposium

The Proceedings will be published by Kluwer Academic Publishers in 2003 (editors: T. Burczynski and A. Osyczka).

e) Financial supports

Financial support for the Symposium was generously provided by the following organizations:

- The International Union of Theoretical and Applied Mechanics
- Silesian University of Technology in Gliwice
- Cracow University of Technology

f) Scientific program**Opening Session**

G. Szefer (President of the Committee of Mechanics),

M. Chrzanowski (Rector of the Cracow University of Technology), W. Cholewa (Vice

Rector of the Silesian University of Technology), T. Burczynski (Co-Chairman),

A. Osyczka (Co-Chairman).

Session 1

I.C. Parmee, *A review of the development and application of cluster oriented genetic algorithms.*

V.T. Johnson, S. Ananthramu, B.K B.K. Raghu Prasad, *Genetic algorithm for damage assessment.*

L. Grosset, R.Le Riche, R.T. Haftka, *Accounting for plies coupling in composite laminate statistical optimization via lamination parameters.*

Session 2

A. Długosz , *Evolutionary computation in thermoelastic problems.*

S. Vigdergauz, *Hole shapes in a perforated elastic plate. Genetic algorithm optimization over range of in-plane loads.*

W. Cholewa, *Evolutionary improvement of belief networks for technical diagnostics.*

Session 3

W. Kus, T. Burczynski, *Distributed evolutionary algorithms in optimization of nonlinear solids.*

C-Y. Lin, W-H. Wu, *Adaptive penalty strategies in genetic search for problems with inequality and equality constraints.*

A. Osyczka, S. Krenich, J. Krzystek, J. Habel, *Evolutionary optimization system (EOS) for design automation.*

Session 4

D.E. Grierson, S. Khajepour, *Using evolutionary search to study structural safety.*

S. D'Angelo, M. Fantetti, E. Minisci, *Hang-glider wing design by genetic optimization.*

T. Burczynski, E. Majchrzak, *Evolutionary computation in inverse problems of mechanics and biomechanics.*

Session 5

R.A. Białeckki, M. Król, *Minimum heat losses subjected to stiffness constraints: window frame optimization.*

N.M. Dourado, J.C. Xavier, J.L. Morais, *On the identification of linear elastic mechanical behavior of orthotropic materials using evolutionary algorithms.*

W. Beluch, *Evolutionary computation in crack problems.*

Session 6

G. Dobrowolski, M. Kisiel-Dorohnicki, *Management of evolutionary MAS for multiobjective optimization.*

A. Hernandez-Aguirre, G. Lizarraga-Lizarraga, S. Botello-Rionda, *I-PAES: A multiobjective optimization method with efficient constraint handling in high dimensional space.*

J. Montusiewicz, *Ranking Pareto optimal solutions in genetic algorithm by using the undifferentiation interval method.*

Session 7

A. Muc, W. Gurba, P. Kędziora, *The effectiveness of probabilistic algorithms in shape and topology discrete optimization of 2-D composite structures.*

F.I. de Bustos, J. Aguirrebeitia, V. Gomez-Garay, R. Aviles, *An error function for optimum dimensional synthesis of mechanisms using genetic algorithms.*

S. Krenich, A. Osyczka, *Optimal design of multiple clutch brakes using a multistage evolutionary method.*

Session 8

G. Kokot, P. Orantek, *Topology optimization using evolutionary algorithms.*

R. Filomeno Coelho, PH. Bouillard, H. Bersini, *PAMUC: A new method to handle with constraints and multiobjectivity in evolutionary algorithms.*

J. Zola, L. Lacinski, R. Wyrzykowski, *An objective oriented library for evolution programs with applications for partitioning of finite element meshes.*

Session 9

A. Kęsy, Z. Kęsy, A. Kądziela, *Parameter estimation of hydradynamic drive mathematical model with application of genetic algorithm.*

G. Papa, B. Korusic-Seljak, *Evolutionary method for a universal motor geometry optimization.*

R. Rohatynski T. Klekiel, K. Białas-Heltowski, *Investigation of evolutionary algorithm effectiveness in optimal synthesis of certain mechanism.*

Session 10

S. Krenich, *Multicriteria design optimization of robot gripper mechanisms.*

D. Greiner, G. Winter, J.M. Emperador, B. Galvan, *A comparative analysis of „Controlled Elitism“ in the NSGA-II applied to optimization of frames.*

J. Kołodziej, W. Jakubiec, M. Starczak, R. Schaefer, *Hierarchical genetic strategy applied to the problem of identification of the coordinate measuring machine geometrical errors.*

Session 11

A. Muc, P. Saj, *Genetic algorithms in optimization of resin hardening technological processes.*

M. Krawczuk, M. Palacz, W. Ostachowicz, *Genetic algorithm for fatigue crack detection in Timochenko beams.*

P. Orantek, *Hybrid evolutionary algorithms in optimization of structures under dynamical loads.*

Session 12

Z. Hu, G.M. Genin M.J. Jakiela, *Material optimization of aligned fiber laminate composites in the presence of stress concentrations.*

Y.Y. Kim, D.H. Jung, *Multiscale genetic algorithm.*

L.A.C. Poltosi, N. Lemke, A.L. Cehin, *Genetic Algorithms applied to electric transformers design.*

Report composed by Tadeusz Burczynski

02-10 IUTAM Symposium on Multiscale Modeling and Characterization of Elastic-Inelastic Behavior of Engineering Materials, Marrakech, Morocco, 20-25 October 2002**a) Scientific Committee**

S. Ahzi (France, Chair), M. Cherkaoui (France), H. Zbib (USA), P. Germain (France), E.P. Busso (UK), K. Neale (Canada), P. McHugh (Ireland), C. Miehe (Germany), S. Nemat-Nasser (USA), J. Salençon (France), E.C. Aifantis (Greece), D. McDowell (USA).

b) Short summary of scientific progress achieved

The symposium brought together scientists from various countries. There were 52 presentations including four plenary sessions, and 2 poster sessions with 12 posters. The presentations covered contemporary topics in multiscale modeling and characterization of materials behavior of engineering materials. The presentations and papers were selected to focus on topics related to deformation and failure in metals, alloys, intermetallics and polymers including, Experimental techniques, deformation and failure mechanisms, dislocation-based modeling, mesoscopic-macroscopic averaging schemes, application to forming processes and to phase transformation, localization and failure phenomena, and computational advances in Key areas that were covered by some of the presentations included modeling of material deformation at various scales. At the atomistic scale, results from MD simulations pertaining to deformation mechanisms in nano-crystalline materials as well as dislocation-defect interactions were presented. Advances in modeling of deformation in metals using discrete dislocation analyses were also presented, providing an insight into this emerging scientific technique that can be used to model deformation at the microscale. These presentations addressed current engineering problems, including deformation of thin films, dislocation behavior and strength during nanoindentation, strength in metal matrix composites, dislocation-crack interaction, development of textures in polycrystals, and problems involving twinning and shape memory behavior. The presentations were very lively with heated discussions at sometimes due to the nature of the topics.

c) Countries represented and number of participants

France (24), USA (15), Japan (6), Morocco (12), Netherlands (3), Belgium (1), Switzerland (1), Hong Kong (2), Italy (1), Germany (1), Canada (1), Denmark (1), Taiwan (1), South Korea (2), Tunisia (1), United Kingdom (2), Australia (1)

d) Publication of Proceedings of the Symposium

The Proceedings will be published by Kluwer Academic Publishers in 2003 (editors, S. Ahzi, M. Charkaoui, M. Khaleel, H. Zbib and M. Zikry).

e) Financial supports

Financial support for the Symposium was generously provided by,

- International Union of Theoretical and Applied Mechanics
- Moroccan State Secretary for Scientific Research
- Pacific Northwest National Laboratory, WA, USA
- European Research Office of the US Army
- University Cadi Ayyad, FSSM, Marrakech, Morocco
- University of Metz, UFR MIM, Metz, France
- University Louis Pasteur, UFR IPST, Strasbourg, France

We thank our sponsors for their contribution to the success of the symposium

f) Scientific program

Session 1

Ali S. Argon (Plenary Lecture1), *New Developments in the Brittle-to-Ductile Transitions of Fracture in Intrinsically Brittle Crystals and Polycrystals, Experiments and Modeling*

Sia Nemat-Nasser (Plenary Lecture 2), *Dislocation-based Length-Scale in Crystal Plasticity, Experiments and Modeling*

P. Blanc, C. **Lexcellent**, C. Bouvet and A. Vivet, *What about the yield transformation surface determination (austenite ® martensite) with the measurement of austenite and martensite lattice parameters for some shape memory alloys?*

T. Watanabe, K. Kido and S. Tsurekawa, *Well-Assembled and Crossed-Lamellar Microstructure and Robust Mechanical Properties of Bioceramic Shell Structure*

Session 2

P. Gilormini, Y. Liu and P. Ponte Castañeda, *Application of a variational self-consistent procedure to the prediction of deformation textures in polycrystals*

Y. Tomita and M. Uchida, *Characterization of Micro- to Macroscopic Deformation Behavior of Amorphous and Crystalline Polymer*

T. Leffers and O.B. Pedersen, *Cross slip viewed at the nano and micrometer scale*

E.P. Busso, G. Cailletaud, S. Quilici, *A multiscale micromechanics approach to describe environment effects on crack tip damage under cyclic loading*

D. Bacon and Yu.N. Osetsky, *Atomic-scale modelling of the dynamics of dislocation behaviour under stress*

M. O. Bloomfield, Y.-H. Im, D.Datta, M.S Shepherd, T.S. Cale, *Coalescence and Evolution of Nanoscale Islands into Polycrystalline Thin Films*

D. Thévenet, M. Abbadi, P. Hähner and A. Zeghloul, *On the Propagative Plastic Instabilities in Aluminum Alloys*

Session 3 - Poster presentations

- R. Ami Saada, *Effect of some parameters on the elastoplastic behavior of green sand*
G. Simons, Ch. Weipert, J. Dual and J. Villain, *Experimental investigation of size effects in thin copper foils*
L.Nicola, E. Van der Giessen and A. Needleman, *Size effects in thin film: a discrete dislocation study*
S.M'Guil, C. Husson and S. Ahzi, *Characterization of the mechanical behavior of materials using a digital image correlation method*
O. Oussouaddi, L. Daridon, S. Ahzi and A. Zeghloul, *Shear band spacing analysis in the case of HY-100 steel and TI-6Al-4V alloy*
F. El Houdaigui, A. Molinari and L. S. Toth, *A differential scheme for the effective moduli of viscoplastic composites*

Session 4

- Alain Molinari (Plenary Lecture 3), *The non-linear inclusion problem with applications to averaging schemes*
Y. Shitbutani, A. Koyama and T. Tsuru, *Collective Dislocation Behavior in Single Crystalline Aluminium under Indentation*
H. Riedel, *Simulation of Powder Processing – Models and Applications for the Ceramics and Powder Metal Industry*
K. Dang Van, *Fatigue analysis of structures by multiscale approach*
K.W. Neale, K. Inal and P.D. Wu, *Multiscale modelling of localization in sheet metals*
A. Abdul-latif, K. Saanouni and J. Ph. Dingli, *Multiaxial plastic fatigue behavior with multiscale Modeling*
G. Cailletaud, O. Diard, A. Musienko, *A model for damage opening and sliding of grain boundaries*
G. Voyiadjis, R. J. Dorgan and R. Abu Al-Rub, *Gradients of Hardening in Nonlocal Dislocation Based Plasticity*

Session 5

- A.H.W. Ngan, *Global and Local Constraints in the Theory of Compaction of Granular Materials*
T. Ohashi, *Three-Dimensional Structures of the Geometrically Necessary Dislocations Generated from Non-Uniformities in Metal Microstructures*
L.S. Toth, R. Massion, S.C. Baik, *Simulation of Texture Evolution in Equal Channel Angular Extrusion of Copper Using a New Flow Field*
J.W. Kysar, *Energy Dissipation Mechanisms in Ductile Fracture*
Y. Remond, *Constitutive modeling of viscoelastic unloading of glassy polymers*
A.M. Rajendran, *A Microcracking and Spall Based Model to Describe the Dynamic Response of for Brittle Materials under Shock and Penetration Loading*

C. Y. Hsu, **B.J. Lee** and M. E. Mear, *On the constitutive theories of power-law materials containing voids*

H. Bouabid, S. Charif -d'ouazzane, Mel Kortbi and O. Fassi-Fehri, *Objective quantification of the ductility within the coupling elasticity-damage behavior: formulation*

Session 6 - Poster presentations

A.A. Benzerga, *A new model for dilational plasticity and applications to ductile solids*

M. Abbadi, P. Hähner and A. Zeghloul, *Influence of temperature and loading on the characteristics of PLC bands in an Al-Mg alloy*

L. Campagne, L. Daridon and S. Ahzi, *Planar impact simulation for ductile metals*

A. Molinari, **F. El Houdaigui** and L. S. Toth, *Validation of the tangent approach for the solution of the non-linear Eshelby inclusion problem*

C. Husson, C. Poizat, N Bahloul, S. Ahzi, L. Merle and T. Courtin, *On plasticity and damage evolution during sheet metal blanking*

N. Fakri and L. Azrar, *Thermo-electro-elastic effective properties of piezoelectric composite materials*

Session 7

Pin Tong (Plenary lecture 4), *Size Effect of Fine Structures - Experiments and Theory*

E. Patoor, C. Niclaey, T. Ben Zineb, *Influence of microstructural parameters on shape memory alloys behavior*

H. Shin, J.K. An and **D.N Lee**, *Analysis of Ridging in Ferritic Stainless Steels Using Crystal Plasticity Finite Element Method*

M.A. Zikry and W.M. Ashmawi, *Grain-Boundary Effects and Ductile Failure Evolution in Crystalline Aggregates*

K. Derrien and **D. Batiste**, *Particles cluster effect on the damage and failure of metal-matrix composites: micromechanical approach*

J.J.C. Remmers, R. de Borst and A. Needleman, *A cohesive segments approach for crack growth*

J.A. Young, E.M. Bringa and B.D. Wirth, *Atomistic simulations of materials deformation at high-strain rate*

H. Garmestani, B. L. Adams, G. Salehi, *Homogenization techniques based on statistical continuum approaches*

Session 8

B.L. Adams, M. Lyon, S. R. Kalidindi and H. Garmestani, *Microstructure design for polycrystalline materials*

D. Walgraef, *Reaction-Diffusion Approach to Self-Assembled Nanostructure Formation in Thin Films*

M. Tokuda, M. Ye, T. Inaba, B. Bundara and P. Sittner, *Multi-axial Behavior of Polycrystalline Shape Memory Alloy and Its Constitutive Equations*

A.A. Benzerga, A. Needleman, Y. Bréchet and E. van der Giessen, *Mesosopic simulations of easy-glide and stage II hardening*

B. N. Nguyen and **M.A. Khaleel**, *Prediction of Damage in Randomly Oriented Short Fiber Composites by Means of A Continuum Damage Mechanics Approach*

K. Chung and W. Lee, *Non-steady plane strain ideal plastic flow considering elastic dead zone*

S.R. Kalidindi, A. Salem and R.D. Doherty, *Role of deformation twinning in mechanical response of FCC and HCP metals*

P. Kanoute and J.L. Chaboche, *Multiscale Modelling of Non-linear Behaviour of Heterogeneous Materials, Comparison of recent homogenisation methods*

M.O. Ben-Salah, L. Boulmane and A. Hihi, *Thermomechanical behaviour of shape memory alloy*

Session 9

H. Zbib, *Multiscale Dislocation Dynamics Plasticity*

F. Ellyin, Z. Xia and Y. Zhang, *Prediction of mechanical properties and damage evolution in polymeric composites through meso-mechanical modelling*

A.S. Khan and Y. Suh, *Response of Ti-6Al-4V alloys over a wide range of strain rates and temperatures and constitutive modelling*

O. Bouaziz and P. Buessler, *A stress-strain mixture law without fitting parameter application to several classical problems of heterogeneous material behaviour*

C. Sansour, *On anisotropic formulations of multiplicative inelasticity*

Z. Tourki and M. Cherkaoui, *Deep drawing process of an AISI304 stainless steel, interaction between geometry tools and kinetics of plastic induced martensite from a micromechanical framework*

L. Daridon, L. Campagne, C. Poizat and S. Ahzi, *Modelling and simulation of dynamic plasticity and failure in ductile metals*

A. Jada, *Effects of polymeric additives on the morphology and the structure of the calcium carbonate material*

Report composed by Said Ahzi

Report of the IUTAM Summer School held in 2002

IUTAM Summer School on Nonlinear Mechanics of Heterogeneous Materials Beijing, China, September 2-5, 2002

a) Organization

The IUTAM summer school on “Nonlinear Mechanics of Heterogeneous Materials” was successfully held in the main campus of the Peking University in Beijing during September 2 to September 5, 2002. The summer school was hosted by the Department of Mechanics and Engineering Science of Peking University.

b) Lecturers

The summer school invited the following principal lecturers:

Professor Zvi Hashin, Tel Aviv University, Israel

Professor Hideyuki Horii, The University of Tokyo, Japan

Professor Yonggang Huang, University of Illinois at Urbana-Champaign, USA

Professor Zhuping Huang, Peking University, China

Professor Bhushan L. Karihaloo, Cardiff University, UK

Professor Pedro Ponte Castaneda, University of Pennsylvania, USA

Professor Tzu-Chiang Wang, Chinese Academy of Sciences, China

c) Summer School topics

The topics covered by the main lecturers include:

- Thermoelastic properties of composites and cracked bodies (Z. Hashin)
- Micromechanics-based continuum theory for solution of engineering problems (H. Horii)
- The mesoscale size-dependent material behavior and the theory of mechanism-based strain gradient plasticity (Y. Huang)
- Mechanics of porous materials (Z. Huang)
- Mechanics of fibre-reinforced composites (B. L. Karihaloo)
- Effective behavior and potentials of nonlinear composite materials (P. Ponte Castaneda)
- Fundamentals of interface mechanics (T. Wang)

d) Participants

Over 60 participants from 15 Chinese universities and research institutions attended the summer school.

e) Scientific Output

The participants highly appreciated the summer school that gave them an excellent opportunity to learn the achievements in mechanics of a wide variety of heterogeneous materials.

The excellent lectures and discussions promoted the academic exchange among the scholars and the students, and were helpful for the applications to the various engineering problems of theoretical and computational mechanics.

f) Publications of Proceedings of the Symposium

No formal proceedings were published, but the lecture notes of all the lecturers were distributed to the audience during the school.

g) Financial support

The National Natural Science Foundation of China provided 15,000 Yuan (about 2,000 US dollars). Peking University provided 10,000 Yuan (about 1,200 US dollars)

The total cost of the summer school is about 70,000 Yuan (25,000 Yuan local expenses + 45,000 Yuan airfares of the invited overseas lecturers), which is about 9,000 US dollars. A financial aid of \$5,000 from the IUTAM is expected to cover part of the cost.

Report composed by Jing Fang, Beijing, China

Summary Record of General Assembly Meetings, 2002

Summary Record of the General Assembly of IUTAM in Cambridge, UK, on 16, 17 and 18 August 2002

The General Assembly of IUTAM convened in the Moller Centre of Cambridge University, UK. The schedule of sessions was as follows

Friday 16 August 2002

20.00 – 22.00 h	:	General Assembly, Lectures
20.00 – 20.30 h	:	Opening and Welcome by the President
20.30 – 22.00 h	:	S. Pellegrino – Deployable structures based on closed-loop linkages

Saturday 17 August 2002

14.00 – 17.30 h	:	General Assembly: 1st Business Session
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Sunday 18 August 2002

10.00 – 12.30 h	:	General Assembly, Lectures
10.00 – 11.00 h	:	G. Worster – Complex solidification problems
11.00 – 11.30 h	:	Break
11.30 – 12.30 h	:	T. Mullin – Silnikov Chaos in fluid flows
14.00 – 17.15 h	:	General Assembly: 2nd Business Session

Attendance at Business Sessions

Voting Members:

R. Adrian (USA), H. Aref (USA), J. Astley (New Zealand), Y. Bai (China), D. Barthes-Biesel (France; 1st session + part of 2nd session), L. Bevilacqua (Brazil; 1st session only), S. Bodner (Israel), B. Boley (USA), C. Calladine (UK), D. van Campen (Netherlands), P. Carpenter (UK), C. Cercignani (Italy), G. Chernyi (Russia), R. Dvorák (Czech Republic), J. Engelbrecht (Estonia), B. Freund (USA), U. Gabbert (Germany), W. Gutkowski (Poland), C. Herakovich (USA), Ph. Hodge (USA), M. Ismail (Egypt), N. Jones (UK), S. Kaliszky (Hungary), T. Kambe (Japan; 1st session only), H. Kitagawa (Japan), A. Kluwick (Austria), G. Leal (USA), F. Lund (Chile), B. Lundberg (Sweden), G. Maier (Italy), J. Martins (Portugal), C. Miehe (Germany), G. Mikhailov (Russia), K. Moffatt (UK), P. Monkevitz (Switzerland), M. Morozov (Russia), M. Munjal (India), M. Määttänen (Finland), R. Narashima (India), F. Niordson (Denmark), P. O'Donoghue (Ireland), N. Olhoff (Denmark), S. Paavola (Finland), T. Pedley (UK), D. Ruzic (Yugoslavia), J. Salençon (France), S. Savage (Canada), W. Schiehlen (Germany), P. Suquet (France; 1st session only), V. Tamuzs (Latvia; 1st session only), R. Tanner (Australia), T. Tatsumi (Japan), Ch. de K. du Toit (South Africa), D. Vandeputte (Belgium; 1st session + part 2nd session), S. Wagner (Germany; 1st session only), E. Watanabe (Japan), D. Weaver (Canada), L. van Wijngaarden (Netherlands), W. Yang (China), S. Zaleski (France), A. Zaoui (France), Zh. Zheng (China).

Non-voting observers:

J. Achenbach (USA; chair Solid Mechanics Panel), P. Huerre (France; chair Fluid Mechanics Panel), J.R.A. Pearson (UK), S. Crandall (USA; repres. of ICA), M. Crocker (USA; repres. of IIAV), B. Karihaloo (UK; repres. of ICF), P. Lugner (Austria, repres. of IAVSD), R. Moreau (France; repres. of HYDROMAG).

Persons represented by proxies:

D. Barthes-Biesel (France), represented in 2nd session by S. Zaleski
 T. Belytschko (USA), represented by H. Aref
 L. Bevilacqua (Brazil), represented in 2nd session by W. Schiehlen
 A. Boström (Sweden), represented by B. Lundberg
 P. Germain (France), represented by J. Salençon
 N. Gupta (India), represented by M. Munjal
 J. Hansen (Canada), represented by S. Savage
 M. Hayes (Ireland), represented by D. van Campen
 Y. He (China), represented by Y. Bai
 S. Hult (Sweden), represented by B. Lundberg
 T. Kambe (Japan), represented in 2nd session by E. Watanabe
 T. Kant (India), represented by M. Munjal
 T. Kaboyashi (Japan), represented by E. Watanabe
 P. Podio-Guidugli (Italy), represented by C. Cercignani
 F. Rimrott (Canada), represented by D. Weaver
 W. Schröder (Germany), represented by C. Miehe
 P. Suquet (France), represented in 2nd session by A. Zaoui
 G. Szefer (Poland), represented by W. Gutkowski
 S. Wagner (Germany), represented in 2nd session by C. Miehe

Agenda Saturday 17 August 2002, 14.00 – 17.30 h

1. Opening of the meeting by the President
 Minutes of the General Assembly, Chicago 2000 (Report 2000, pp. 69-87)
2. Report by the Secretary-General
3. Report by the Treasurer on financial matters
4. Preliminary discussion on annual dues
5. Report on relations with ICSU
6. Report by the Secretary of the Congress Committee
7. Adhering Organizations
 - 7.1. Suspension of membership of Kazakhstan
8. Affiliated Organizations
 - 8.1. Application for affiliation to IUTAM by ICTS
9. Inter-Union Committees and Commissions
10. Matters concerning non-ICSU organizations
11. Preliminary discussion on Standing Scientific Committees and Working Parties
12. Preliminary discussion on changes of the Statutes (in relation to Agenda item 11)

13. Proposal for Electoral Committee
14. Preliminary discussion on future IUTAM Symposia
15. Preliminary discussion on future International Summer Schools on Mechanics

Agenda Sunday 18 August 2002, 14.00 – 17.15 h

16. Continued discussion and final decision regarding future IUTAM Symposia
17. Continued discussion and final decision regarding future International Summer Schools on Mechanics
18. Continued discussion and final decision regarding annual dues
19. Continued discussion and final decision regarding Standing Scientific Committees and Working Parties
20. Continued discussion and final decision regarding changes of Statutes
21. Appointment of members of the Working Parties
22. Election of members of the Electoral Committee
23. Election of members of the Congress Committee of IUTAM
24. Election of member of Symposia Panel on Fluid Mechanics
25. Date and venue of the next General Assembly
26. Any other business

Proceedings of the General Assembly

Item 1 - Opening of the meeting by the President

The President, Professor H.K. Moffatt, opened the meeting and greeted all members and observers welcome. The minutes of the General Assembly held in Chicago in 2000 were adopted.

Item 2 - Report by the Secretary General

The Secretary-General, Professor D.H. van Campen, submitted the following report to the General Assembly on the activities of IUTAM since the last General Assembly in Chicago, USA, on 29 and 30 August 2000:

Mr. President, Dear Colleagues,

At the outside I should like to thank my predecessor, Prof. Michael Hayes, who gave me great help and support when I took his position. It is my sad duty to ask you to stand as we commemorate the deaths of two distinguished colleagues and friends who died in the past two years.

Professor Ren Wang died on 8 April 2001, aged 80. He was Professor at the Department of Mechanics and Engineering Science and the Department of Geophysics at Peking University. During his career he held a series of important offices at Peking University. Moreover, he was Vice-President of the Council of the National Natural Science Foundation of China, President of the Chinese Society of Theoretical and Applied Mechanics and Vice-President of the Chinese Society of Seismology. He also was Academician of the Chinese

Academy of Sciences. As far as IUTAM is concerned, he was a member of the General Assembly since 1986 and served on the IUTAM Bureau from 1996 to 2000. He was involved in a number of IUTAM Symposia.

Prof. Daniel C. Drucker died on 1 September 2001 at the age of 83. He served as Treasurer of IUTAM from 1972 through 1980 and as President of the Union from 1980 through 1984.

Prof. Drucker had a long and distinguished career of scholarship, leadership and service at Cornell University, Brown University, the University of Illinois and the University of Florida. He will be long remembered for his profound contributions to the field of plasticity, particularly for his part in establishing the bounding theorems of plastic limits analysis and for the criterion of stability for elastic-plastic material behavior. This body of work shaped the field for a generation.

Prof. Drucker's contributions were recognized through a host of honors, awards and honorary degrees. Among these were membership in the U.S. National Academy of Engineering and receipt of the U.S. National Medal of Science from President Ronald Reagan. He was also the inaugural awardee of the Daniel C. Drucker Medal, which is now awarded annually by the American Society of Mechanical Engineers.

The many friends of IUTAM who knew Prof. Drucker will remember him as an articulate and effective spokesman on behalf of the field of theoretical and applied mechanics, as a brilliant scholar, and as a thoughtful and generous friend. He will be missed within IUTAM and throughout the world mechanics community.

Adhering Organizations

There are now 51 Adhering Organizations. Kazakhstan became adhered to IUTAM in 1996, but never has paid dues. In spring of this year, the Secretary-General has received a message from Kazakhstan, expressing that they are unable to pay dues. (Note: This will be further addressed under item 7)

In the past year there have been contacts with Mexico, which might result in the establishment of an Adhering Organization there.

Affiliated Organizations

All Affiliated Organizations have presented reports in the past two years. These reports are included in the IUTAM Reports 2000 and 2001. All the Affiliated Organizations appear to be in a healthy state.

The International Congresses on Thermal Stresses (ICTS) has applied for affiliation to IUTAM. The statutes and rules are enclosed to the agenda. The Bureau recommends to the General Assembly that ICTS become affiliated to IUTAM.

Representation with Affiliated Organizations

Asian Fluid Mechanics Committee (AFMC):

Prof. R. Narasimha has expressed his wish to resign as representative of AFMC in IUTAM. The Chairman of AFMC, Prof. M. Kiya, Japan has been appointed as the successor of Prof. Narasimha.

International Association for Boundary Element Methods (IABEM):

Prof. F. Ziegler has expressed his wish to resign as representative of IABEM in IUTAM. The President of IABEM, Prof. M. Bonnet, France, has been appointed as the successor of Prof. Ziegler.

International Commission for Acoustics (ICA):

The Bureau appointed Prof. A. Boström, Sweden, as representative of IUTAM in ICA. He succeeds Prof. D. Crighton in this duty.

Inter-Union Committees

Scientific Committee on Oceanic Research (SCOR):

Prof. S.A. Thorpe, UK, has expressed his wish to resign as representative of IUTAM in SCOR. The Bureau appointed Prof. W. Fennel, Germany, as his successor.

Matters concerning ICSU

The Bureau agreed to support the application of the International Society for Photogrammetry and Remote Sensing (ISPRS) for Scientific Union membership of ICSU.

Last year, the ICSU Executive Board has expressed to stimulate that position statements be prepared by the Union members on a number of significant scientific topics. The Bureau has responded that at present IUTAM does not have a mechanism to produce state-of-the-art papers on significant scientific issues in the short term, but that IUTAM will encourage future Symposia that will contribute to the debate on those issues. The discussion on position statements will certainly be continued at the coming General Assembly of ICSU, to be held in September in Rio de Janeiro, Brazil.

Symposia and Summer Schools

There were nine IUTAM Symposia in 2000 with average attendance 67. Additionally, there was one Summer School in 2000, in CISM, Udine, with 30 participants. In 2001 there were 7 IUTAM Symposia with average attendance 68. That year, there was one Summer School, in Beijing with about 100 participants.

For 2002 ten IUTAM Symposia are being organized, whereas five Symposia are scheduled for 2003. Two Symposia from the 2002/2003 package have been cancelled due to inability of the respective Chairs to organize their Symposium. These Symposia are entitled "Quasi-Brittle Fibre Reinforced Composites", UK, and "Water Waves and Optics", Denmark.

Sponsorship

It was agreed to co-sponsor without financial support the Second Symposium on Computational Modeling of Multi-Scale Problems in Rio de Janeiro, Brazil,

5-8 August 2002, and, in the same way, the Fifth International Conference on Vibration Engineering in Nanjing, China, 18-20 September 2002. IUTAM is represented on the scientific committees of both events.

A procedure for co-sponsoring by IUTAM of non-IUTAM events has been set by the Bureau. This procedure is specified on the IUTAM website.

IUTAM website

The new IUTAM website is now running since February last year. The transition from the previous IUTAM website has been smoothly completed and once again Prof. J. Phillips, USA, is acknowledged for his enormous efforts in setting up the previous IUTAM website.

The IUTAM website is of great help to the Secretary-General. Some major website developments over the past year have been described in the last IUTAM Newsletter. The latest developments include links from the Symposia Proceedings on the Publication section to the Kluwer website as well as links to the reports of the Symposia held in 2000 and 2001.

Remarks about the website are highly appreciated.

IUTAM Newsletter

The Bureau has decided that the IUTAM Newsletter should be revived and that the Secretary-General should be responsible for this. The first issue of the revived Newsletter appeared in the beginning of last May. Remarks and suggestions with respect to the Newsletter are highly appreciated.

Publications

As far as I can see, publication of Symposia Proceedings by Kluwer is running smoothly.

The Proceedings of ICTAM-2000 have appeared well in time and they look wonderful. Professors H. Aref and J. Phillips have to be complemented for having done a great job.

D.H. van Campen, Secretary-General

The report by the Secretary-General was adopted.

The President thanked the Secretary-General for his report.

Item 3 - Report by the Treasurer on financial matters

The Treasurer, Professor L.B. Freund, submitted the following report to the General Assembly.

Mr. President and colleagues in the General Assembly,

With reference to the IUTAM Report 2001, the Union's assets as of 31 December 2001 stood at \$351,472. This reflects a budget surplus of \$76,178 for the year. The large surplus is mainly the result of three circumstances: ICTAM2000 resulted in a substantial return to IUTAM, the operation of the

office of Secretary-General and the IUTAM web site during the year required only minor financial support from IUTAM, and the number of symposia plus summer schools during the year was smaller by two than in most previous years.

The main source of revenue for the Union is subscription dues. Adhering Organizations, which are represented in the General Assembly, continue to pay dues on a more or less regular schedule. More than 85 percent of these organizations are fully paid through 2001, and more than half have paid dues for 2002. Regrettably, there are currently several Adhering Organizations for which dues are seriously in arrears.

The cash reserves of the Union earned interest in the amount of \$7524 during the year. This interest income is derived from savings accounts held in banks in the Netherlands and in the United States.

The largest single expense is support of IUTAM sponsored symposia and summer schools. The level of support has been \$5000 per symposium or summer school since the beginning of 1998. During 2001, awards were provided to seven symposia and no summer school.

The cost of travel for members of the Bureau and for members of the Executive Committee of the Congress Committee totaled approximately \$16,000 for the year.

The cost of administration is principally the cost of operating the office of Secretary General. It has been anticipated that this cost would return to normal level in 2002, plus a small increase in order to maintain the up-to-date IUTAM website through the office of Secretary General.

The financial records of IUTAM are subject to an audit by an independent international accounting firm each year. This firm must submit a formal report and certification to ICSU by March 15th of each year. In recent years, this audit has been conducted by the firm UWP UNITREU GMBH in Eschborn, Germany.

The amount shown as bank fees represents per transaction costs charged by commercial banks for receiving dues payments, arranging symposium awards, and conducting other business.

Invoices for dues for 2002 totalled \$95,380 were sent to Adhering Organizations or their sponsors. Of this amount, only \$38,674 remains outstanding as of August 1 2002. In addition, there is an amount of \$18,223 outstanding on dues for years prior to this year.

A grant of \$4000 was received from ICSU for support of IUTAM programs during 2002. This compares to grants of \$7000, \$10,000 and \$12,000 in the three preceding years.

In summary, the financial state of the Union has remained stable for some years and has benefited from unusually good fortune during the past year. It is likely that this stable situation can be sustained for the foreseeable future. If additional commitments are to be considered by IUTAM, it will be necessary to identify additional sources of revenue to support them.

In closing, it is a pleasure to acknowledge the help and advice provided by assistant treasurers Professor Bruno Boley and Professor Dick van Campen.

Respectfully submitted,
L.B. Freund, Treasurer

The report by the Treasurer was adopted.

The President thanked the Treasurer for his most successful work.

Prof. Van Wijngaarden asked for the viewpoint of the Bureau with respect to an increase of Grants for IUTAM Symposia, given the financial state of the Union. The President responded that a general increase of these Grants would not be desirable, but that an increase of the Symposium Grant could be recommended either for Symposia in developing countries or for other Symposia succeeding to attract participants from developing countries.

Prof. Boley suggested to let the extend of the Symposium Grant depend on the situation of the Symposium Chair at hand: some Chairs do need money, some do not.

It was agreed that further decisions in this matter are to be left to the Bureau.

Item 4 - Preliminary discussion on annual dues

In view of the financial state of the Union, the Treasurer recommended no increase of dues for 2004 and the standard increase for 2005.

This recommendation was supported by the General Assembly.

It was noted that the final decision regarding annual dues would be made in the second session of the General Assembly, see item 18 below.

Item 5 - Report on relations with ICSU

The President of IUTAM, Professor H.K. Moffatt, in his duty as IUTAM representative in ICSU, reported as follows.

Dear Colleagues,
ICSU's activities this year have been focused on the preparation of position papers for the World Summit on Sustainable Development (WSSD), to be held

in Johannesburg, 26 August to 6 September 2002. The input of IUTAM on the topic "Energy and Transport" was solicited, but with such a short time-scale for response that consultation with the General Assembly of IUTAM was not practicable, and we therefore declined to contribute.

I shall attend the General Assembly of ICSU in Rio de Janeiro, 24 to 28 September 2002, at which the conclusions and recommendations from WSSD will be debated. It seems clear that IUTAM will need to develop a rapid consultation procedure, whereby responses to requests from ICSU can be made on a much shorter time-scale than our two-year General Assembly cycle. The Bureau should consider this, together with the report of the ICSU General Assembly, at its meeting in 2003, with a view to reporting to the General Assembly of IUTAM in 2004.

H.K. Moffatt, Representative of IUTAM in ICSU

Item 6 - Report by the Secretary of the Congress Committee

The Secretary of the Congress Committee, Professor T.S. Pedley, submitted the following report:

Mr President and Colleagues,

It is my job at this point to report to you on the progress of the planning and preparations for the 21st ICTAM in Warsaw, 15-21 August 2004, and in particular to tell you of the decisions made by the Congress Committee (CC) at its meeting yesterday morning.

1. First, I can report that the Local Organizing Committee (LOC), led by the Congress President, Professor Witold Gutkowski, and its Secretary-General, Professor Tomasz Kowalewski, has everything well in hand for the 21st ICTAM. The Executive of the Congress Committee (XCCC) visited Warsaw in August 2001 and were very pleased with the facilities, and the full CC was impressed by the LOC's report yesterday. You will already have seen the preliminary announcement of the Congress, and many of you will have visited the Congress website. The structure of the Congress will be exactly the same as the 20th ICTAM in Chicago.
2. The first item for the CC's decision was to select opening and closing lecturers, from a shortlist prepared by the XCCC from a large number of suggestions sent in by members of the CC, the GA and other relevant bodies. The results of the CC vote was to select

·as Opening Lecturer: Professor L van Wijngaarden (The Netherlands)
·as Closing Lecturer: Professor Kasimierz Sobczyk (Poland)

3. At its meeting in 2001, the XCCC selected 6 topics for Mini-symposia, which are given below with the names of those who have agreed to serve as Chairs and co-Chairs. The organizers of each Mini-symposium have the right to nominate one Sectional Lecturer to speak on the topic of that Mini-symposium, and where these nominations have been received they are given below. In addition the organizers will be arranging for three one-hour introductory lectures in each Mini-symposium.

Mini-symposia

1. *Smart Materials and Structures*

Professor N Sottos (USA) chair
 Professor J Holnicki (Poland) co-chair

2. *Tissue, Cellular and Molecular Biomechanics*

Professor P Janmey (USA) chair
 Professor D Barthès-Biesel (France) co-chair
 Professor A Hoger (USA) co-chair

3. *Mechanics of Thin Films and Nanostructures*

Professor K S Kim (USA) chair
 Professor Z Suo (USA) co-chair
 Professor H M Jensen (Denmark) co-chair
 Sectional lecturer: Professor E Arzt (Germany)

4. *Microfluidics*

Professor P Tabeling (France) chair
 Professor R J Adrian (USA) co-chair
 Professor J Santiago (USA) co-chair
 Sectional lecturer: Professor J Israelachvili (USA)

5. *Microgravity Flow Phenomena*

Professor J C Legros (Belgium) chair
 Professor P Neitzel (USA) co-chair
 Professor J I D Alexander (USA) co-chair

6. *Atmosphere and Ocean Dynamics*

Professor J Sommeria (France) chair
 Professor M E McIntyre (UK) co-chair
 Sectional lecturer: Professor P B Rhines (USA)

4. The CC also selected the names of 12 more scientists who will be invited to give Sectional Lectures, with 4 reserves. These names are given below. My own most urgent job after this meeting is to issue invitations to all Sectional

Lecturers, because we wish to include their names on the First Announcement of the Congress, to be produced during October or November of this year.

Sectional Lecturers

Solids

H-J Gao (USA/Germany)
T J R Hughes (USA)
P Ladeveze (France)
A Neistadt (Russia)
R W Ogden (UK)

Fluids

K Bajer (Poland)
J F Brady (USA)
R Keunings (Belgium)
M Lesieur (France)
E A Spiegel (USA)

Reserves:

J C Ambrosio (Portugal)
Z Bazant (USA)

Reserves:

J N Sørensen (Denmark)
V Zakharov (Russia)

General (Fluids/Solids)

H Swinney (USA)
E Kreuzer (Germany)

5. Next I should report that the CC has also selected the names of those to be invited as (equal) co-chairs of all 59 Prenominate Sessions (PNS), with one reserve in each case.
6. One innovation decided on by the CC is to allow the Chairs of Mini-symposia to invite a maximum of three regular speakers, to go into contributed lecture slots, in addition to be introductory lecturers, without the possibility of being over-ruled by the International Papers Committee. This dispensation is not being extended to PNS co-chairs.
7. I should announce to the GA that we have had bids to host ICTAM 2008 from the cities of Adelaide, Australia and Beijing, China, and the CC heard excellent presentations from representatives of both these cities. I have also had an indication that a bid will come from Mumbai (Bombay), India. The CC will make a decision on the venue for the 2008 Congress during the Warsaw Congress.
8. Finally, the CC has drawn up a shortlist of candidates for election by the GA to serve on the CC in place of those who have come to the end of their terms. There are 5 people who have served just one four-year term on the CC, and they should be re-elected automatically. These are Professors N A Fleck (UK), A Kluwick (Austria), B A Schrefler (Italy; also on the XCCC), K Sobczyk (Poland) and E Watanabe (Japan).

There are seven CC members who have served more than one term and who would normally retire from the CC. These are Professors M A Hayes (Ireland, representing ISIMM), T Inoue (Japan, representing ICM), J Jimenez (Spain), A N Kounadis (Greece), B C Nakra (India), J T Oden (USA, representing IACM) and R I Tanner (Australia). I am sure we would like to record our gratitude to these members for their cooperation in the work of the CC over at least 8 years.

Members of the GA now have to vote for 7 of the 16 shortlisted candidates.

T.S. Pedley, Secretary Congress Committee

The report by the Secretary of the CC was adopted.

The President thanked the Secretary of the Congress Committee for his report.

Prof. Van Wijngaarden pleaded to add Prof. M.G. Velarde, appointed as new Rector of CISM, as candidate member of the Congress Committee.

Item 7 - Adhering Organizations

Kazakhstan

The Adhering Organization from Kazakhstan is seriously in arrears in maintaining subscriptions within IUTAM; in fact the Kazakhstan Adhering Organization has paid no IUTAM dues since its admission.

In spring of this year a message has been received from the Kazakhstan Adhering Organization, stating that they are unable to pay their IUTAM dues.

In view of this the Bureau regrettably is forced to recommend to the General Assembly that the membership of the Kazakhstan Adhering Organization be suspended.

It was agreed that the membership of the Kazakhstan Adhering Organization be suspended and that the Secretary-General will recommend to the Kazakhstan Adhering Organization to reapply for membership when they are confident that they will be able to meet the annual dues.

Item 8 - Affiliated Organizations

The International Congress on Thermal Stresses (ICTS) has submitted an application for affiliation with IUTAM. The Bureau recommends to the General Assembly that ICTS become affiliated to IUTAM.

On request by Prof. Schiehlen, Prof. Boley, who is a member of the present International Committee of ICTS, commented on ICTS in a positive way.

It was agreed to admit ICTS as an Affiliated Organization of IUTAM.

Item 9 - Inter-Union Committees and Commissions

Nothing to report.

Item 10 - Matters concerning non-ICSU organizations*World Council on Biomechanics (WCB)*

Professor D. Barthes-Biesel, the representative of IUTAM on WCB, reported as follows:

Last week the WCB met in Canada on the occasion of the World Congress on Biomechanics. The World Council on Biomechanics (WCB) was founded in 1990 and presently consists of 42 members. Every 4 years 1/3 of the membership of the WCB is renewed. At the recent meeting of the WCB in Calgary (August 2002), Prof. D. Barthes-Biesel was elected member and Prof. T.J. Pedley was elected President.

The WCB meets every 4 years at the World Congress. About 1500 participants attended the World Congress in Calgary. The next World Congress will be held in Munich, Germany, in 2006.

It was agreed to authorize the President to write to the WCB, encouraging them to apply for affiliation to IUTAM.

Item 11 - Preliminary discussion on Standing Scientific Committees and Working Parties

The President briefly introduced the Report by the Bureau on Standing Scientific Committees (SSCs) and Working Parties (WPs), which had been distributed before with the documents for the General Assembly.

Prof. Boley asked for the terms of reference for the SSCs. The President specified those from the Report.

Prof. Van Wijngaarden suggested that the SSCs should have a finite life-time (perhaps 8 years) and be subject to review. He also suggested that the WP on “Nano-Scale Phenomena in Mechanics” should be renamed as “Nano- and Micro-Scale Phenomena in Mechanics”.

Prof. Pedley remarked that the International Union of Physiological Sciences should be added to the list of Unions to be linked to the WP on “Biomechanics”. Additionally, the WP on “Geophysical Fluid and Solid Mechanics” should be combined with the WP on “Environmental Fluid and Solid Mechanics”. Prof. Leal considered that the latter merger would result in too broad a WP, but Prof. Carpenter supported it.

It was concluded that the Bureau should decide on this merger, but that if the two WPs are merged, the membership should be increased.

Prof. Karihaloo suggested to add the President of ICF as member of SSC3.

It was agreed to further discuss this within the Bureau.

Prof. Aref remarked that SSCs could be helpful for generating Position Statements. Also, he asked whether it would be desirable that the Chairs of the SSCs be ex officio members of the General Assembly.

It was agreed to continue the discussion in the second session of the General Assembly.

Item 12 - Preliminary discussion on changes of Statutes

To be addressed after completing the discussion on Standing Scientific Committees and Working Parties in the second session under item 19.

Item 13 - Proposal for Electoral Committee

To be presented in the second session under item 22.

Item 14 – Preliminary discussion on future IUTAM Symposia

The Secretary-General had received 26 proposals for IUTAM Symposia in 2004/2005, listed below.

- F.1 *Dynamics of Fiber Suspensions* (Hangzhou, China, 2004)
- F.2 *Elementary Vortices and Coherent Structures: Significance in Turbulence Dynamics* (Toki, Japan, 2005)
- F.3 *One Hundred Years of Boundary Layer Research* (Göttingen, Germany 2004)
- F.4 *Flow Control with MEMS* (London, UK, 2005)
- F.5 *Non-Uniqueness of Solutions to the Navier-Stokes Equations and their Connection with Laminar-Turbulent Transition* (Manchester, UK, 2004)
- F.6 *Laminar-Turbulent Transition* (Bangalore, India, 2004)
- F.7 *High Temperature Gas Dynamics* (Beijing, China, 2004)
- F.8 *Thermohydraulics of High Temperature Gas-Cooled Reactor Plants* (Potchefstroom, South-Africa, 2005)
- F.9 *Mathematical Fluid Dynamics* (Hull, UK, 2005)
- F.10 *Recent Advances in Disperse Multiphase Flow Simulation* (Urbana-Champaign, IL, USA, 2004)
- F/S.1 *Elastohydrodynamics of Rough Surfaces* (Cardiff, UK, 2004)
- S.1 *Mechanical Behavior and Micro-Mechanics of Nanostructured Materials* (Beijing, China, 2004)
- S.2 *Fracture Mechanics for Geomaterials* (Hong Kong, China, 2004)
- S.3 *Mechanics in Cold Regions Environment and Engineering* (Lanzhou, China, 2005)
- S.4 *Multiscale Problems in Multibody Systems Contacts* (Erlangen, Germany, 2005)
- S.5 *Impact Biomechanics - from Fundamental Insights to Applications* (Dublin, Ireland, 2005)
- S.6 *Computational Modeling of Multi-scale Phenomena* (Vandoeuvre lès Nancy, France, 2004)
- S.7 *Mechanics of Biological Tissue* (Graz, Austria, 2004)
- S.8 *Modelling of Damage and Fracture Processes in Composite Materials* (Lublin, Poland, 2005)
- S.9 *Size Effects on Material and Structural Behavior at Micron- and Nanometer-Scales* (Hong Kong, China, 2004)

- S.10 *Vibration Control of Nonlinear Mechanisms and Structures* (Stuttgart, Germany, 2005)
- S.11 *Mechanics and Reliability of Actuating Materials* (Beijing, China, 2004)
- S.12 *Mechanical Behavior of Nano-tubes* (Beijing, China, 2005)
- S.13 *Non-Smooth Dynamical Systems: Theory and Application* (Aberdeen, UK, 2005)
- S.14 *Topological Design Optimization of Structures, Machines and Materials – Status and Perspectives* (Aalborg and Lyngby, Denmark, 2005)
- S.15 *Analytical Basis of Computation in Mechanics* (New York, NY, USA, 2004)

These proposals had been reviewed by the two Symposia Panels. All proposals and the preliminary reports of the Panels had been sent to the members of the General Assembly. During a joint meeting of the Symposium Panels in Cambridge, UK, on 16 August 2002 the proposals had been grouped into three categories according to the system used since 1978.

The Chairmen of the Symposia Panels, Professors P. Huerre and J.D. Achenbach, reported on the recommendations of the two Panels.

On suggestion by the Treasurer it was agreed that up to 16 Symposia might be accepted for the years 2004 and 2005.

After preliminary discussion the proposals numbered F.2, F.3, F.4, F.5, F.10, S.4, S.5, S.9, S.10, S.11, S.14 were ranked “alpha”, those numbered F.6, F.8, F.9, F/S.1, S.1, S.2, S.6, S.7, S.8, S.13 were ranked “beta”, whilst the proposals numbered F.1, F.7, S.3 and S.15 were ranked “gamma”.

It was agreed that the proposal numbered S.12 should be combined with S.1. Additionally, it was agreed that the proposals ranked “alpha” would be accepted in the second session, those ranked “gamma” would be rejected and the remainder, ranked “beta”, would be further considered at the second session.

Item 15 - Preliminary discussion on future IUTAM Summer Schools on Mechanics

The Secretary-General had received two proposals for IUTAM Summer Schools, i.e.

- SS.1 *Mechanics of Microstructured Materials* (Udine, Italy, 2003)
- SS.2 *Biomechanics of Cellular and Molecular Processes* (Beijing, China, 2004)
- Both proposals had been reviewed by the Symposia Panel on Solid Mechanics.

It was agreed to consider both proposals, notwithstanding the fact that the proposal SS.1 is already scheduled for 2003. After some discussion both proposals were ranked “beta”.

The President thanked the two Panels and their Chairmen on behalf of the General Assembly for their careful scrutiny of the proposals for IUTAM Symposia and IUTAM Summer Schools.

It was agreed that the final decision on future IUTAM Symposia and Summer Schools would be made in the second session under items 16 and 17, respectively.

The meeting then adjourned.

The meeting reconvened on 18 August 2002 with item 16.

Item 16 - Continued discussion and final decision regarding future

IUTAM Symposia

The General Assembly decided to accept the 11 symposia proposals rated “alpha” and reject the 4 proposals rated “gamma”.

After further discussion of the remaining 10 proposals a vote was taken.

The following further 4 proposals were finally accepted:

- Mechanics of Biological Tissue
- Laminar-Turbulent Transition
- Elastohydrodynamics of Rough Surfaces
- Mechanical Behavior and Micro-Mechanics of Nanostructured Materials (to be combined with S.12).

With respect to the proposal F.8 (Thermohydraulics of High Temperature Gas-Cooled Reactor Plants) and S.8 (Modeling of Damage and Fracture Processes in Composite Materials), it was decided not to accept these two proposals now, but to ask the Bureau to set up two Study Groups to consider how they may be strengthened.

Item 17 - Continued discussion and final decision regarding future International Summer Schools on Mechanics

After further discussion both proposals for a Summer School on Mechanics of Microstructured Materials in 2003 and for a Summer School on Biomechanics of Cellular and Molecular Processes in 2004 were accepted.

With respect to the latter Summer School, as suggested by Prof. D. Barthes-Biesel, *the General Assembly agreed that preferably two more lecturers should be added.* The recommended names are: Prof. M. Sato, Tohoku University, Japan and Prof. J.J. Meister, EPFL, Lausanne, Switzerland

Item 18 - Continued discussion and final decision regarding annual dues

Following the proposal made by the Treasurer, Prof. L.B. Freund, see item 4, the General Assembly decided the following amounts for the units of dues:

US \$ 656 in 2004

US \$ 670 in 2005

Item 19 - Continued discussion and final decision regarding Standing Scientific Committees and Working Parties

Prof. B. Boley pointed out that SSCs and WPs should give IUTAM guidance for possible directions. The SSCs should not become an independent layer of bureaucracy. Prof. R. Moreau pointed out that the SSCs should be used to get more formal relations established with other Unions.

It appeared that for a number of members of the General Assembly the distinction between SSCs and WPs was not quite clear. The President pointed out that the WPs are meant to be explorative.

Prof. Schiehlen gave a short summary on the history of WPs and SSCs. About eight years ago it was felt that IUTAM was loosing to some extent important sub-fields of mechanics through the activities of some of the affiliated organizations. Then, as a first step, WPs were established which should not have too long a duration of life. Now, SSCs are meant amongst others to further structure the overlapping activities between IUTAM and some of its affiliated organizations.

It appeared that a number of members of the General Assembly were not ready yet to have SSCs established in the form proposed by the Bureau.

After informal discussions during a break and continued discussions after the break *the following was agreed:*

- *All proposed SSCs will start as WPs, i.e. no distinction will be made between SSCs and WPs.*
- *With respect to the WP on Materials Processing it was agreed to accept the proposal by the Chair of this WP to start with 5 members instead of the usual 4.*
- *With respect to the WP on Mechanics of Material, Fracture and Damage, it was agreed to change the name to Mechanics of Materials, although the Chair of this SSC, Prof. S. Bodner, would have preferred the name Material Mechanics.*
- *In addition to the above 5 WPs, replacing the proposed associated SSCs, 4 more WPs were approved. Compared to the proposal by the Bureau, the WP on Geophysical Fluid and Solid Mechanics and the WP on Environmental Fluid and Solid Mechanics were joined together. The number of members of the combined WP was allowed to be somewhat larger than the usual 4.*
- *The proposed additional WP on Nano-Scale Phenomena in Mechanics was renamed as Nano- and Micro-Scale Phenomena in Mechanics.*
- *All WPs are required to provide to the Secretary-General a report once every year, to be included in the IUTAM Report and to be discussed by the Bureau. Moreover, all WPs are required to report to the General Assembly every 2 years. Then the General Assembly will consider continuation of each individual WP.*

The Bureau will compose an updated report about WPs, taking account of the above decisions by the General Assembly,

Item 20 - Continued discussion and final decision regarding changes of Statutes

In view of the decisions under item 19 no changes of the Statutes were needed.

Item 21 - Appointment of members of the Working Parties

The candidate members for the positions on the first 5 WPs (the formerly proposed SSCs) were appointed. A survey of the appointed members is given below.

The General Assembly accepted the proposal for the Chair positions in the 4 additional WPs. These Chairs yet have to be invited to accept this duty. The nomination process for the membership of the additional SSCs will be carried out in a way similar to the one for the first 5 WPs.

The above decisions resulted in the following list of approved Working Parties and associated membership:

WP1: Non-Newtonian Fluid Mechanics and Rheology

Chair: Prof. J.R.A. Pearson, Cambridge, UK

Additional members:

Prof. L.G. Leal, Santa Barbara, USA, member GA, representative of ICR

Prof. D. Boger, Melbourne, Australia

Prof. R. Keunings, Louvain-La-Neuve, Belgium, member GA

WP2: Dynamical Systems and Mechatronics

Chair: Prof. R.S. Sharp, Bredford, UK

Additional members:

Prof. F.L. Chernousko, Moscow, Russia, member SP

Prof. F. Pfeiffer, Munich, Germany

Prof. M. Tomizuka, Berkeley, USA

WP3: Mechanics of Materials

Chair: Prof. S. Bodner, Haifa, Israel, member GA, representative in ICM

Additional members:

Prof. C.T. Herakovitch, Charlottesville, USA, member GA

Prof. J.B. Leblond, Paris, France, representative in ICF

Prof. T. Inoue, Kyoto, Japan

WP4: Materials Processing

Chair: Prof. R. Moreau, Grenoble, France, member GA, representative of HYDROMAG

Additional members:

Prof. R.M. McMeeking, Santa Barbara, USA

Prof. S. Asai, Japan

Prof. M. Rappaz, Switzerland (to be confirmed)

either Prof. C. Macoska, USA (preference) or Prof. S. Milner, USA

WP5: Computational Fluid and Solid Mechanics

Chair: Prof. E.H. de Arantes e Oliveira, Lisbon, Portugal

Additional members:

Prof. J.T. Oden, Austin, USA, member GA

Prof. Y.K. Cheung, Hong Kong, China

Prof. S. Idelsohn, Santa Fe, Argentina, member GA

WP6: Biomechanics

Chair: Prof. D. Barthes-Biesel, Compiègne, France, member GA

WP7: Nano- and Micro-Scale Phenomena in Mechanics

Chair: Prof. W. Yang, Beijing, China, member GA

WP8: Geophysical and Environmental Mechanics

Chair: Prof. S. Savage, Montreal, Canada, member GA

Possible additional member: Prof. J. Hunt, UK (to be confirmed)

WP9: Education in Mechanics and Capacity Building

Chair: Prof. B. Karihaloo, Cardiff, UK, member GA (to be confirmed)

Item 22 - Election of members of the Electoral Committee*The General Assembly elected unanimously the following persons as members of the electoral committee:*

Prof. H.K. Moffatt (UK, chair), Prof. Y.L. Bai (China), Prof. B. Boley (USA),

Prof. S. Kaliszky (Hungary), Prof. L. van Wijngaarden (Netherlands).

Item 23 - Election of members of the Congress Committee of IUTAM*The General Assembly decided to elect the following persons as members of the Congress Committee for the period 2002 through 2006:*

Prof. T. Belytschko (USA), representative of IACM

Prof. D.E. Beskos (Greece)

Prof. F. Ellyin (Canada), representative of ICM

Prof. M. Hayes (Ireland), representative of ISIMM

Prof. E. Kreuzer (Germany)

Prof. E. Tuck (Australia)

Prof. M.G. Velarde (Spain), representative of CISM

The new membership of the Congress Committee from 1 November 2002 is recorded in the following table:

Prof. Hassan Aref, USA, 2004, Member of XCCC

Prof. Ted Belytschko, USA, 2006, Representative of IACM

Prof. Martin P. Bendsøe, Denmark, 2004, Representative of ISSMO

Prof. D.E. Beskos, Greece, 2006

Prof. David Bogy, USA, 2004

Prof. Dick van Campen, Netherlands, 2004

Prof. David Durban, Israel, 2004

Prof. Fernand Ellyin, Canada, 2006, Representative of ICM

Prof. Jüri Engelbrecht, Estonia, 2004

Prof. Norman Fleck, USA, 2006

Prof. Ben Freund, USA, 2004

Prof. Graham Gladwell, Canada, 2004

Prof. Peter Gudmundson, Sweden, 2004

Prof. Michael Hayes, Ireland, 2006, Representative of ISIMM

Prof. Tsutomu Kambe, Japan, 2004

Prof. Bhushan Karihaloo, UK, 2004, Representative of ICF

Prof. Alfred Kluwick, Austria, 2006

Prof. Valery Kozlov, Russia, 2006

Prof. Edwin Kreuzer, Germany, 2006

Prof. Yu Ku, USA
 Prof. Gary Leal, USA, 2004, Representative of ICR
 Prof. Peter Lugner, Austria, 2004, Representative of IAVSD
 Prof. Fernando Lund, Chile, 2004
 Prof. Keith Moffatt, UK, 2004, Chairman Member of XCCC
 Prof. Peter A. Monkewitz, Switzerland, 2004
 Prof. Rene Moreau, France, 2004, Member of XCCC Representative of HYDROMAG
 Prof. Niels Olhoff, Denmark, 2004, Member of XCCC
 Prof. Timothy Pedley, UK, 2004, Secretary Member of XCCC
 Prof. Bernhard Schrefler, Italy, 2006, Member of XCCC
 Prof. Kazimierz Sobczyk, Poland, 2006
 Prof. Pierre Suquet, France, 2004
 Prof. Ernie Tuck, Australia, 2006
 Prof. Manuel Velarde, Spain, 2006, Representative of CISM
 Prof. Eiichi Watanabe, Japan, 2006
 Prof. Feng-Gan Zhuang, China, 2004

Item 24 - Election of member of Symposia Panel on Fluid Mechanics

Prof. E. Krause, member of the Fluid Symposia Panel has recently withdrawn.
The General Assembly decided to appoint Prof. Dan Henningson (Sweden) on the vacant position.

Item 25 – Date and venue of the next General Assembly

The General Assembly decided to hold its next meeting during the 21st ICTAM in Warsaw, Poland, on Tuesday evening, 17 August and on Wednesday afternoon, 18 August 2004.

Item 26 – Any other business

Professor H. Aref, President of ICTAM 2000, reported on the efforts to improve the public image of mechanics as follows:

Members of the General Assembly,
 As you may recall, one thing we did in conjunction with ICTAM2000 in an attempt to promote public appreciation of mechanics was to have Governor George Ryan of Illinois declare the first day of the Chicago congress, Monday, August 28, 2000, to be "Theoretical and Applied Mechanics Day" in Illinois. We had the official declaration for you in Chicago during the Congress. It is now prominently displayed in my Department and on our website. You are most welcome to visit it in either location.

Last year we attempted to continue this idea by wishing all the attendees at ICTAM2000, and a good many others, Happy TAM Day 2001. We set the day to be the last Monday in August rather than a fixed calendar day. That is, last year TAM Day was Monday, August 27, 2001. We solicited comments and stories on how people were planning to celebrate this emerging, international

day of festivities. For a summary of what we got, I invite you, once again, to go to our website.

For example, many of the Russian attendees told us that they planned to celebrate by attending the Eighth All-Russian Congress of Theoretical and Applied Mechanics in Perm which, quite appropriately, opened on TAM Day 2001. Professor Werner Schiehlen, out-going President of IUTAM, told us that nearly 500 engineering students at University of Stuttgart would celebrate TAM Day by taking their first exam in Applied Mechanics, working on five problems for two hours, and then discussing the most elegant solutions. Thus, Schiehlen concluded "TAM Day was the central topic on our campus."

Our incoming President arranged for all the banks in the United Kingdom to be closed, and facilitated that Cambridge University Library was closed in observance of TAM Day 2001. Furthermore, the Newton Institute inaugurated a Boules Court on the west side of the Institute. As he put it to us: "The ancient Basque game of Boules, otherwise known as Petanque, involves the rolling, spinning and collision of steel balls, up to eight in number, and exploits to the full the dynamical possibilities permitted by Newton's Laws of Motion, to which we here are particularly addicted."

In fact, our President was so inspired by TAM Day that he composed a poem entitled TAM Day musings, which - in my humble opinion - will in due course take its place among the great poetic epics of our time such as the Illiad and Beowulf. These poetic musings of our President were also published in the Annual Report of the Isaac Newton Institute for Mathematical Sciences, and have thus become part of the archival literature.

This year TAM Day is officially on August 26. At my home institution we will be celebrating it - quite appropriately we feel - by opening the IUTAM Symposium on Nonlinear Stochastic Dynamics, chaired by Prof. S. Namachchivaya of our Aerospace Engineering Department. Prof. Schiehlen, past President, will welcome the attendees on behalf of IUTAM. Actually, the TAM Day celebrations this year are quite extended. The event we are currently attending, the IUTAM General Assembly, is obviously close enough in time that we can subsume it under TAM Day 2002. Even earlier, at the 14th US National Congress of Theoretical and Applied Mechanics Governor Mark Warner recognized June 24, 2002, as "Theoretical and Applied Mechanics day in the Commonwealth of Virginia", and - as the declaration said - called "this observance to the attention of all citizens."

So, this notion of celebrating our subject on a day during the year seems to have resonated in certain quarters. It was started, of course, somewhat tongue-in-cheek, but it has also a more serious dimension. Other subjects have designated various time periods for particular focus. For example, we had the World Mathematics Year in 2000. The year 1998 was the International Year of the Ocean. Each year in USA we have National Engineers Week, and you may

have similar things in your countries. We have a National Astronomy Week. We have National Chemistry Week. And so on.

With this lengthy preamble let me state two ideas for IUTAM and the General Assembly.

1. We ought to have some annually recurring event, a day, a week, a month (and we started with the most manageable unit, a day) where we, somehow, celebrate our science and place it more prominently in public view.
2. If such an event is to be successful, I believe it would benefit from the impact, authority, and coordination of a body like IUTAM. Conversely, I believe IUTAM would benefit from sponsoring such an event.

I submit these ideas for your consideration.

The President encouraged all members of the General Assembly to reflect on the ideas of Professor Aref and interact informally.

The Secretary-General brought up that recently IACM, without informing or consulting IUTAM, has decided to go on a bi-annual schedule with their World Congresses, the first being in 2004 in Beijing. Hence, IUTAM should be into contact with IACM to try to avoid a clash of World Congresses to the largest possible extent. A possible option would be that IACM would go to uneven years.

It was agreed that the President should contact the representatives of IUTAM in IACM and of IACM in IUTAM, Profs. E.R. de Arantes et Oliviera and T.J. Oden, as well as the President of IACM, Prof. T.J.R. Hughes on this matter.

Then, the President closed the meeting.

Summary Record composed by Dick van Campen, Secretary-General

Summary Record of Congress Committee Meetings, 2002

Minutes of Meeting of IUTAM Congress Committee held at 0900-1200 hours on Saturday 17 August 2002 in the Centre for Mathematical Sciences, University of Cambridge, England

Present: Professors H. Aref, M.P. Bendsøe, D. Durban, J. Engelbrecht, B. Freund, W. Gutkowski (Present ICTAM04, Warsaw), T. Kambe, B. Karihaloo, A. Kluwick, L.G. Leal, P. Lugner, F. Lund, H.K. Moffatt (President), P.A. Monkewitz, R. Moreau, N. Olhoff, T.J. Pedley (Secretary), B.A. Schrefler, K. Sobczyk, R. Tanner, D.H. van Campen, E. Watanabe, F.-G. Zhuang.

Present by invitation: Professor T. Kowalewski (Secretary-General, ICTAM04 Warsaw), Professor N. Morozov (on behalf of VV Kozlov), Professor Yilong Bai and Dr J.M. Denier (for presentation of the cases for Beijing and Adelaide to host the 22nd ICTAM).

Agenda

1. Minutes of meeting of Executive Committee of Congress Committee held on 11-13 August 2001 in Warsaw, Poland.
2. Arrangement and Plans for 21st Congress, Warsaw, 15-21 August 2004
 - (a) Report from Executive Committee
 - (b) Report from Local Organizing Committee
 - (c) Opening and Closing Lectures
 - (d) Report from Chairmen of Mini-symposia
 - (e) Sectional Lectures
 - (f) Chairmen of Pre-nominated Sessions
 - (g) Relationship between the IPC and Mini-symposia and PNS chairs
 - (h) Publication of Congress Proceedings
3. Proposal to General Assembly for new members of the Congress Committee
4. Presentations and preliminary discussion of invitations to host the 22nd Congress in year 2008
5. Any other business

Minutes

Item 1: The Minutes of the last meeting of the Executive Committee of the Congress Committee (XC), held in Warsaw, Poland, on 11-13 August 2001, were approved.

Item 2: Arrangements and Plans for 21st Congress, Warsaw, 15-21 August, 2004
2(a) Report from Executive Committee

With reference to the minutes of the XC on 11-13 August 2001 in Warsaw, Poland, the Secretary gave a brief report on decisions made by the XC regarding ICTAM04. It was decided to choose the same format for this Congress as had proved so successful for ICTAM 2000 in Chicago, including up to 18 Invited Sectional Lectures (cf item 2(e)) and six Mini-Symposia (cf item 2(d)). The topics, chairs and co-chairs of the Mini-Symposia had been agreed, based on suggestions received from various IUTAM bodies. The Secretary had sent letters to all those chairs and co-chairs, but by the time of the meeting not all had replied. The Secretary was pressing for the last replies. [All replies were received shortly after the meeting, and are reported under item 2(d) below.]

In addition, based on proposals invited from, a.o., the CC and the General Assembly (GA), the XC had selected 58 subjects for Pre-nominated sessions (PNS, cf item 2(f)) on topics covering the whole range of theoretical and applied mechanics other than those of the Mini-Symposia. The titles of the PNS will be listed in all future announcements of the Congress, and the co-chairs, when appointed, will be asked to encourage scientists in the respective areas to submit contributions.

By letters of 15 April 2002, the Secretary had invited the members of the CC, the GA, the National and Affiliated Organisations and the Working Parties of IUTAM to submit proposals for the names of Opening and Closing Lecturers, Sectional Lecturers, co-Chairs of the PNS and new members of the Congress Committee. Decisions on all these matters were to be made at this meeting; lists of the proposals were sent to CC members in advance. The Secretary was extremely grateful for the large numbers of excellent suggestions that he had received.

2(b) Report from Local Organising Committee (LOC)

Professor W Gutkowski and T Kowalewski circulated and presented their "Report on the second year of preparation for ICTAM04 in Warsaw". This shows that the LOC has everything well in hand (see below). Moreover the XC had visited Warsaw in August 2001 and were very pleased with the facilities for both the Congress and participants' accommodation. Particular points from the LOC report are as follows:

- (i) *Announcements*
- The Preliminary Announcement has been printed (10,000 copies) and widely circulated.
 - The editors of 47 journals had been asked to announce the Congress.
 - The text of the First Announcement and Call for Papers was complete, apart from matters to be decided by the CC and XC in Cambridge.
 - The Congress home page <http://ictam04.ippt.gov.pl> and email address had been active since September 2000, and were updated regularly; there had been over 3600 visits to the website already, with 200 online pre-registrations.
 - Pre-registration and registration forms were prepared and on the web.
 - The same was true of Abstract and Extended summary forms and instructions.
- (ii) *Proceedings*
- The search for a publisher of the Proceedings of ICTAM04 is underway. Kluwer Academic Publishers, Elsevier and Chandos Publishing (Oxford) Limited had all shown some interest.
- (iii) *Travel agents*
- From several invited tenders, the XLOC had chosen “Mazurkas Travel” Congress and Conference Bureau to serve the Congress. Documents on travel, accommodation and accompanying persons’ sightseeing tours were circulated.
- (iv) *Finances*
- A draft budget was presented, though not all details could yet be finalised. Financial contributions from various sources within Poland were gratefully acknowledged. It is proposed that the full registration fee be US\$340.00, with a reduced fee of US\$170.00 for students.
- (v) *Congress programme format*
- All sessions of the Congress will take place in the Warsaw University of Technology. A sheet with an overview of the programme was circulated, with essentially the same format as in Chicago. The Congress would begin on Sunday, 15 August, 2004, with Registration from 15.00 to 18.00 and a Get-together Party from 18.00 to 21.00. The Opening Ceremony will start on Monday 16 August at 10.00 and the Opening Lecture at 11.00. On most days technical sessions will begin at 08.30. They will continue until the afternoon of Friday, 20 August, with the Closing Lecture at 14.30-15.30, followed by the Closing Ceremony.

In the program, the Initial Lectures of the Mini-symposia, the Sectional Lectures, and the Lecture and the Seminar (poster) Presentations, respectively, of contributed papers will take place in separate time blocks, where each type of activity is conducted in parallel sessions without competition from other

types of activity. A two-hour and a one-hour time block Monday afternoon and Tuesday morning, respectively, are reserved for parallel Initial Sessions of the six Mini-symposia. Three one-hour time blocks are reserved for six parallel presentations of the eighteen Sectional Lectures. Two two-hour time blocks (Tuesday and Thursday afternoon) are reserved for parallel Seminar Presentation Sessions, and the rest of the time in the technical program is devoted to Lecture Presentations of contributed papers in parallel sessions.

The Congress Banquet is scheduled for Thursday 19 August at 19.00 hours. In addition to the Banquet and the Get-together Party mentioned earlier, there will be a Welcome Reception on the evening of Monday 16 August, and the afternoon of Wednesday 18 August is reserved for Excursions.

2(c) **Opening and Closing Lectures**

From a shortlist of four names drawn up by the XC, it was agreed to invite the following scientists to give the plenary lectures at ICTAM04 in Warsaw.

Opening Lecture: Professor Leen van Wijngaarden (The Netherlands)

Closing Lecture: Professor Kazimierz Sobczyk (Poland)

[Both Lecturers accepted the invitation.]

2(d) **Mini-Symposia**

The topics, chairs and co-chairs of the six Mini-Symposia are listed below.

The Chairs were asked to nominate one sectional lecturer in addition to their three introductory lecturers; the sectional lecturers so chosen are listed with the other sectional lecturers under item 2(e) below.

1. *Smart materials and structures.*
N. Sottos (UIUC, USA) – Chair
J. Holnicki-Szulc (Poland) – Co-Chair
2. *Tissue, cellular and molecular biomechanics.*
P. Janmey (Univ of Pennsylvania, USA) – Chair
D. Barthès-Biesel (Compiègne, France), A. Hoger (UCSD, USA) – Co-Chairs
3. *Mechanics of thin films and nanostructures.*
K.S. Kim (Brown Univ, USA) – Chair
Z. Suo (Princeton, USA), H M Jensen (TU of Denmark) – Co-Chairs
4. *Microfluidics.*
P. Tabeling (ENS, Paris, France) – Chair
R. J. Adrian (UIUC, USA), J. Santiago (Stanford, USA) – Co-Chairs

5. *Microgravity flow phenomena.*
J.C. Legros (Univ Libre de Bruxelles, Belgium) – Chair
P. Neitzel (Georgia Tech, USA),
J.I.D. Alexander (Case Western Reserve, USA) – Co-Chairs
6. *Atmosphere and ocean dynamics.*
J. Sommeria (LEGI, Grenoble, France) – Chair
M.E. McIntyre (Cambridge, UK) – Co-chair

2(e) **Sectional Lecturers**

Based on recommendation by the XC, the CC agreed that the total number of invited Sectional Lectures should be 18. Six of these are those recommended by the Chairs and Co-Chairs of the Mini-Symposia (Item 2(d)). The CC then considered a short list of 24 names prepared by the XC from the large number of suggestions received by the Secretary in response to his April letter. The CC voted on these and decided on 12 people to be invited to give the Sectional Lectures, plus 4 reserves. The Secretary was authorised to invite the reserves, one by one, if any of the invited Sectional Lecturers declined the invitation. [In the event, all 12 of the first choices accepted.] The complete list of sectional lecturers is as follows; the lecturers associated with the Mini-Symposia are marked accordingly.

E Arzt (Germany)	M-S 3
K Bajer (Poland)	
D Beysens (France)	M-S 5
J F Brady (USA)	
H-J Gao (USA/Germany)	
T J R Hughes (USA)	
R Keunings (Belgium)	
E Kreuzer (Germany)	
P Ladeveze (France)	
M Lesieur (France)	
A Neishtadt (Russia)	
R W Ogden (UK)	
A Preumont (Belgium)	M-S 1
P B Rhines (USA)	M-S 6
E Sackmann (Germany)	M-S 2
D A Saville (USA)	M-S 4
E A Spiegel (USA)	
H L Swinney (USA)	

2(f) **Co-chairs of Pre-Nominated Sessions (PNS)**

At its meeting on 16 August 2002, the XC had decided to change the name of one of the previously agreed PNS from “Control in Multibody Dynamics” to “Mechatronics”. It also added a PNS on “Vehicle Dynamics”, to be organised

jointly with IAVSD. Based on the proposals received, the XC had drawn up lists of possible co-chairs for all 59 of the PNS. From these lists, the CC selected two names to be invited to serve, plus one reserve. If further reserves were needed, the Secretary (in consultation with members of the XC) would have discretion in choosing other names, either from the lists supplied at the meeting or on the basis of other suggestions. At the time of writing these minutes not all co-chairs have accepted the invitation to serve. Those that have agreed are given in Appendix 1.

2(g) **Relationship between the International Papers Committee (IPC) and Mini-Symposia and PNS chairs**

The question as to whether chairpersons of Mini-Symposia and PNS should have the authority to make firm invitations to a small number of speakers without fear of being overruled by the IPC had been discussed by the XC at its meetings both in Warsaw in August 2001 and in Cambridge on 16 August 2002. The XC was recommending that chairpersons should be entitled to invite up to a maximum of 3 speakers whose talks could not be rejected by the IPC. After considerable discussion, the CC decided by vote that Chairs of Mini-Symposia should be given that entitlement, but not PNS Chairs. Therefore, Mini-Symposia Chairs may invite up to a maximum of three speakers, in addition to their introductory lecturers, without fear of rejection. They would be instructed not to include more than one such speaker from any single institution, and to send the IPC a brief statement of the international research reputation of the proposed speaker and the reasons for the invitation. The speakers so invited would not have to submit an extended abstract to the IPC, though a short abstract would be required.

2(h) **Publication of Congress Proceedings**

This is mostly covered in item 2(b)(ii) above. Participants at the Congress will receive, in addition to the usual book of short abstracts and, eventually, the published Proceedings, a CD-ROM containing the extended abstracts.

Item 3: Proposal to General Assembly for new members of the Congress Committee

Based on recommendations by the XC, the CC agreed to make the following recommendations to the GA:

- (i) That the following five people who have served just one four-year term on the CC be re-elected automatically:

Professors N.A. Fleck (UK), A. Kluwick (Austria), B.A. Schrefler (Italy), K. Sobczyk (Poland), E. Watanabe (Japan).

- (ii) That the following seven CC members who have served more than one term be asked to retire from the CC:

Professors M.A. Hayes (Ireland, representing ISIMM), T. Inoue (Japan, representing ICM), J. Jiménez (Spain), A.N. Kounadis (Greece), B.C. Nakra (India), J.T. Oden (USA, representing IACM), R.I. Tanner (Australia).

The CC recorded their gratitude to these members for their cooperation in the work of the CC for at least 8 years.

- (iii) That the following 16 candidates (proposed by the XC) be shortlisted for the 7 vacant seats on the CC:

Professors T. Belytschko (USA, to represent IACM), D. Beskos (Greece), D. Bestle (Germany), K.-U. Bletzinger (Germany), J. Dominguez (Spain), C. du Toit (S Africa), F. Ellyin (Canada, to represent ICM), M.A. Hayes (Ireland, to represent ISIMM again), E. Kreuzer (Germany), G.C. Nayak (India), N. Peters (Germany), F. Rammerstorfer (Austria), H.A. Stone (USA), E.O. Tuck (Australia), M.G. Velarde (Spain), G. Yagawa (Japan).

[At its meeting on Saturday 17 August the GA voted on the above candidates and elected the following to serve on the Congress Committee of IUTAM for a four-year term from 1 November 2002:

Professors T. Belytschko (USA), D. Beskos (Greece), F. Ellyin (Canada), M.A. Hayes (Ireland), E. Kreuzer (Germany), E.O. Tuck (Australia), M.G. Velarde (Spain).

The GA also recorded their warm thanks to the retiring CC members.]

A full listing of the new Congress Committee is included as Appendix 2.

Item 4: Presentations and preliminary discussion of invitations to host the 22nd ICTAM in 2008

Invitations to host the 22nd Congress have been received from Adelaide (Australia), Beijing (P R China) and Mumbai (India). The CC was given detailed written bids and two excellent presentations by Dr J M Denier from Adelaide and by Professor Feng-Gan Zhuang from Beijing.

- (i) Dr Denier presented the case for Adelaide on behalf of the whole Mechanics community in Australia. The bid document included letters of invitation from the President of the Australian Academy of Science, the Vice-Chancellor and Dean of Engineering of Adelaide University, the Presidents of the Australian Acoustical Society, the Australian Association for Computational Mechanics, the Australian Fracture Group, the Australian Mathematical Society, the Director of the Australian Centre for Geomechanics, Chairs of the Australia and New Zealand Society for Industrial and Applied Mathematics, the Centre

for Water Research at the University of Western Australia, senior figures in the Institution of Engineers, Australia and CSIRO, and from the Premier of South Australia, the Lord Mayor of Adelaide and the South Australian Minister for Tourism. Draft budgets for the Congress were based on 800, 900 or 1000 delegates, and proposed a standard registration fee of US\$432 (Aus\$800), with expected external sponsorship of approximately US\$100,000.

- (ii) Professors Zhuang and Bai presented the case for Beijing on behalf in particular of the Chinese Society of Theoretical and Applied Mechanics (CSTAM). The document included letters of invitation from Professor Bai Yilang, the President of CSTAM, from the Mayor of Beijing and from the Minister of Science and Technology of the People's Republic of China. A draft budget was presented, based on 1050 participants, with a standard registration fee of US\$450. Sponsorship was estimated at US\$ 60,000.

The Secretary reported that he had received an indication that a full bid would be forthcoming from Mumbai (Bombay), India.

The CC was reminded that the final choice of venue for ICTAM 2008 would be made during the next meetings of the CC, to be held during ICTAM04 in Warsaw.

Item 5: Any other business

Allocation to IUTAM. The CC was required to set the level of fee payable to IUTAM by the organisers of ICTAM04. On the advice of the Treasurer, Professor Ben Freund, and following the recommendation of the XC, this fee was set at US\$27.50 per participant.

Summary Record composed by Tim Pedley, Secretary Congress Committee

2002 Treasurer's Report

USD

Balance, 31 December 2001 351,471.62

Net revenues minus expenses for 2002 12,513.78

Balance, 31 December 2002 363,985.40**Revenues collected during 2002:**

Subscription dues 85,125.00

Interest income 6,466.91

ICSU allocations 4,975.00

Repayment Symposia 0.00

Total 96,566.91**Expenses paid during 2002:**

Symposia 45,000.00

IUTAM summer course 0.00

Other meetings 0.00

Travel, Bureau 11,603.72

Travel, Congress Committee Executive Committee 4,634.25

Travel, Other 6,921.33

Contribution to ICSU 5,355.00

Administration & printing 11,387.47

Web site maintenance 3,605.34

Auditor's fee 1,826.37

Bank fees 618.08

Total 90,951.56**Revenues minus expenses for 2002** 5,615.35

Gain (loss) from exchange of currency 6,898.43

Net revenues minus expenses for 2002 12,513.78

**Statement of IUTAM Bank Accounts
(1 January 2002 through 31 December 2002)**

Bank	Balance 31-Dec-01	Withdrawals 2002	Deposits 2002	Balance 31-Dec-02	Currency
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Checking Accounts

Citizens Bank Providence 1009-367-2	143,008.11	(81,538.87)	100,069.26	161,538.50	US\$
ABN-AMRO Bank Eindhoven 41.41.42.551	24,143.40	(9,313.59)	14,617.00	29,446.81	US\$
ABN-AMRO Bank Eindhoven 41.41.28.311	861.69	(106.02)	2.63	758.30	EUR

Savings Accounts

Busey Bank Urbana	22,478.73	(23,764.34)	1,285.61	0.00	US\$
Citizens Bank Providence	99,541.40	0.00	2,326.69	101,868.09	US\$
ABN-AMRO Bank Eindhoven	68,965.34	0.00	2,048.55	71,013.89	EUR

IUTAM Bank Account Information**Treasurer:**

Professor L. B. Freund, Division of Engineering, Brown University, Providence,
RI 02912-9104, USA

Assistant Treasurers:

Professor D. H. van Campen, Faculty of Mechanical Engineering, Eindhoven University
of Technology, Postbus 315, NL-5600 MB Eindhoven, The Netherlands
Professor Bruno A. Boley, Department of Civil Engineering & Engineering Mechanics,
Columbia University, New York, NY 10027

Bank Accounts:

ABN-AMRO Bank, Postbus 515, 5600 AM Eindhoven, The Netherlands, Account
41.41.28.311 (EUR), 41.41.42.551 (USD)

Citizens Bank, One Citizens Drive, Riverside, RI 02915-3000, Account 1009-367-2
(USD)

**Subscription Due Paid in Membership Units
(1 January 2002 through 31 December 2002)**

Adhering Organization	1997	1998	1999	2000	2001	2002
Argentina	1	1	1	1	1	--
Australia	3	3	3	3	3	3
Austria	1	1	1	1	1	1
Belgium	5	5	5	5	5	5
Brazil	1	1	1	1	1	--
Bulgaria	1	1	1	1	--	--
Canada	8	8	8	8	8	8
Chile	--	--	--	--	1	1
China/Beijing China/ Hong Kong	8	8	8	8	8	8
	1	1	1	1	1	1

Adhering Organization	1997	1998	1999	2000	2001	2002
China/Taipei	3	3	3	3	3	3
Croatia	1	1	1	1	1	--
Czech Republic	1	1	1	1	1	1
Denmark	3	3	3	3	3	3
Egypt	1	1	1	1	1	1
Estonia	1	1	1	1	1	1
Finland	3	3	3	3	3	3
France	8	8	8	8	8	--
Georgia					1	1
Germany	8	8	8	8	8	8
Greece	1	1	--	--	1	--
Hungary	1	1	1	1	1	1
India	5	5	5	5	5	5
Ireland	1	1	1	1	1	1
Israel	3	3	3	3	3	3
Italy	8	8	8	8	8	8
Japan	8	8	8	8	8	8
Korea	3	1	1	1	1	--
Latvia	1	1	1	1	1	1
Morocco			--	--	--	--
Netherlands	5	5	5	5	5	5
New Zealand	1	1	1	1	1	1

Adhering Organization	1997	1998	1999	2000	2001	2002
Norway	1	1	1	1	1	1
Poland	3	3	3	3	3	3
Portugal	1	1	1	1	1	1
Romania	1	1	1	1	1	1
Russia	8	8	8	8	--	--
Saudi Arabia	1	1	1	1	1	1
Slovakia	1	1	1	1	1	1
Slovenia	1	1	1	1	1	1
South Africa	1	1	1	1	1	1
Spain	1	1	1	1	1	1
Sweden	5	5	5	5	5	5
Switzerland	3	3	3	3	3	3
Turkey	1	1	1	1	1	1
Ukraine					1	1
United Kingdom	8	8	8	8	8	8
United States	12	12	12	12	12	12
Vietnam	1	1	1	1	1	1
Yugoslavia	1	1	1	1	1	1

Note: For any particular year, a dash (--) indicates that dues had not been paid as of 31 December 2002 and a blank space indicates no adhering organization. Dues are expressed in membership units of 1, 3, 5, 8 or 12, corresponding to category of membership from I through V, respectively.

Reports on Affiliated Organizations

AFMC (Asian Fluid Mechanics Committee)

The Ninth Asian Congress of Fluid Mechanics was held at Isfahan, Iran during 27-31 May, 2002. The Congress was well represented by fluid dynamicists from Asian countries as well as from countries elsewhere. Five Invited Lectures and 12 Special Lectures were delivered. A total of 155 contributed papers were presented by authors from Australia, Azerbaijan, Bangladesh, China, Greece, India, Iran, Japan, Pakistan, Singapore, Sri Lanka, UK and USA. The total number of participants was 252.

It was decided that the Tenth Asian Congress of Fluid Mechanics will be held in Peradeiya, Sri Lanka in May 2004. Professor Siva Sivasegaram, the member of the Asian Fluid Mechanics Committee from Sri Lanka (Department of Mechanical Engineering, University of Peradeiya, Peradeiya, Sri Lanka, e-mail: siva@mech.pdn.ac.lk) will coordinate the Congress activities.

Report composed by M. Kiya

CISM (International Centre for Mechanical Sciences)

1. Courses and Seminars

The regular programme of courses and seminars, planned for the Centre for 2002 by the Scientific Council, took place in two Scientific Sessions, the Morecki Session (June-July 2002) and the Lighthill Session (September-October 2002). The topics, always at an advanced level, included different fields of mechanics and related computer sciences, both at a basic and applied level. UNESCO sponsored three courses and one conference.

The Morecki Session

- Advanced Dynamics and Control of Structures and Machines
- Light Gauge Metal Structures - Recent Advances (Advanced Professional Training)
- Deformation in the Earth's Continental Crust - Theory, Experiment and Modelling
- Cardio-Vascular Fluid Mechanics
- Multiscale Modelling in Continuum Mechanics and Structured Deformations
- Modern Trends in Composite Laminates Mechanics

The Lighthill Session

- Phase Change with Convection: Modelling and Validation
- Modelling and Control of Two-Phase Flow Phenomena
- Computational Micromechanics of Materials Science
- Mechanics and Thermomechanics of Rubberlike Solids

2. Other Events

Besides the above courses, the following other meetings were organized or hosted by CISM in 2002:

- Conference on Fundamental Problems and New Perspectives in Thermodynamics, Febr 17-21, 2002
- Models and Algorithms for the WWW, June 17-22, 2002
- 14th Symposium RO.MAN.SY on Robots, July 1-4, 2002
- CEPET 3rd Workshop (Central European Progr. in Econ. Theory), June 12-14, 2002
- Conference on Design and Nature, Sept. 10-12, 2002
- ISSEK 2002, Workshop on Planning Based on Decision Theory, Sept. 26-28, 2002

3. Editorial Activities

The lectures of several courses held at CISM are published in book form and distributed by Springer Verlag Vienna-New York.

The following books were published in 2002

P. Davidson-A. Thess "*Magnetohydrodynamics*"

D. Weichert-G. Maier "*Inelastic Behaviour of Structures under Variable Repeated Loads: Direct Analysis Methods*"

V. Kompis "*Selected Topics in Boundary Integral Formulation for Solids and Fluids*"

L. Györfi "*Principles of Nonparametric Learning*"

F.M. Mazzolani-M. Ivanyi "*Refurbishment of Buildings and Bridges*"

A.P. Seyranian-I. Elishakoff "*Modern Problems of Structural Stability*"

E. Kuljanic "*AMST 2002 - Advanced Manufacturing Systems and Technology*"

A. Morecki-J.C. Guinot "*RO.MAN.SY 14 - Theory and Practice of Robots and Manipulators*"

M. Oberlack-F.H. Busse "*Theories of Turbulence*"

F.M. Mazzolani "*Aluminium Structural Design*"

M. Rein "*Drop-Surface Interactions*"

J.A.C. Martins-M. Raous "*Friction and Instabilities*"

The international Journal for rapid communication "Mechanics Research Communications" (bimonthly) created by CISM and Pergamon Press, Oxford-New York in 1973, published in 2002 its twenty-ninth volume. It contains short communications on research related to a wide domain of both theoretical and applied mechanics.

4. Scholarships

A number of scholarships, including free lodging and board or exemption from registration fee, was offered during the courses to participants who were not supported by their home institutions, priority being given to young researchers coming from countries that contribute to CISM's operating resources.

Partial travel reimbursements as well as free board and lodging in Udine were granted to some participants from Mediterranean and Central European countries, thanks to a UNESCO contribution,

5. International Participation

In 2002 67 lecturers from 22 countries delivered lectures in the Morecki and Lighthill Sessions. The courses were attended by 355 participants coming from 38 countries.

Report composed by Giovanni Bianchi

EUROMECH (European Mechanics Society)

EUROMECH is an international non-governmental non-profit scientific organization.

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.

The society is governed by the Council whose members are being elected according to rules set in Statutes.

EUROMECH meetings

The EUROMECH Council has overall responsibility for EUROMECH Colloquia and EUROMECH Conferences.

EUROMECH Colloquia are informal meetings on specialized research topics. Participation is restricted to a small number of research workers actively engaged in the field of each Colloquium. The organization of each Colloquium, including the selection of participants for invitation, is entrusted to a Chairman. Proceedings are not normally published. Those who are interested in taking part in a Colloquium should write to the appropriate Chairman (Number, Title, Chairperson or Co-chairperson).

EUROMECH Conferences are broad in scientific scope. They comprise the EUROMECH Solid Mechanics Conference, the EUROMECH Fluid Mechanics Conference, the EUROMECH Turbulence Conference, the EUROMECH Nonlinear Dynamics Conference and the EUROMECH Mechanics of Materials Conference. They are open to all those interested and are expected to have a number of participants between 150 and 600. The general purpose is to provide opportunities for scientists and engineers to meet and discuss current research. The responsibility for each series of Conferences is delegated to a Standing Conference Committee. The organizational work is carried out by Local Organizing Committees (LOC). Those who are interested in taking part in one of the Conference should write to the Chairman or Secretary of the appropriate LOC.

In 2002 three big EUROMECH Conference were organized:

9th European Turbulence Conference, 2-5th July, 2002 Southampton, UK,
6th Mechanics of Material Conference 9-12 September, 2002, Liege, Belgium and
4th Nonlinear Oscillations Conference, 19 - 23 August, 2002, Moscow, Russia.
Also, EUROMECH Society initiated and organized 10 Colloquia during 2002.

For more details see www.euomech.cz .

Report composed by Miloslav Okrouhlik

HYDROMAG (International Association for Hydromagnetic Phenomena and Applications)

HYDROMAG is an international association of scientists and engineers active in those fields of research which involve the flow of fluids in the presence of a magnetic fields, namely magnetohydrodynamics (MHD), electromagnetic processing of materials (EPM) and dynamics of magnetic fluids (MF). HYDROMAG promotes growth and visibility of the field of hydromagnetics and stimulates exchanges between its members throughout the world via conferences, workshops, summer schools and publications. Detailed information on HYDROMAG can be accessed under

<http://www.maschinenbau.tu-ilmenau.de/mb/wwwtd/hydromag/home.html>

This WWW-site contains information on membership, forthcoming conferences, the electronic HYDROMAG newsletter and a link to the German Ferrofluid Information Server, maintained by Dr. S. Odenbach (University of Bremen).

During the year 2002 several workshops and scientific meetings have been conducted involving the active participation of HYDROMAG and its members including the International PAMIR Conference in Ramatuelle.

A group of European Scientists successfully established a network on MHD in frame of the COST-programme of the European Commission called "COST action P6 Magnetofluidynamics". The programme supports mutual visits of scientists. Detailed information can be obtained from

http://www.maschinenbau.tu-ilmenau.de/mb/wwwtd/COST/COST_Page01.html

Report composed by André Thess

IABEM (International Association for Boundary Element Methods)

The IABEM 2002 symposium was held on May 28-30, 2002 at the University of Texas at Austin (see <http://cavity.ce.utexas.edu/iabem2002/>), under the supervision of Prof. S. Kinnas. About 70 persons attended the Symposium, where 54 papers were presented. Many participants expressed their satisfaction at the very good overall level of quality and interest of the research presented. Proceedings have been published only in CD-rom

form. In addition, a special issue of Computational Mechanics is currently being set up in connection with this symposium.

The next IABEM symposium is going to be held on May 24-26, 2004, at the university of Minnesota, Minneapolis, USA. It is organized by Prof. Steven L. Crouch.

Report composed by Marc Bonnet

IACM (International Association for Computational Mechanics)

The following IACM supported events took place in 2002:

Second International Conference on Numerical Methods in Science and Engineering, Guanajuato, Mexico, 17-19 January 2002- Organized by Mexican Association of Numerical Methods in Engineering.

WCCM V World Congress on Computational Mechanics, Vienna, Austria, 7-12 July 2002. Organized by the Technical University of Vienna.

MECOM 2002 1st South American Congress on Computational Mechanics, Santa Fe-Paraná, Argentina 28-31 October 2002. Organized by the Argentinean Association of Computational Mechanics.

IACM activities for 2003:

FEF 2003 13th International Conference on Finite Elements in Flow Problems, Nagaya, Japan 2-4- April 2003. Contact: fef03@cmlab.mejo-ac.jp;

COMPLAS 2003 VII International Conference on Computational Plasticity, Barcelona, Spain 7-10 April 2003. Contact: complas@cimne.upc.es

CMM 2003 15th International Conference on Computer Methods in Mechanics, 3-6 June 2003, Gliwice, Poland. Contact: www.cmm-2003-polsl.gliwice.pl

USNCCM VII 7th U.S. National Congress on Computational Mechanics, Albuquerque, New Mexico, 27-31 July 2003. Contact: <http://www.escc.sandia.gov/usnccm.html>

ENIEF 2003 XII Congress on Numerical Methods and their Applications, Bahia Blanca, Argentina, 4-7 November 2003. Organized by the Argentinean Association of Computational Mechanics. Contact: <http://www.frbb.utn.edu.ar/enief2003>

Details on above events can be obtained from the IACM Secretariat at iacm@cimne.upc.es

Further information on IACM activities can be found in the web page www.cimne.upc.es/iacm

Report composed by Sergio R. Idelsohn

IAVSD (International Association for Vehicle Systems Dynamics)

The IAVSD was heavily affected in the year 2002 by the death of the president of IAVSD Prof. Willi Kortüm, PhD, the head of the Department of Vehicle Dynamics of Institute of Aeroelasticity of DLR (German Aerospace Research Establishment) in July 26, 2002. Prof. Kortüm has been active in IAVSD from the early beginning and in the last years he was the heart and the motor of IAVSD activities. His name will be forever connected with IAVSD.

In the year 2002 IAVSD has co-operated on the organization of the International AVEC'02 Symposium on Advanced Vehicle Control in September 9-13, 2002 in Hiroshima, Japan (<http://avec02.mech.cst.nihon-u.ac.jp/>), sponsored by the Society of Automotive Engineers of Japan (JSAE). The event was successful and attended by many scientists from many countries. There were 153 papers presented in 4 parallel sessions. The editing of the proceedings from 17th IAVSD symposium in Lyngby in 2001 was completed.

The final preparation of the next event, the International 18th IAVSD Symposium that will take place on August 25-29, 2003 in Kanagawa, Japan, has been started. The other IAVSD event that is being prepared is a colloquium on "Tyre Models for Vehicle Dynamic Analysis" in August 2004 in Vienna, Austria. There is also foreseen the co-operation of IAVSD on the organization of AVEC'04 in 2004 to be held in Arnhem, the Netherlands.

Report composed by Michael Valasek

ICA (International Commission for Acoustics)

The International Commission for Acoustics (ICA) is a worldwide consortium of societies concerned with the field of acoustics. The ICA convenes the triennial International Congress on Acoustics in accordance with the Commission's guidelines. The ICA has also undertaken a number of initiatives to promote international development and collaboration in all fields of acoustics. The ICA currently has 43 Member Societies worldwide.

The ICA held its annual Board meeting in Cancun, Mexico on 2002 December 1. The next major event for the ICA is the 18th triennial Congress that be held on 2004 April 4-

9 in Kyoto, Japan. The deadline for abstract has been set for 2003 September 15. There are plans to continue the travel grant program to provide support for students and early carry scientists to attend the 18th Congress.

Details regarding an ICA Early Career Award have now been established. An announcement will be sent to all the ICA Member Societies and the details are being posted on the ICA web site along with a nomination form. The first award is expected to be given during the 18th Congress. Funding was also approved for Student Support Awards to students pursuing graduate studies in acoustics, principally in developing countries. This initiative is being pursued jointly with the Acoustical Society of America.

The ICA continues to promote its Conference Grant Program for small (< 100 attendance) specialty symposia on acoustics. Support is now provided for a number of symposia each year. The following three symposia were support in 2002 to provide travel support for international participation:

- Joint Baltic-Nordic Acoustical Meeting, Lynby, Denmark, 2002 August 26-28.
- 10th anniversary Congress of the Turkish Acoustical Society, Antalya, Turkey, 2002 October 26-28.
- NSA 2002: Ultrasonic Applications and dedicated to the memory of late Prof. Rais Ahmad, Aligarh, India, 2002 October 22-24.

The ICA continues to maintain an International Calendar of Meetings and Congresses on Acoustics through the ICA Information Services. The Calendar is published simultaneously on the ICA web site and in the Journal of Acoustical Society of America.

The Executive Director of the International Institute of Acoustics and Vibration, Prof. Malcolm Crocker, was invited to attend the ICA Board meeting in Cancun. Prof. Crocker gave a summary of the history and organizational functions of the IIAV. In particular, the need for greater international cooperation and coordination of activities in the field of acoustics was raised with Prof. Crocker.

For more information see our website <http://www.icacommission.org> .

Report composed by Gilles Daigle and Suk Wang Yoon

ICF (International Congress on Fracture)

At the General Assembly of ICF held during ICF10 (December 2-6, 2001, Honolulu) it was agreed to revamp the Nominations Committee of ICF and to create an Awards Committee in order to make the process of nomination of ICF office bearers more transparent and to separate from it the task of nominating eminent researchers for the award of ICF Honorary Fellowships. The members of the Executive Committee of ICF were charged with the implementation of this agreement.

In 2002 the Executive Committee consulted widely with the national adhering organisations. As a result a Nominations Committee chaired by Professor R.O. Ritchie (a past President of ICF) with membership drawn from across the world has been established. An Awards Committee has also been established jointly chaired by Professors D. Taplin and B.L. Karihaloo (who are both Honorary Fellows of ICF) with members of international repute drawn from seven countries.

An ICF Interquadrennial Conference on "Scale Interaction in Fracture" will be held in Moscow on June 23-26, 2003. This Conference is jointly organised by Professors R.V. Goldstein, N.F. Morozov and R.O. Ritchie under the auspices of the Institute for Problems in Mechanics, Russian Academy of Sciences. Details available from goldst@ipmnet.ru

Preparations for the next quadrennial conference of ICF (ICF11) to be held in Turin, Italy on March 20-25, 2005 under the chairmanship of Professor Alberto Carpinteri (carpinteri@polito.it) are in full swing.

Report composed by Bhushan L Karihaloo in consultation with Yiu-Wing Mai.

ICHMT (International Centre for Heat and Mass Transfer)

ICHMT organized two international symposia and sponsored two in 2002:

- "Mediterranean Combustion Symposium", (Sponsored) January 6-11, 2002, in Pyramisa Hotel, Sharm El-Sheikh, Egypt. The symposium was chaired by Professor Mostafa M. Kamel, University of Cairo, Egypt; Professor Nevin Selcuk, Middle East Technical University, Turkey; Professor Federico Beretta, Istituto di Ricerche sulla Combustione, Italy. Proceedings of accepted Contributed Papers will be printed before the Symposium and will be distributed to the participants. In addition, a set of keynotes and contributed papers will be selected for post conference publication in special issues of "Combustion Science and Technology" and "Experimental Thermal and Fluid Science" Journals, as in the previous symposium.
- "Micro/Nanoscale Energy Conversion and Transport", April 14-19, 2002, in Merit Limra Hotel, Kiris, Antalya, Turkey. The symposium was chaired by Professor Arun Majumdar, University of California at Berkeley, USA. The peer-reviewed papers will be published in the journal, *Microscale Thermophysical Engineering*.
- "Visualization and Imaging in Transport Phenomena", May 5-10, 2002, in Adora Golf Resort Hotel, Belek, Antalya, Turkey. The symposium was chaired by Professor Sam Sideman, Technion-Israel Institute of Technology, Israel. The Proceedings will be published by NYAS (in the *Annals of New York Academy of Sciences*).
- NATO-ASI on Low-Temperature and Cryogenic Refrigeration-Fundamentals and Applications, 23 June-05 July 2002, in Golden Dolphin Resort Hotel, Cesme, Izmir,

Turkey. The meeting was organized by Professor Sadik Kakac, University of Miami and Professor Henry G. Smyrnov, Odessa State Academy of Refrigeration.

Details of these meetings including abstracts of all presentations can be found on the web page at < <http://www.ichmt.org/abstracts/meetings.html> >

The organization of several future meetings has continued. These are:

- “Transient Convective Heat Transfer in Single and Two-Phase Flows”, August 17-22, 2003, in Golden Dolphin Resort Hotel, Cesme, Izmir, Turkey. Detailed information can be found on the symposium Web site: <<http://www.ichmt.org/Trcon-03>>.
- “Turbulence, Heat and Mass Transfer IV”, October 12-17, 2002, in Dedeman Hotel, Antalya, Turkey. Detailed information can be found on the symposium Web site: <<http://www.ichmt.org/Thmt-03>>.
- “Third International Symposium on Advances in Computational Heat Transfer”, April 19-24, 2004, on MS Midnatsol, a cruise ship operating between Kirkenes and Bergen, Norway. Detailed information can be found on the symposium Web site: <<http://cht04.mech.unsw.edu.au>>
- “Heat and Mass Transfer in Nanotechnology”, July 2004, in Seoul, South Korea.

The General Assembly and the Scientific Council of ICHMT convened in Grenoble France. These were the usual meetings held once in four years. The Executive Committee of ICHMT met twice in 2002; one in Antalya, Turkey, and the second one in Grenoble, France. The Agendas of these meetings are on the web page at < <http://www.ichmt.org/agenda/ExComAgenda.html> >

Report composed by Faruk Arinç

ICM (International Congress on the Mechanical Behaviour of Materials)

A major activity of the ICM Executive Committee during this reporting period has been to agree on a venue change for the ICM 9 from Haifa, Israel to Geneva, Switzerland.

The arrangements for the ICM9 Conference are progressing smoothly under the leadership of Prof. Sol Bodner. The ICM9 Conference will be held May 25-29, 2003. It will include plenary and sectional lectures and contributed lectures and posters. In addition to topics of practical importance, ICM9 will also have sessions on new research directions and developments.

Information on the conference can be obtained at: <http://www.kenes.com/icm9>.

Report composed by Fernand Ellyin

ICR (International Committee on Rheology)

The next International Congress of Rheology will be held in Seoul, Korea, August 22 to 27, 2004, hosted by the Korean Society of Rheology. The Chairman of the Organizing Committee is Professor Jae Chun Hyun of the Korea Science & Technology Center, and the Secretary is Professor Seung Jong Lee of Seoul National University. The Congress will be held in Seoul's new COEX Convention Center, conveniently located in the southern metropolitan area of the city and conveniently completed in time for the event. Details about the Congress can be obtained by e-mail (icr2004@icr2004.or.kr) or from the Congress website (<http://www.icr2004.or.kr>). Abstracts of 300 words are due on September 30, 2003, and the date for early registration is April 30, 2004.

At Seoul, the International Committee on Rheology will meet to decide the location of the next Congress. The location will likely be in the Americas because the site now rotates among three regions of the world - Europe, Asia/Australia and the Americas. Since the 2000 Congress was held in Cambridge, England and since the 2004 Congress takes place in Korea, the Americas have the next turn and the host organization is likely to be the (US) Society of Rheology. Professor Ken Walters of the University of Wales, co-organizer of the 2000 Congress, will chair the Committee meeting in Seoul. At its conclusion, he will turn the Chairmanship over to the principal organizer of the 2004 Congress.

Report composed by David F. James

ICTS (International Congresses on Thermal Stresses)

International Congresses on Thermal Stresses held their meetings every two years, consecutively on three continents. There were so far four congresses (the first two were called International Symposia):

- The First, Hamamatsu, Japan, 1995;
- The Second, Rochester, NY, U.S.A., 1997;
- The Third, Cracow, Poland, 1999;
- The Fourth, Osaka, Japan, 2001.

President: Richard B. Hetnarski

Secretary: Theodore R. Tauchert

Representative of ICTS in IUTAM: Richard B. Hetnarski

All past Congresses published extensive Proceedings volumes, containing required four-page abstracts for regular speakers, and six-page abstracts for invited speakers.

The Fifth International Congress on Thermal Stresses, Thermal Stresses 2003, will be held at Virginia Polytechnic Institute and State University, Blacksburg, VA, U.S.A., on June 8-11, 2003. The Web page of the Congress is: www.esm.vt.edu/ts2003/
Chair: Liviu Librescu. Co-Chairs: Richard B. Hetnarski, Edmund G. Henneke and Naotake Noda. About 230 researchers have applied, but the final number of participants, because of the war in Iraq, may be lower.

The year 2002 was devoted to the preparations of Thermal Stresses 2003. Also, the site for the Sixth International Congress on Thermal Stresses has been decided. It will be held in Vienna, Austria, in 2005.

Report composed by Richard B. Hetnarski.

IIAV (International Institute of Acoustics and Vibration)

The International Institute of Acoustics and Vibration IIAV continues to flourish. At present it has 500 individual members in 54 countries and in addition 30 scientific societies or similar organizations are affiliated to IIAV as cooperating societies. The annual IIAV ballot was held in 2002 in which all members voted on candidates for president, vice-president and for five new directors to replace the five directors whose four-year terms had expired. Professor Barry Gibbs of Liverpool University in England was elected as President of IIAV to serve a two-year term. Professor Franz Ziegler of the Technical University of Vienna, Austria was elected as Vice-President of IIAV. The five directors elected were J. Luis Bento Coehlo, Portugal; W. S. Gan, Singapore; Finn Jacobson, Denmark; Robert Randall, Australia; and Jing Tian, China. In this year of 2003, the sixth annual IIAV election will be held. The 2003 ballot, in which all IIAV members will take part, is for one of the IIAV vice-presidents and five new directors. IIAV vice-presidents and directors serve four-year terms.

A very successful conference was held in Orlando, from July 4-7, 2003. About 420 delegates from 35 countries attended this, the Ninth International Congress on Sound and Vibration, ICSV9. The technical programme included over 400 lectures arranged in about 100 sessions, many of which had been organized by members of the ICSV9 Scientific Committee. The ICSV9 technical proceedings were available to delegates at the congress itself in CD-ROM totaling 3600 pages in length. There were altogether six plenary keynote lectures. In addition a special ICSV9 free tutorial Pyroshock Seminar was given on 6 July to about 30 participants. Just after the Opening Ceremony, Dr. Richard H. Lyon, Professor Emeritus of MIT, Cambridge, Massachusetts, USA was awarded the fifth Honorary Fellow membership of the IIAV and he delivered a special keynote lecture. This lecture was titled "Early Days for SEA – and now – SPA (Statistical Phase Analysis.) There were altogether six plenary keynote lectures: (by Hans Boden, Royal Institute of Technology, Sweden) - Duct Acoustics and Source Modeling; (by James Candy, Lawrence Livermore National Laboratory, USA) - Modern Approaches to Acoustic Signal & Image Processing; (by Hugh Hunt, Cambridge

University, England) - Groundborne Vibration from Man-Made Sources; (by Andrew Seybert, University of Kentucky, USA) - BEM/FEM Modeling for Acoustics and Vibration Problems and Experimental Verification; (by Terry Scharton, NASA/JPL, USA) - Vibration and Acoustics Testing of Spacecraft Payload; and (by Greg Swift and Scott Backhaus, Los Alamos National Laboratory, USA) - New Varieties of Thermoacoustic Engines. In addition five IIAV members were elevated to fellow grade in IIAV:

The Tenth International Congress on Sound and Vibration ICSV10 will be held in Stockholm, Sweden, and will be hosted by the Royal Institute of Technology in Stockholm, and the International Institute of Acoustics and Vibration in cooperation with the Scandinavian Vibration Society, July 7-10, 2003. A total of 780 abstracts from authors from 50 countries have been received for the Tenth Congress. All of the technical papers presented will be published and available on CD-ROM and hard paper format for participants at the Congress. In addition the technical programme including abstracts of all of the papers in hard form will be available at the Congress, and given to all ICSV10 participants. An Exhibition will also be held at the Tenth Congress.

Publication of the International Journal of Acoustics and Vibration IJAV, the refereed quarterly journal of IIAV, continues well on schedule. IJAV is receiving a steadily increasing flow of good papers. Currently each issue of IJAV contains seven or eight papers. Professor Malcolm J. Crocker serves as the Editor-in-chief and maintains the IJAV Editorial Office at Auburn University in the USA, where the refereeing of articles is arranged. Professor Nickolay I. Ivanov serves as the IJAV Managing Editor and arranges for the journal to be typeset and printed in St. Petersburg, Russia. IJAV is sent to all IIAV members and to a number of libraries all over the world.

Report composed by Malcolm J. Crocker

ISIMM (International Society for the Interaction of Mechanics and Mathematics)

The most important event organized in 2002 by the Society was the STAMM XIII meeting, the Symposium on Trends in the Application of Mathematics to Mechanics. The meeting was competently organized by Professors S. Rionero and G. Romano (both from Naples) on the Costiera Amalfitana in Maiori. It brought together 54 scientists from 8 countries and offered interesting discussions and debates.

During the Symposium the Executive Committee met to discuss current issues. It has been decided to intensify the publishing activities of the Society. Prof. Lev Truskinovsky has been nominated to be the chairman of the editorial committee of a series of short books on modern subjects in our fields of interest.

The Society has grown by the nomination of new members. It is particularly pleasant that most of them are young scientists. The current list of members can be found on our webpage: <http://www.thermodynamik.tu-berlin.de/isimm/index.html>.

STAMM XIV 2004. The next biannual meeting of the Society will be organized by Professor Kolumban Hutter (Darmstadt, Germany). The date and venue are not yet confirmed but Prof. Hutter is aiming for September 2004 in Seeheim-Jugenheim (Lufthansa-Center near Frankfurt/Main, Germany).

Current activities of the Society are reported in Newsletters, which appear on the webpage of the Society.

Report composed by K. Wilmanski

ISSMO (International Society for Structural and Multidisciplinary Optimization)

ISSMO co-sponsored the IUTAM Symposium on Evolutionary Methods in Mechanics held in Cracow, Poland 24-27 September 2002. The full papers accepted for presentation during the Symposium will appear in the Proceedings to be published by Kluwer Academic Publishers.

The Society co-sponsored the 4th ASMO UK / ISSMO Conference on Engineering Design Optimization held in Newcastle-upon-Tyne, 4-5 July 2002.

ISSMO co-sponsored the 9th AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, held 4-6 September, 2002 in Atlanta, Georgia, USA. About 250 full papers were presented and published in the proceedings (CD-ROM).

ISSMO co-sponsored the 3rd ISSMO/AIAA Internet Conference on Approximations in Optimizations held 14-18 October 2002.

The next ISSMO World Congress (WCSMO-5) to be held in Lido di Jesolo (Venice Area), Italy 19-23 May 2003, is being organized. About 300 papers have been submitted for possible presentation.

Please see the website <http://www.issmo.org> for more details about ISSMO.

Report composed by Niels Olhoff

Reports on ICSU and its Scientific Committees

Relations with ICSU (International Council for Science)

The 27th General Assembly of ICSU was held in Rio de Janeiro, 24-28 September 2002. I attended this General Assembly as representative of IUTAM. Professor J. Engelbrecht, member of the Bureau of IUTAM, was also present, in his capacity as President of the Estonian Academy of Sciences and representing Estonia.

Before the formal start of the General Assembly, a meeting of the Scientific Unions Forum was held on 24th/25th September. Matters discussed included: the Mission Statement of ICSU; the need for ICSU to be able to provide 'position statements', often at short notice, on scientific matters of global importance; the need for ICSU to identify and prioritize emerging scientific issues; the ICSU grants programme; the new role of ICSU in strengthening science in developing countries; and the desirability of broadening the representation and outreach of the International Scientific Unions. These issues were duly debated by the General Assembly also.

As regards the ICSU grants programme for the year 2004 (for which a Call for Proposals was issued in October 2002, with a submission deadline 1st March 2003) five priority themes were identified: Science and Technology for Sustainable Development; Capacity Building and Science Education; Science/Policy Interface; Dissemination of Data Information on Science and Technology; and Emerging Science and Technology -- Creation of New Knowledge.

Following discussions by e-mail with the Bureau and General Assembly of IUTAM, a grant application has been prepared and submitted under the second of the above priority themes, specifically for the support of the new African Institute for Mathematical Sciences (AIMS) to be established in Muizenberg, South Africa, with the intention of encouraging the involvement of the Theoretical and Applied Mechanics community in this capacity-building initiative. IUTAM is the Lead Applicant, and the Supporting Applicants are: IUGG, IMU, IUPAP, IUPAC, IAU, the Third World Academy of Sciences (TWAS), and five National Scientific members of ICSU, namely South Africa, UK, Netherlands, Brazil and Egypt. The result of this application is expected by September 2003.

Report composed by Keith Moffatt

COSPAR (Committee on Space Research)

COSPAR is the leading interdisciplinary international scientific organization. COSPAR objectives are carried out by the international community of scientists working through ICSU and its adhering National Academies and International scientific unions.

The year 2002 has been very active at the COSPAR with a hugh amount of work necessary to prepare the World Space Congress (joint 34th Scientific Assembly of COSPAR and 53rd International Congress of the International Astronautical Federation) which was held in Houston 10–18 October, 2002.

More than 15000 people participated in the multitude of Congress components. More than 450 scientific and technical sessions have been organized by COSPAR and IAF. Topics included science, technology, infrastructure, missions and exploration, business and applications, legal and policy factors, education and history. The Congress facilitated important discussion between scientific researchers and those from the engineering world.

At the 34th COSPAR Scientific Assembly the new Bureau was elected with COSPAR President Professor R.M. Bonnet (France) on the top. He followed on this place Professor G. Haerendel (Germany).

The next 35th Scientific Assembly of COSPAR will be held 18–25 July, 2004 in Paris.

In 2002 COSPAR co-sponsored the following meetings:

- 18th European Conference on Cosmic Rays (8–12 July, Moscow, Russia).
- COSPAR Colloquium on Frontiers of Magnetospheric Plasma Physics (24–26 July, Sagamihara, Japan).
- 11th UN/ESA Workshop on Basic Space Science (8–13 September, Cordoba, Argentina).
- Conference titled “Europe and Space Debris” (27–28 November, Toulouse, France).

COSPAR continues its publication activity. In 2002 four issues of COSPAR Information Bulletin were published containing news from the space community, space mission news, the list of meeting of interest to COSPAR, the continuation of list of satellites and space probes launches etc.

The new issues of COSPAR journal *Advances in Space Research* appeared: Vol. 29, NN 11, 12 and Vol. 30, NN 1, 2, 3, 4, 5.

Report composed by G.G. Chernyi

SCOR (Scientific Committee on Oceanic Research)

SCOR held the 26th SCOR General Meeting in Sapporo, Japan, 1-5 October 2002, chaired by the President, Professor Bob Duce, in connection with a symposium of the Japan Oceanography Society.

Current SCOR Working Groups, which may be of interest to IUTAM:

- WG 111—Coupling Winds, Waves and Currents in Coastal Models The group is still developing a book tentatively entitled Coupled Coastal Wind-Wave-Current Dynamics, and will be disbanded after completing the book.

- WG 114—Transport and Reaction in Permeable Marine Sediments
The group has prepared plans for a Gordon Conference on their topic for June 2003.

New SCOR Working Groups, which may be of interest to IUTAM
A new Working Group to Investigate Deep-ocean Mixing Processes has been established.

SCOR continues to be involved in large –scale scientific programs, including:

- Joint Global Ocean Flux Study (JGOFS)

JGOFS will hold its final Open Science Conference in Washington, D.C. in May 2003.

- Global Ocean Ecosystems Dynamics (GLOBEC)

GLOBEC held its 2nd Open Science Meeting in Qingdao, China in October 2002.

The GLOBEC SSC will meet in June 2003 in Banff, Canada in conjunction with the IGBP Congress.

- Global Ecology and Oceanography of Harmful Algal Blooms (GEOHAB)

The GEOHAB SSC has completed the work on the GEOHAB Implementation Plan, which will become available in 2003.

- Surface Ocean-Lower Atmosphere Study (SOLAS)

SOLAS has a variety of implementation activities scheduled for 2003 and its SSC will meet next in conjunction with the IGBP Congress in Banff, Canada.

Scientific Program under Development:

SCOR/IGBP Planning Committee on Future Ocean Research in Earth System

Science Transition Team on Ocean Biogeochemistry and Ecosystems Analysis held an Open Science Conference in January 2003 in Paris.

The next Meeting of the SCOR Executive Committee will be take place in Moscow. 15-19 September 2003. The next SCOR General Meeting will be held in Venice, Italy in September or October 2004.

Further information can be found in the SCOR Annual Report for 2002 available in mid-2003 on the SCOR Web site (<http://www.jhu.edu/scor>) or from Dr. Ed Urban, Executive Director, SCOR, Department of Earth and Planetary Sciences, The Johns Hopkins University, Baltimore, MD 121218, USA;
e-mail: scor@jhu.edu; website: <http://www.jhu.edu/~scor>

Report composed by W. Fennel

Agreement by and between IUTAM and Kluwer Academic Publishers B.V.

(hereinafter referred to as the "Publisher")

WHEREAS IUTAM and the Publisher agree that Kluwer Academic Publishers is the official designated publisher of the proceedings of IUTAM Symposia (hereinafter referred to as "Symposia". The organizer or organizers of an IUTAM Symposium, being the chairmen of the Scientific Committee of the Symposium, are hereinafter referred to as the "Organizers");

WHEREAS IUTAM and the Publisher agree that each IUTAM proceedings volume published by the Publisher (hereinafter referred to as "Volume"), providing it is appropriate vis-a-vis subject matter, will be published in the "Solid Mechanics and Its Applications" book series, or the "Fluid Mechanics and Its Applications" book series (hereinafter referred to as the "Series");

WHEREBY, in consideration of the mutual covenants and obligations herein contained, the parties hereto have agreed and do agree as follows:

1. Publication

1. Kluwer Academic Publishers shall be the preferred publisher of the proceedings of all IUTAM Symposia. Each proceedings accepted for publication shall appear as a Volume in the Series. In those cases where it is not appropriate, the Volume will be published out-of-series in the same style and format. Each Volume will appear in a hard bound version.
2. IUTAM will inform the Organizers of IUTAM Symposia of the possibility of publishing a proceedings with the Publisher, and encourage them to contact the Publisher. Further contact between the Organizers and the Publisher will be bilateral. In addition, IUTAM will notify the Publisher sufficiently ahead of time which Symposia are to be organized and shall give the Publisher the names and addresses of the Organizers.
3. The Organizers of each individual Symposium, in accord with the IUTAM Scientific Committee, will remain free to propose to publish the proceedings in a suitable journal. In such case, the Organizers and the Publisher shall first jointly make an effort to investigate the availability of a suitable journal of Kluwer Academic Publications.
4. If the Organizers decide to publish a proceedings with the Publisher, as recommended by IUTAM, a separate contract will be concluded between the Organizers and the Publisher in which all details regarding publication will be settled. The terms and conditions relating to the publication of a given Volume will be a matter of negotiation between the Organizers and the Publisher, where the basic conditions are based on this present Agreement.
5. The Organizers act as the Editors of the Volume.

6. Typescripts for Volumes in the Series shall yield maximally about 450 printed pages. Exemption from this restriction can be agreed on by the Organizers and the Publisher. Further, the typescripts will not contain colour pictures or colour photographs, unless the Organizers and the Publisher agree otherwise.
7. The papers submitted for publication will be preferably in LaTeX format using the Kluwer style file. The style file will be made available by the Publisher, and the Publisher will assist in any questions regarding its use. The papers will be submitted in camera-ready, laser printed, form (with the original figures pasted in the typescript) according to the guidelines given by the Publisher.
8. The proceedings of IUTAM Symposia will be published as Volumes in the Series, having a uniform design and recognisable cover design, including the IUTAM logo (see article 1.2). Proceedings that will be or have been published with other publishers do not form part of the Series.
9. Both the Publisher and the Organizers will do their very best in bringing the Volume out no later than one year after the Symposium has taken place. This requires that the Volume Editors who are responsible of assembling the final typescript should deliver it on time, in consultation with the Publisher.
10. IUTAM grants the Publisher the non-exclusive rights of the use of the IUTAM logo.
11. IUTAM grants the Publisher the use of the brand name "IUTAM Symposium on". This brand name is solely reserved for proceedings Volumes based on the Symposia which have been decided upon by the IUTAM General Assembly and entrusted to the Scientific Committee of the Symposium.
12. The brand name "IUTAM Symposium on" will be an integral part of the title page and the front and back cover of each Volume, and will feature in relevant promotional material.
13. The right to publish the IUTAM Symposium proceedings is not transferable by Kluwer Academic Publishers to any other publisher.
14. The Volumes will be published entirely for the account and risk of the Publisher, who shall be the proprietor of the goodwill and copyrights to each individual Volume.
15. In consideration of the Publisher's obligations hereinafter mentioned, IUTAM grants to the Publisher all of its rights, title, and interest in and to the publication rights to the Volumes in any language throughout the world, including but not limited to the following: the exclusive right to print, publish and sell the Volumes in whole or in part, in book form and in any other form including, without limitation, mechanical, electronic and visual reproduction, electronic storage and retrieval systems, and all other forms of electronic publication not known or hereinafter invented. The Publisher also shall have the the exclusive authorization to license the right to translate, print, publish, or sell any no-English language edition of the Volumes, all during the unrestricted period of copyright.
16. IUTAM hereby agrees that the Publisher shall be the copyright holder of each Volume in the Series, and the Publisher shall be responsible for affixing the proper notice of copyright in each copy of each Volume.
17. 12 months after publication each new work shall be made available as a Print-on-Demand paperback edition.

2. Responsibilities

1. The Organizers, will in their role as Editors of the Volume be responsible for ensuring that each Volume satisfies the standards of high scientific quality. This requires that a reviewing procedure should be carried out of each submission to the Volume. This reviewing procedure will in general be performed by the Scientific Committee of each Symposium.
2. The Publisher will provide either directly, either through the Volume Editors, guidelines and instructions to contributing authors so as to ensure that each contribution appearing in the Volume is prepared to a consistent style and format. The Editors of each Volume shall endeavour that the typescripts are prepared in accordance with the Publisher's instructions.
3. All decisions regarding publication, promotion, prices and the sale of Volumes in the Series shall be made by the Publisher. However, at the Publisher's request, IUTAM or the Volume Editors will advise the Publisher on matters pertaining to promotion and advertisement. IUTAM will allow the Publisher the right to use its name in connection with such advertising and promotion of the Series and Volumes in the Series.
4. The Publisher will be responsible for ensuring that the Volumes are produced to a high quality in a consistent style and format.
5. IUTAM and Volume Editors warrant to ensure to the best of their ability that no material in the Series contains anything that is obscene, objectionable, indecent, or of libellous or scandalous character.

3. Payments/Complimentary Copies

1. Royalties shall not be paid to the Organizers.
2. In lieu of royalties, the Organizers will get a minimum of 2 copies of each Volume free of charge.
3. The Publisher will provide the IUTAM Bureau with 9 free copies of each Volume.
4. Participants to the Symposium will be given the opportunity to order the Volume at a special prepublication price. The special Volume price will be included in the Symposium registration fee, so that each registered Participant will automatically receive a copy of the Volume upon publication. The special price includes tax (if applicable) and postage. The special price will depend on the number of participants and the size of the Volume and will be subject to negotiation between the Publisher and the Organizers of the Symposium concerned. The agreed pre-publication prices for 2002 shall be as set forth in the addendum to this contract.
5. The agreed pre-publication prices for 2002 and 2003 shall be as set forth in a separate addendum to this contract.
6. It will be the sole responsibility of the Organizers of a given Symposium to forward the appropriate, one-time payment to the Publisher. The Organizers will also supply the Publisher with adhesive labels with the names and addresses of the relevant participants.

4. Special Conditions

1. Should Kluwer decide to send a representative to a given Symposium, the Organizers will agree to provide display space free of charge for the display of relevant publications and, possibly, the dissemination of relevant promotion material to participants in the conference portfolios.
2. Kluwer will provide the Organizers with a subsidy of 650 Euro towards the costs of organizing the Symposium. This subsidy will be paid upon receipt of the contracts signed by the Organizers.

5. Termination

The Agreement between IUTAM and Kluwer Academic Publishers will remain in force for an initial period of 3 (three) years, starting January 1, 2002. The Agreement will be renewed for additional periods of 3 (three) years subject to confirmation of extension by both parties 12 months before the end of the initial 3-year period or subsequent 3-year periods. Either party may terminate the Agreement with or without cause upon 12 months written notice to the other.

6. Arbitration

All disputes that may arise in connection with this present agreement or the breach thereof shall be settled exclusively by arbitration, to be held in The Netherlands in accordance with Dutch law, and shall be conducted under the Rules of the 'Nederlands Arbitrage Instituut' (Netherlands Institute of Arbitration).

Statutes

Statuts de l'Union Internationale de Mécanique Théorique et Appliquée

- I «L'Union Internationale de Mécanique Théorique et Appliquée» ci-après dénommée «l'Union» est une organisation scientifique à la fois internationale et non-gouvernementale.
- II Les principaux objectifs de l'Union sont
- a) de constituer un lien entre personnes et organisations engagées dans le travail scientifique (théorique ou expérimental) concernant la mécanique ou les sciences associées;
 - b) d'organiser les congrès internationaux de mécanique théorique et appliquée par l'intermédiaire de son Comité permanent des Congrès (cf. Art. XII ci-après), et d'organiser d'autres réunions internationales sur des sujets relevant de la mécanique théorique et appliquée;
 - c) de s'engager en d'autres activités visant à promouvoir le développement de la mécanique, aussi bien théorique qu'appliquée, en tant que branche de la science.

- III L'autorité suprême de l'Union est son Assemblée Générale.

Cette Assemblée détient le pouvoir de décider sur toute question affectant l'Union, notamment sur toute modification de ses Statuts. Sur des questions spécifiées, elle peut déléguer tout ou partie de ses pouvoirs à un ou à des organismes appropriés.

La composition de l'Assemblée Générale est régie par l'article VI ci-après. Les réunions de l'Assemblée Générale doivent se tenir aux dates fixées par le Bureau de l'Union (cf. Art. XI ci-après) ou sur la demande de 10 Membres au moins de cette Assemblée.

- IV Dans toutes ses décisions, l'Assemblée Générale doit être guidée par la tradition de libre coopération scientifique internationale développée par les Congrès Internationaux de Mécanique Théorique et Appliquée. En poursuivant ses objectifs, l'Union respectera le principe général de non-discrimination et reconnaîtra le droit pour tout scientifique, partout dans le monde, d'adhérer ou de s'associer à une activité scientifique internationale sans rencontrer d'opposition pour motif de race, de religion, de philosophie politique, d'origine ethnique, de citoyenneté, de langage ou de sexe.
- V Dans les votes de l'Assemblée Générale, chaque membre ne dispose que d'une voix.

Pour une modification des Statuts, la majorité requise est de deux tiers des votes exprimés.

Pour toute autre décision la majorité simple des votes exprimés est requise. Tout membre se trouvant dans l'impossibilité d'être présent à une réunion peut désigner, à l'avance et par lettre adressée au Secrétaire Général, un autre membre qu'il charge de voter en son nom.

Dans l'intervalle entre réunions de l'Assemblée Générale, un vote peut être émis par correspondance sur proposition formulée par le Bureau (cf. Art. XI ci-après). En pareil cas, le résultat du vote n'est valablement obtenu que si le nombre des participants effectifs n'est pas inférieur aux deux tiers du nombre total des membres de l'Assemblée Générale.

VI* L'Assemblée Générale se compose:

- a) des représentants des «organisations adhérentes» (cf. art. VIII);
- b) des membres du Bureau (cf. art. XI);
- c) des membres cooptés par l'Assemblée Générale de l'Union;
- d) s'il y a lieu, et sur décision de l'Assemblée Générale, des représentants de comités ou groupes de scientifiques.

La durée de fonction de tout membre élu doit être précisée, lors de son élection, par l'Assemblée Générale. La durée de fonction des membres du Bureau doit coïncider avec celle de leur fonction au Bureau.

*) Adopté par l'Assemblée Générale de l'Union, le 2 Septembre 1990 à Vienne, Autriche

VII L'Assemblée Générale doit veiller à une représentation adéquate de tout groupe de scientifiques poursuivant des recherches en mécanique théorique ou appliquée et non représenté par une organisation adhérente.

VIII Les organisations de scientifiques en mécanique théorique ou appliquée (ou les unions de telles organisations) qui représentent effectivement une activité scientifique indépendante dans un pays ou dans un territoire bien défini peuvent être admises dans l'Union par l'Assemblée Générale comme «organisations adhérentes» pourvu que leur dénomination exclue tout malentendu quant à la qualification du pays ou du territoire en cause.

En principe, une seule organisation pourra être admise pour chaque pays ou chaque territoire.

- IX Chaque «organisation adhérente» dispose d'un certain nombre de représentants dans l'Assemblée Générale et doit acquitter une cotisation annuelle à l'Union (cf. Art. XIV ci-après).
- X Des organisations internationales dont les domaines principaux d'activité sont en étroite relation avec ceux de l'Union peuvent être admises par l'Assemblée Générale en qualité «d'organisations affiliées» à l'Union.

Chaque organisation affiliée a la faculté de désigner un observateur qui est invité à participer, sans droit de vote, à l'Assemblée Générale de l'Union. Le Bureau de l'Union (Article XI) a réciproquement la faculté de désigner un observateur, sans droit de vote, à l'organe ayant une responsabilité équivalente dans l'organisation affiliée.

L'organisation affiliée et l'Union sont tenues de s'informer mutuellement de toutes leurs activités importantes et des mesures affectant leur fonctionnement.

En préparant les rencontres scientifiques internationales qu'elles organisent, l'Union et chaque organisation affiliée sont tenues de prendre soigneusement en considération toutes les décisions déjà prises par l'Union et les organisations affiliées de manière à assurer la bonne coordination de toutes ces activités scientifiques.

Les organisations affiliées n'ont à payer aucune cotisation annuelle à l'Union.

- XI** Pour exécuter les décisions de l'Assemblée Générale et pour assurer entre ses sessions le travail de l'Union, l'Assemblée Générale élit les membres d'un Bureau pour une durée de quatre ans au plus. Le Bureau est composé d'un Comité Directeur (un Président, le précédent Président qui remplit la fonction de Vice-Président, un Secrétaire Général et un Trésorier) et de quatre autres personnes qui ont été membres de l'Assemblée Générale à un moment de la période précédant de quatre ans le moment de l'élection du Bureau.

Les membres, qui ne sont pas au Comité Directeur, ne peuvent recevoir plus de deux mandats consécutifs. Les membres du Bureau nouvellement élus entrent en fonction au premier novembre qui suit l'Assemblée Générale qui a procédé à leur élection.

Le Bureau doit se réunir au moins une fois par an. Tout membre du Bureau empêché de prendre part à une réunion de celui-ci peut désigner, par lettre adressée au Secrétaire Général, un autre membre de l'Assemblée Générale pour le remplacer.

C'est au Secrétaire Général que doivent être adressées toutes les questions concernant le fonctionnement de l'Union y compris ses relations avec les organisations adhérentes, affiliées ou autres.

Le domicile légal de l'Union se situe au domicile du Secrétaire Général.

Le Bureau a le droit de désigner un trésorier-assistant en tout pays où l'Union est titulaire d'un compte bancaire. Les trésoriers-assistants doivent être choisis parmi les membres de l'Assemblée Générale, mais non nécessairement parmi les membres du Bureau.

Le Bureau doit établir un budget prévisionnel pour l'année à venir, administrer les finances de l'Union et soumettre, chaque année, à l'Assemblée Générale un rapport financier.

Le Vice-Président doit normalement remplir les fonctions du Président pendant toute période où celui-ci se trouve empêché de les exercer.

Entre les réunions de l'Assemblée Générale, il incombe au Bureau de désigner un remplaçant temporaire pour remplir les fonctions du Vice-Président, du Secrétaire Général ou du Trésorier si cela s'avère nécessaire.

** Adoptés par l'Assemblée Générale de l'Union, le 2 Septembre 1990 à Vienne, Autriche

XII L'Assemblée Générale désigne un Comité permanent des Congrès chargé d'organiser à intervalles réguliers les Congrès Internationaux de Mécanique Théorique et Appliquée (ICTAM).

- a) Le Président de l'Union préside aussi ce Comité des Congrès.
- b) Les Membres de ce Comité sont nommés par l'Assemblée Générale; ce sont des scientifiques actifs en mécanique théorique ou appliquée, n'appartenant pas nécessairement à l'Assemblée Générale.
- c) Le Comité des Congrès nomme un Secrétaire, sans précision de durée.
- d) Les règles de fonctionnement du Comité des Congrès sont soumises à l'approbation de l'Assemblée Générale.

XIII Les ressources financières de l'Union sont constituées par:

- a) les cotisations annuelles des «organisations adhérentes»;
- b) les dons et subventions que l'Union peut recevoir.

L'Union doit tenir une liste de ses bienfaiteurs où doivent être mentionnés pour chaque année les noms des personnes ou institutions qui ont accordé à l'Union des dons, des legs ou des subventions.

XIV Le nombre des représentants d'une «organisation adhérente» et le montant de la cotisation annuelle qu'elle doit acquitter sont défini dans le tableau suivant, par la catégorie à laquelle elle désire appartenir, et avec l'accord de l'Assemblée Générale.

Catégorie	Nombre de représentants	Nombre d'unités de la cotisation annuelle
I	1	1
II	2	3
III	3	5
IV	4	8
V	5	12

Le montant de l'unité de cotisation annuelle est fixé par l'Assemblée Générale, au moins une année précédente celle à laquelle cette cotisation devient exigible.

XV*** Toute proposition de modification des Statuts, présentée ou par le Bureau ou par le Secrétaire Général, et ayant reçu l'appui d'au moins dix membres de l'Assemblée Générale ayant le droit de vote, devra être envoyée aux membres de l'Assemblée Générale avec l'ordre du jour de la réunion de l'Assemblée Générale. Le débat sur de telles propositions devra s'effectuer au cours de la première session et le vote au cours de la seconde (Article V).

*** Article XV adopté par l'Assemblée Générale de l'Union, le 28 Août 1994 à Amsterdam

Règles de fonctionnement du Comité des Congrès de l'Union

1. Le Comité des Congrès se réunit au moins une fois lors de chaque Congrès.
2. Le Comité des Congrès doit nommer un Comité Exécutif chargé de prendre en son nom toutes les décisions nécessaires pendant la période qui s'écoule entre deux réunions successives, et de lui en faire rapport à sa prochaine réunion. Le Comité Exécutif comprend le président, le secrétaire du Comité des Congrès, et un ou plusieurs membres désignés par le comité des Congrès.
3. L'organisation effective d'un Congrès est confiée à un Comité local d'Organisation, élu par le pays ou l'organisation qui invite, et ce Comité est également responsable de la publication des Comptes rendus du Congrès. Le Comité d'Organisation fera son rapport au Comité des Congrès soit au cours du Congrès qu'il organise, soit avant, s'il le juge préférable.
4. Le Comité d'Organisation devra obtenir l'approbation du Comité des Congrès (normalement par l'intermédiaire du Comité Exécutif) pour toutes les question relevant de la politique générale du Comité des Congrès, en particulier pour celles qui concernent:

- 4.1. le but du Congrès;
 - 4.2. la sélection des communications pour le Congrès;
 - 4.3. le choix des conférences générales pour le Congrès;
 - 4.4. la désignation des présidents de sessions du Congrès;
 - 4.5. les principes généraux régissant les arrangements financiers du Congrès.
5. Le Comité d'Organisation percevra, de tous les membres du Congrès, une contribution (dont le montant sera proposé par le Comité du Congrès et approuvé par le Bureau) afin de couvrir les dépenses administratives du Comité du Congrès. Ces contributions seront reversées à l'IUTAM immédiatement après le Congrès.

Procédés pour l'élection du Bureau de l'IUTAM****

1. Lors de l'Assemblée Générale (AG) précédant celle au cours de laquelle le nouveau Bureau doit être élu, un Comité Electoral (CE) doit être élu comprenant le Président de IUTAM (qui assure la présidence de ce Comité) et deux à quatre membres de l'AG, non-membres du Bureau en exercice.
2. A la suite de cette élection, le CE doit inviter les membres de l'AG à faire connaître à son Président, dans des délais fixés, leurs suggestions de candidatures pour le Bureau, c'est-à-dire pour les charges de Président (P) de Secrétaire Général (S), de Trésorier (T) et pour quatre autres postes. Toutes ces suggestions doivent être traitées confidentiellement par le CE.
3. Prenant en compte toutes les suggestions reçues, le CE doit soumettre au Secrétaire Général les noms proposés comme candidats au Bureau: un seul nom pour les charges P,S,T et un ou plusieurs noms pour chacun des quatre autres postes (W,X,Y,Z). Le CE doit s'assurer que tous les candidats ainsi proposés sont prêts à accepter leur élection. Toutes ces propositions sont portées par le Secrétaire Général à la connaissance des membres de l'AG avant la première session de l'AG au cours de laquelle le nouveau Bureau doit être élu.
4. Lors de cette première session d'autres propositions de candidatures peuvent être proposées pour chacun des postes P, S, T, W, X, Y, Z. Aucun candidat ne peut être proposé pour plus d'un seul poste.
5. Avant la seconde session de l'AG au cours de laquelle le nouveau Bureau doit être élu, chaque proposition envisagée au point 4 ci dessus pour pouvoir être acceptée doit recevoir l'appui d'au moins dix membres de l'AG ayant le droit de vote au moyen d'une déclaration écrite et signée et faire l'objet d'un engagement écrit de la personne

proposée indiquant qu'elle est prête à accepter son élection. Toute proposition ne remplissant pas ces conditions sera retirée.

6. Pour chacun des postes P, S, T, W, X, Y, S, l'AG est appelé à désigner le titulaire par un vote mettant en compétition les candidats restants. S'il y a plusieurs candidats pour un poste, le vote doit avoir lieu au scrutin secret.

**** Procédure adoptée par l'Assemblée Générale de l'Union, le 28 Août 1994 à Amsterdam

Procédure pour l'élection de membres cooptés par l'Assemblée Générale*****

1. La procédure s'applique à l'élection et à la réélection des membres cooptés par l'Assemblée Générale mentionnés à l'article VI c) des Statuts.
2. Les propositions émanant des membres de l'Assemblée Générale ayant le droit de vote en vue de l'élection des membres cooptés, doivent parvenir au Bureau au moins trois mois avant l'Assemblée Générale au cours de laquelle ces propositions sont prises par elle en considération, en règle générale celle qui se tient pendant le Congrès International de Mécanique Théorique et Appliquée. Toutes ces propositions doivent être traitées confidentiellement par le Bureau.
3. Après avoir pris en compte toutes les propositions ainsi reçues le Bureau présente à l'Assemblée Générale une liste de celles qui sont jugées pouvoir recevoir de la part de l'Assemblée Générale un soutien raisonnable, pourvu cependant que le nombre total des membres cooptés n'excède pas 1/8 environ du nombre total des membres ayant le droit de vote. La liste de ces propositions est communiquée à tous les membres de l'Assemblée Générale pendant la première session de la réunion de l'Assemblée au cours de laquelle doit avoir lieu le vote.
4. Une liste de propositions différente de celle présentée par le Bureau n'est recevable que si elle a recueilli le soutien d'au moins dix membres de l'Assemblée Générale avant la seconde session.
5. L'Assemblée Générale vote sur les listes de candidats qui font l'objet des paragraphes 3 et 4.

***** Procédure adoptée par l'Assemblée Générale de l'Union, le 26 Août 1992 à Haïfa, Israël

Statutes of the International Union of Theoretical and Applied Mechanics

I "The International Union of Theoretical and Applied Mechanics" hereinafter called "the Union" is an international non-governmental scientific organization.

II The principal objectives of the Union are

- a) to form a link between persons and organizations engaged in scientific work (theoretical or experimental) in mechanics or in related sciences;
- b) to organize international congresses of theoretical and applied mechanics through a standing Congress Committee (Article XII), and to organize other international meetings for subjects falling within the field of theoretical and applied mechanics;
- c) to engage in other activities meant to promote development of mechanics, both theoretical and applied, as a branch of science.

III The highest authority of the Union is its General Assembly.

The General Assembly has the power to decide all questions affecting the Union, including alterations of the Statutes. On specified questions it may delegate its power to appropriate bodies.

The composition of the General Assembly is regulated in Article VI.

Meeting of the General Assembly will take place at times decided by the Bureau (Article XI) or on the request of at least 10 members of the General Assembly.

IV In all its decisions the General Assembly shall be guided by the tradition of free international scientific cooperation, developed in the International Congresses for Theoretical and Applied Mechanics.

In pursuing its objectives the Union shall observe the basic policy of non-discrimination and affirm the rights of scientists throughout the world to adhere to or to associate with international scientific activity without regard to race, religion, political philosophy, ethnic origin, citizenship, language or sex.

V In voting every member of the General Assembly shall dispose of one vote. For an alteration of the Statutes the majority required is 2/3 of the votes brought forward. For all other decisions a simple majority of the votes brought forward is required.

Any member who is unable to attend a meeting may by a letter to the Secretary General constitute another member of the General Assembly as proxy.

Between meetings of the General Assembly voting may be carried out by correspondence upon proposals made by the Bureau (Article XI); in this case decisions will be valid only provided the number of persons taking part in the vote is not less than 2/3 of the total membership of the General Assembly.

VI* The General Assembly is composed of

- a) representatives of the adhering organizations (Article VIII);
- b) members of the Bureau (Article XI);
- c) members-at-large;
- d) representatives of committees and groups of scientists, if so decided by the General Assembly.

The term of an elected member shall be determined by the General Assembly at the time of the election. The term of members of the Bureau shall coincide with their term of service on the Bureau.

* Adopted by the General Assembly on September 2, 1990, in Vienna (Austria)

VII The General Assembly shall provide for an adequate representation of any group of scientists carrying out research in theoretical or applied mechanics and not represented by an adhering organization.

VIII Organizations of scientists in theoretical or applied mechanics (or unions of such organizations) which effectively represent independent scientific activity in a country or in a definite territory can be admitted by the General Assembly as adhering organizations of the Union provided they can be listed under a name that will avoid any misunderstanding about the country or territory represented.

In general only one organization from each country or territory will be admitted.

IX Each adhering organization shall have representatives in the General Assembly of the Union, and pay an annual subscription to the Union in accordance with Article XIV.

X International organizations mainly occupied in fields closely related to that of the Union can be admitted by the General Assembly as affiliated organizations of the Union.

Each affiliated organization has the right to appoint an observer, who is invited to take part in the General Assembly without voting rights. The Bureau of the Union

(Article X) has the reciprocal right to appoint a nonvoting observer to the corresponding council or other executive body of the affiliated organization.

The affiliated organization and the Union are mutually obliged to keep each other informed about all important activities of and organizational measures taken.

In organizing international scientific meetings the Union and each of the affiliated organizations are obliged to consider carefully all measures already taken by the Union and its affiliated organizations in order to coordinate such international scientific activities.

Affiliated organizations pay no annual dues to the Union.

XI** To execute the decisions of the General Assembly and to carry out work between meetings, the General Assembly elects members of a Bureau for a period of at most four years. The Bureau consists of the officers (President, the retiring President who serves as Vice-President, Secretary-General, and Treasurer) and four other persons who shall have been members of the General Assembly at some time within the four years preceding the time of election to the Bureau. The maximum continuous period of service as a member of the Bureau, other than an officer, is limited to eight years. Newly elected members of the Bureau enter into office on the date of November 1, following the General Assembly at which they were elected. The Bureau will meet at least every year. A member of the Bureau who is prevented from attending a meeting may by letter to the Secretary-General designate another member of the General Assembly as a replacement.

The Secretary-General will act as a permanent centre for all matters affecting the Union, including relations with adhering, affiliated and other organizations.

The legal domicile of the Union shall be the place where the Secretary-General lives.

The Bureau is authorized to appoint Assistant-Treasurers in those countries where the Union has a bank account.

The Assistant-Treasurers must be members of the General Assembly but need not to be members of the Bureau.

The Bureau shall draft a budget for each coming year, and shall administer the finances. The Bureau shall submit an annual financial report to the General Assembly.

The Vice-President shall normally fulfil the duties of the President should the President become unable to discharge them.

Between meetings of the General Assembly the Bureau shall decide who shall undertake the duties of the Vice President, Secretary-General, or Treasurer should a temporary replacement be necessary.

**Adopted by the General Assembly on September 2, 1990, in Vienna (Austria)

- XII The General Assembly establishes a standing Congress Committee that is responsible for the organization of International Congresses of Theoretical and Applied Mechanics at regular intervals.
- a) The President of the Union shall also serve as President of the Congress Committee.
 - b) The members of the Congress Committee are appointed by the General Assembly as scientists active in theoretical or applied mechanics and need not be members of the General Assembly.
 - c) The Congress Committee appoints a Secretary, without stated terms of office.
 - d) The rules of procedure of the Congress Committee shall be approved by the General Assembly.

XIII The financial means of the Union are formed by:

- a) the annual subscriptions of the adhering organizations;
- b) gifts and grants.

The Union shall maintain a roll of benefactors on which shall be inscribed annually the names of those persons or institutions which have accorded gifts, legacies or other subventions to the Union.

XIV The number of representatives of an adhering organization and the amount of the annual subscription to be paid by that organization will be regulated according to one of the following categories, as proposed by the adhering organization and after approval of the General Assembly of the Union:

Category	Number of Representatives	Units of annual subscription
I	1	1
II	2	3
III	3	5
IV	4	8
V	5	12

Changes in the amount of the unit annual subscription will be decided by the General Assembly not less than one year in advance.

XV*** Any proposal for alteration of the Statutes either prepared by the Bureau or supported by statements to the General-Secretary signed by at least ten voting members of the General Assembly with voting rights, shall be sent to members of the General Assembly with the Agenda for a meeting of the General Assembly. Such proposals shall be discussed during the first session of that meeting and voted upon during the second session (Article V).

*** Article XV adopted by the General Assembly on August 28, 1994, in Amsterdam

Rules of procedure for the Congress Committee of IUTAM

1. The Congress Committee meets at least once at every Congress.
2. The Congress Committee may appoint an Executive Committee to take all necessary actions on its behalf in the period between two successive Congresses, and to report to it at its next meeting. The Executive Committee will consist of the president, the secretary and one or more members appointed by the Congress Committee.
3. The actual organization of a Congress is delegated to a local Organizing Committee, elected by the host-country or host-organization, which is also responsible for publication of its Proceedings. The Organizing Committee will report to the Congress Committee either during or, if it sees fit, before the Congress which it organizes.
4. The Organizing Committee will obtain the approval of the Congress Committee (normally through the Executive Committee) with regard to all matters affecting the general policy of the Congress Committee, in particular with regard to:
 - 4.1. the scope of the Congress;
 - 4.2. the screening of papers of the Congress;
 - 4.3. the selection of general lectures for the Congress;
 - 4.4. the appointment of chairmen of sessions of the Congress;
 - 4.5. the broad principles regarding financial arrangements for the Congress.
5. The Organizing Committee will levy a fee (the level to be recommended by the Congress Committee and approved by the Bureau) for administrative expenses of the

Congress Committee, from all Congress members. This fee will be paid over to IUTAM after the Congress.

Procedure for election of the Bureau of IUTAM****

1. At the General Assembly (GA) preceding the one at which the new Bureau is to be elected, an Electoral Committee (EC) shall be elected, consisting of the President of IUTAM (who shall act as Chairman of the EC) and two to four members of the GA who are not members of the current Bureau.
2. Following its election, the EC shall invite from members of the GA, within a specified time-limit, suggestions for candidates for the Bureau, viz. for the Offices of President (P), Secretary-General (S) and Treasurer (T), and for the four non-Officer positions. All suggestions shall be treated confidentially by the EC.
3. Taking account of all suggestions received, the EC shall submit to the Secretary-General nominations for candidates for election to the Bureau: one name for each of the Officer positions (P, S, T) and one or more names for each of the non-Officer positions (W, X, Y, Z). The EC will make sure that the candidates thus nominated are willing to accept an election. These nominations shall be conveyed by the Secretary-General to the GA in advance of the first session of the meeting of the GA at which the new Bureau is to be elected.
4. At this first session, additional candidates may be proposed by members of the GA for each and any of the positions P, S, T, W, X, Y, Z. No candidate may be proposed for more than one position.
5. Before the second session of the GA at which the new Bureau is to be elected, the proposals under clause 4 above shall be accepted if supported by statements to the Secretary-General each signed by at least ten (voting) members of the GA and by written confirmation that each nominee is willing to accept election; otherwise they shall be considered withdrawn.
6. The GA shall vote separately on the surviving nominations for each of the positions P, S, T, W, X, Y, Z. In any case in which there is more than one candidate for a position, the vote shall be by secret ballot.

**** Procedure adopted by the General Assembly on August 28, 1994, in Amsterdam

Procedure for electing Members-at-Large of the General Assembly*****

1. This procedure shall apply for the election and re-election of the Members-at-Large of the General Assembly provided for in Article VI(c) of the Statutes.
2. Proposals, by members of the General Assembly with voting rights, for Members-at-Large must be received by the Bureau at least three months before the meeting of the General Assembly at which proposals are to be considered, normally during the International Congresses of Theoretical and Applied Mechanics (ICTAM). All proposals will be treated confidentially by the Bureau.
3. Taking into account all material received, the Bureau will present to the General Assembly such proposals as it deems will have at least a reasonable support by the General Assembly, provided however that the total number of Members-at-Large is not to exceed approximately one eighth (1/8) of the total General Assembly membership with voting rights. Such proposals will be circulated to all members of the General Assembly during the first session of meeting of the Assembly at which the proposals are to be voted on.
4. Proposals not identical with those presented by the Bureau are considered to be withdrawn, unless they are sustained and supported by at least ten members of the General Assembly before its second session.
5. The General Assembly will vote on those candidates mentioned in the proposals of paragraphs 3 and 4.

***** Procedure adopted by the General Assembly on August 26, 1992, in Haifa, Israel

List of Publications

Five categories of IUTAM publications can be distinguished:

a) Annual Reports

Since 1948, the Union has published a Report every year with detailed information on its activities. These Annual Reports are preserved at the IUTAM Archive at CISM, Udine, Italy.

The IUTAM Annual Reports over the last five years are available upon request from the IUTAM Secretariat.

b) Newsletters

At the meeting of the Bureau of IUTAM held in Warsaw in August 2001 it was agreed that the IUTAM Newsletter should be revived.

A primary purpose of the Newsletter, in conjunction with the IUTAM website, is to provide information concerning future activities of IUTAM, particularly its Symposia and Summer Schools, and concerning the International Congress of Theoretical and Applied Mechanics (ICTAM).

The Newsletter will also serve to keep members of IUTAM informed about any other current developments of concern to IUTAM.

The last IUTAM Newsletter is available from the IUTAM Secretariat. Pdf versions of IUTAM Newsletters are available from the IUTAM website.

c) Proceedings of IUTAM Symposia

These are only available by ordering directly from the publisher.

d) Proceedings of the International Congresses on Theoretical and Applied Mechanics (ICTAM)

These are only available by direct ordering from the publisher.

e) Publications on the history of IUTAM

Proceedings of IUTAM Symposia

The Proceedings of IUTAM Symposia published since 1990 are listed below. The names of the editors and of the publisher are given in every case. A complete listing of all published Proceedings can be found at the IUTAM website <http://www.iutam.net> or <http://www.iutam.org> or <http://www.iutam.info>.

1990

- 90-1 *IUTAM Symposium on Mechanical Modeling of New Electromagnetic Materials* (Stockholm, Sweden, 2-6 April 1990).
The Proceedings of the Symposium, edited by R.K.T. Hsieh, have been published by Elsevier, Amsterdam, 1990. ISBN 0-444-88518-8.
- 90-2 *IUTAM Symposium on Dynamical Problems of Rigid-Elastic Systems and Structures* (Moscow, USSR, 23-27 May 1990).
The Proceedings of the Symposium, edited by N.V. Banichuk, D.M. Klimov and W. Schiehlen, have been published by Springer-Verlag, Berlin, 1991. ISBN 3-540-53788-0.
- 90-3 *IUTAM Symposium on Inelastic Deformation of Composite Materials* (Troy, New York, USA, 29 May-1 June 1990).
The Proceedings of the Symposium, edited by G.J. Dvorák, have been published by Springer-Verlag, New York, 1991. ISBN 0-387-97458-X.
- 90-4 *IUTAM Symposium on Dynamics of Marine Vehicles and Structures in Waves* (Uxbridge, UK, 24-17 June 1990).
The Proceedings of the Symposium, edited by W.G. Price, P. Temarel and A.J. Keane, have been published by Elsevier, Amsterdam, 1991. ISBN 0-444-89020-3.
- 90-5 *IUTAM Symposium on Separated Flows and Jets* (Novosibirsk, USSR, 9-13 July 1990).
The Proceedings of the Symposium, edited by V.V. Kozlov and A.V. Dovgal, have been published by Springer-Verlag, Berlin, 1991. ISBN 3-540-53762-7.
- 90-6 *IUTAM Symposium on Fluid Mechanics of Stirring and Mixing* (La Jolla, California, USA, 20-24 August 1990).
The Proceedings of the Symposium, edited by A. Acrivos, have been published in the journal "Physics of Fluids A", ISSN 0899-8213, Vol. 3 (1991), pp. 1009-1469.

- 90-7 *IUTAM Symposium on Nonlinear Hydrodynamic Stability and Transition*
(Sophia-Antipolis, Nice, France, 3-7 September 1990).
The Proceedings of the Symposium, edited by G. Iooss, have been published in the journal "European Journal of Mechanics B/ Fluids", ISSN 0997-7546, Vol. 10 (1991), No. 2-Suppl. 3-334.
- 90-8 *IUTAM Symposium on Contact Load and Local Effects in Thin-Walled Plates and Shell Structures*
(Prague, CSFR, 4-7 September 1990).
The Proceedings of the Symposium, edited by V. Krupka and M. Drdácky, have been published by Springer-Verlag, Berlin, 1992. ISBN 3-540-53551-9.
- 90-9 *IUTAM Symposium on Creep in Structures*
(Cracow, Poland, 10-14 September 1990).
The Proceedings of the Symposium, edited by M. Zyczkowski, have been published by Springer-Verlag, Berlin, 1992. ISBN 3-540-53786-4.
- 1991**
- 91-1 *IUTAM Symposium on Aerothermodynamics in Combustors*
(Taipei, Taiwan, 3-5 June 1991).
The Proceedings of the Symposium, edited by R.S.L. Lee, J.H. Whitelaw and T.S. Wung, have been published by Springer-Verlag, Berlin, 1992. ISBN 3-540-55404-1.
- 91-2 *IUTAM Symposium on Mechanical Effects of Welding*
(Lulea, Sweden, 10-14 June 1991).
The Proceedings of the Symposium, edited by L. Karlsson, L.E. Lindgren and M. Jonsson, have been published by Springer-Verlag, Berlin, 1992. ISBN 3-540-55240-5.
- 91-3 *IUTAM Symposium on Nonlinear Stochastic Mechanics*
(Torino, Italy, 1-5 July 1991).
The Proceedings of the Symposium, edited by N. Bellomo and F. Casciati, have been published by Springer-Verlag, Berlin, 1992. ISBN 3-540-55545-5.
- 91-4 *IUTAM Symposium on Mechanics of Fluidized Beds*
(Stanford, California, 1-4 July 1991).
No Proceedings of the Symposium have been published.
The "Report of a Symposium on Mechanics of Fluidized Beds" by G.M. Homsy, R. Jackson and J.R. Grace has been published in the "Journal of Fluid Mechanics" (1992), Vol. 236, 477-495.

- 91-5 *IUTAM Symposium on Breaking Waves*
(Sydney, Australia, 15-19 July 1991).
The Proceedings of the Symposium, edited by M.L. Banner and R. Grimshaw, have been published by Springer-Verlag, Berlin, 1992. ISBN 3-540-55944-2.
- 91-6 *IUTAM Symposium on Constitutive Relations for Finite Deformations of Polycrystalline Metals*
(Beijing, China, 22-25 July 1991).
The Proceedings of the Symposium, edited by Ren Wang and D.C. Drucker, have been published by Springer-Verlag, Berlin, 1992. ISBN 3-540-55128-X.
- 91-7 *IUTAM Symposium on Finite Inelastic Deformations - Theory and Application*
(Hannover, Germany, 19-23 August 1991).
The Proceedings of the Symposium, edited by D. Besdo and E. Stein, have been published by Springer-Verlag, Berlin, 1992. ISBN 3-540-55849-7.
- 91-8 *IUTAM Symposium on Interpretation of Time Series from Mechanical Systems*
(Warwick, UK, 26-30 August 1991).
The Proceedings of the Symposium, edited by P.G. Drazin and G.P. King, have been published by North Holland, Elsevier Science Publ, Amsterdam, *Physica D Nonlinear Phenomena*, Vol. 58, 1992. ISSN 0167-2789.
- 91-9 *IUTAM Symposium on Microgravity Fluid Mechanics*
(Bremen, Germany, 2-6 September 1991).
The Proceedings of the Symposium, edited by H.J. Rath, have been published by Springer-Verlag, Berlin, 1992. ISBN 3-540-55122-0.
- 91-10 *IUTAM Symposium on Local Mechanics Concepts for Composite Material Systems*
(Blacksburg, Virginia, 27-31 October 1991).
The Proceedings of the Symposium, edited by J.N. Reddy and K.L. Reifsnider, have been published by Springer-Verlag, Berlin, 1992. ISBN 3-540-55547-1.

1992

- 92-1 *IUTAM Symposium on Optimal Control of Mechanical Systems*
(Moscow, Russia, 19-25 April 1992).
The Proceedings of the Symposium, co-edited by F.L. Chernousko, have been published in Russian in the form of a (special) issue of the journal "Izvestiya of the Russian Academy of Sciences, Tekhnicheskaya Kibernetika, No. 1, Jan.-Febr. 1993", ISSN 0002-3388; and in the English translation of this journal published by Scripta Technica Inc. A. Wiley Company, New York.

- 92-2 *IUTAM Symposium on Inverse Problems in Engineering Mechanics*
(Tokyo, Japan, 11-15 May 1992).
The Proceedings of the Symposium, edited by M. Tanaka and H.D. Bui, have been published by Springer-Verlag, Berlin, 1993. ISBN 3-540-56345-8.
- 92-3 *IUTAM Symposium on Optimal Design with Advanced Materials*
The Frithiof I. Niordson Volume (Lyngby, Denmark, 18-20 August 1992).
The Proceedings of the Symposium, edited by P. Pedersen, have been published by Elsevier Science Publishers, Amsterdam, 1993. ISBN 0444-89869-7.
- 92-4 *IUTAM Symposium on Aerothermochemistry of Spacecraft and Associated Hypersonic Flows*
(Marseille, France, 1-4 September 1992).
The Proceedings of the Symposium, edited by R. Brun and A.A. Chikhaoui, have been published by Jouve, 18, rue Saint-Denis, F-75001 Paris. Dépôt légal: Janvier, 1994. No. 215515N.
- 92-5 *IUTAM Symposium on Bluff-Body Wakes, Dynamics and Instabilities*
(Göttingen, Germany, 7-11 September 1992).
The Proceedings of the Symposium, edited by H. Eckelmann, J.M.R. Graham, P. Huerre and P.A. Monkewitz, have been published by Springer-Verlag, Berlin, 1993. ISBN 3-540-56594-9.
- 92-6 *IUTAM Symposium on Fluid Dynamics of High Angle of Attack*
(Tokyo, Japan, 13-17 September 1992).
The Proceedings of the Symposium, edited by R. Kawamura and Y. Aihara, have been published by Springer-Verlag, Berlin, 1993. ISBN 3-540-56593-0.
- 92-7 *IUTAM Symposium on Eddy Structure Identification in Free Turbulent Shear Flow*
(Poitiers, France, 12-14 October 1992).
The Proceedings of the Symposium, edited by J.P. Bonnet and M.N. Glauser, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1993. ISBN 0-7923-2449-8.
- 1993**
- 93-1 *IUTAM Symposium on Probabilistic Structural Mechanics: Advances in Structural Reliability Methods*
(San Antonio, Texas, USA, 7-10 June 1993).
The Proceedings of the Symposium, edited by P.D. Spanos and Y.-T. Wu, have been published by Springer-Verlag, Berlin, 1994. ISBN 3-540-57709-2.

- 93-2 *IUTAM Symposium on Computational Mechanics and Materials*
(Providence, RI, USA, 15-18 June 1993).
The Proceedings of the Symposium have been published as a special issue in a journal "Modelling and Simulation in Materials Science and Engineering", edited by M. Ortiz and C.F. Shih, Vol 2 No 3A 421-782 May 1994, ISSN: 0965-0393.
- 93-3 *IUTAM Symposium on Nonlinearity and Chaos in Engineering Dynamics*
(University College, London, 19-23 July 1993).
The Proceedings of the Symposium, edited by J.M.T. Thompson and S.R. Bishop, have been published by John Wiley & Sons, Chichester, UK, 1994. ISBN 0-471-94458-0.
- 93-4 *IUTAM Symposium on Nonlinear Instability of Nonparallel Flows*
(Potsdam, NY, USA, 26-31 July 1993).
The Proceedings of the Symposium, edited by S.P. Lin, W.R.C. Phillips, D.T. Valentine, have been published by Springer-Verlag, Berlin, 1994. ISBN 3-540-57679-7.
- 93-5 *IUTAM Symposium on Nonlinear Waves in Solids*
(Victoria, British Columbia, Canada, 15-20 August 1993).
The Proceedings of the Symposium, edited by Joanne L. Wegner and Frederick R. Norwood, have been published by The American Society of Mechanical Engineers, New York, 1995. ISBN 0-7918-0645-6.
- 93-6 *IUTAM Symposium on Identification of Mechanical Systems*
(Wuppertal, Germany, 23-27 August 1993).
The Proceedings of the Symposium, edited by P.C. Müller, have been announced to be published by Springer-Verlag, Berlin, 1995.
- 93-7 *IUTAM Symposium on Discrete Structural Optimization*
(Zakopane, Poland, 31 August-3 September 1993).
The Proceedings of the Symposium, edited by W. Gutkowski, have been published by Springer-Verlag, Berlin, 1994. ISBN 3-540-57679-X.
- 93-8 *IUTAM Symposium on Bubble Dynamics and Interface Phenomena*
(Birmingham, UK, 6-9 September 1993).
The Proceedings of the Symposium, edited by J.R. Blake, J.M. Boulton-Stone and N.H. Thomas, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1994. ISBN 0-7923-3008-0.

- 93-9 *IUTAM Symposium on Fracture of Brittle, Disordered Materials: Concrete, Rock and Ceramics*
(Brisbane, Australia, 20-24 September 1993).
The Proceedings of the Symposium, edited by G. Baker and B.L. Karihaloo, have been published by E & FN Spon, London, UK, 1995.
ISBN 0-419-19050-3.
- 93-10 *IUTAM Symposium on Impact Dynamics*
(Beijing, China, 11-15 October 1993).
The Proceedings of the Symposium, edited by Zheng Zhemin (Che-Min Cheng) and Tan Qingming, have been published by Peking University Press, Beijing, China, 1994. ISBN 7-301-02489-4/0 338.
- 93-11 *IUTAM Symposium on Numerical Simulation of Non-Isothermal Flow of Viscoelastic Liquids*
(Kerkrade, The Netherlands, 1-3 November 1993).
The Proceedings of the Symposium, edited by J.F. Dijksman and G.D.C. Kuiken have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1995. ISBN 0-7923-3262-8.
- 1994**
- 94-1 *IUTAM Symposium on Liquid-Particle Interactions in Suspension Flow*
(Grenoble, France, 18-22 April 1994).
The chairman G. Cognet has not edited the Proceedings (Oct. 1996).
- 94-2 *IUTAM Symposium on Waves in Liquid / Gas and Liquid / Vapor Two-Phase Systems*
(Kyoto, Japan, 9-13 May 1994).
The Proceedings of the Symposium, edited by Shigeki Morioka and L. van Wijngaarden, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1995. ISBN 0-7923-3424-8.
- 94-3 *IUTAM / ISIMM Symposium on Structure and Dynamics of Nonlinear Waves in Fluids*
(Hanover, Germany, 17-20 August 1994).
The Proceedings of the Symposium, edited by A. Mielke and K. Kirchgässner, have been published as Volume 7 of the Advanced Series in Nonlinear Dynamics, by World Scientific Publishing, Singapore, 1995.
ISBN 981-02-2124-X.

- 94-4 *IUTAM Symposium on Microstructure-Property Interactions in Composite Materials*
(Aalborg, Denmark, 23-25 August 1994).
The Proceedings of the Symposium, edited by R. Pyrz, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1995. ISBN 0-7923-3427-2.
- 94-5 *IUTAM / ISIMM Symposium on Anisotropy, Inhomogeneity and Nonlinearity in Solid Mechanics*
(Nottingham, UK, 30 August-3 September 1994).
The Proceedings of the Symposium, edited by D.F. Parker and A.H. England, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1995. ISBN 0-7923-3594-5.
- 94-6 *IUTAM Symposium on Laminar-Turbulent Transition*
(Sendai, Japan, 5-9 September 1994).
The Proceedings of the Symposium, edited by R. Kobayashi, have been published by Springer Verlag, Berlin, 1995. ISBN 3-540-59297-0.
- 94-7 *IUTAM Symposium on Mechanical Problems in Geodynamics*
(Beijing, China, 5-9 September 1994).
The Proceedings of the Symposium, edited by R. Wang and K. Aki, have been published in the journal "PAGEOPH (Pure and Applied Geophysics)", Part I in vol.145, no.3/4, Dec.1995 (ISSN 0033-4553), and Part II in vol.146, no.3/4, Feb.1996 (ISBN 3-7643-5412-7). A bound volume has been announced to be published in 1996.
- 94-8 *IUTAM Symposium on The Active Control of Vibrations*
(Bath, UK, 5-8 September 1994).
The Proceedings of the Symposium, edited by C.R. Burrows and P.S. Keogh have been published by Mechanical Engineering Publications Limited, London, 1994. ISBN 0-85298-916-4.
- 94-9 *IUTAM Symposium on Size-Scale Effects in the Failure Mechanisms of Materials and Structures*
(Turin, Italy, 3-7 October 1994).
The Proceedings of the Symposium, edited by A. Carpinteri, have been published by E & FN Spon, London, UK, 1995. ISBN 0-419-20520-9.
- 94-10 *IUTAM Symposium on Mechanics and Combustion of Droplets and Sprays*
(Taipei, Taiwan, 6-10 December 1994).
The Proceedings of the Symposium, edited by H.H. Chiu, have been published by Begell House, Inc. New York, USA, 1995, pp. 396. ISBN 1-56700-051-7.

Selected papers under the title Mechanics and Combustion of Droplets and Sprays have been published by Begell House Publishers at 79 Madison Avenue, New York, NY 10016, Fax (+1) 212-213-8368, edited by N.A. Chigier.

1995

- 95-1 *IUTAM Symposium on Optimization of Mechanical Systems*
(Stuttgart, Germany, 26-31 March 1995).
The Proceedings of the Symposium, edited by D. Bestle and W. Schiehlen, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1996. ISBN 0-7923-3830-8.
- 95-2 *IUTAM Symposium on Asymptotic Methods for Turbulent Shear Flows at High Reynolds Numbers*
(Bochum, Germany, 28-30 June 1995).
The Proceedings of the Symposium, edited by K. Gersten, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1996. ISBN 0-7923-4138-4.
- 95-3 *IUTAM Symposium on Advances in Nonlinear Stochastic Mechanics*
(Trondheim, Norway, 3 - 7 July 1995).
The Proceedings of the Symposium, edited by A. Naess and S. Krenk, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1996. ISBN 0-7923-4193-7.
- 95-4 *IUTAM Symposium on Nonlinear Instability and Transition in Three-Dimensional Boundary Layers*
(Manchester, UK, 17-20 July 1995).
The Proceedings of the Symposium, edited by P.W. Duck and P. Hall, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1996. ISBN 0-7923-4079-5.
- 95-6 *IUTAM Symposium on Micromechanics of Plasticity and Damage of Multiphase Materials*
(Paris, France, 29 August-1 September 1995).
The Proceedings of the Symposium, edited by A.Pineau and A.Zaoui, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1996. ISBN 0-7923-41388-0.
- 95-7 *IUTAM Symposium on Nonlinear Analysis of Fracture*
(Cambridge, UK, 3-7 September 1995).
The Proceedings of the Symposium, edited by J. Willis, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1997. ISBN 0-7923-4378-6.

- 95-9 *IUTAM Symposium on Combustion in Supersonic Flows* (Poitiers, France, 2-6 October 1995).
The Proceedings of the Symposium, edited by M. Champion and B. Deshaies, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1997. ISBN 0-7923-4313-1.
- 1996**
- 96-1 *IUTAM Symposium on Interaction between Dynamics and Control in Advanced Mechanical Systems* (Eindhoven, The Netherlands, 21-26 April 1996).
The Proceedings of the Symposium, edited by D.H. van Campen have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1997. ISBN 0-7923-4429-4.
- 96-2 *IUTAM Symposium on Innovative Computational Methods for Fracture and Damage* (Dublin, Ireland, 30 June-5 July 1996).
The Proceedings of the Symposium, edited by P. E. O' Donoghue, M. D. Gilchrist and K. B. Broberg, have been published in the "Computational Mechanics Journal", 19, 447- 552; 20, 3-198, 1997.
- 96-3 *IUTAM Symposium on Variable Density Low Speed Turbulent Flows* (Marseille, France, 7-10 July 1996). Co-sponsored by ICSU.
The Proceedings of the Symposium, edited by Louis Fulachier, John L. Lumley and Fabien Anselmet, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1997. ISBN 0-7923-4602-5.
- 96-4 *IUTAM Symposium on Mechanics of Granular and Porous Materials* (Cambridge, UK, 15-17 July 1996).
The Proceedings of the Symposium, edited by N.A. Fleck and A.C.F. Cocks, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1997. ISBN 0-7923-4553-3.
- 1997**
- 97-1 *IUTAM Symposium on Lubricated Transport of Viscous Materials* (Tobago, 7-10 January 1997).
The Proceedings of the Symposium, edited by Harold Ramkissoon, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1997. ISBN 0-7923-4897-4.

- 97-2 *IUTAM Symposium on Transformation Problems in Composite and Active Materials*
(Cairo, Egypt, 9-12 March 1997).
The Proceedings of the Symposium, edited by Y.A. Bahei-El-Din and G.J. Dvorak, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1998. ISBN 0-7923-5122-3.
- 97-3 *IUTAM Symposium on Non-Linear Singularities in Deformation and Flow*
(Haifa, Israel, 17-21 March 1997).
The Proceedings of the Symposium, edited by D. Durban and J.R.A. Pearson, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1998. ISBN 0-7923-5349-8.
- 97-4 *IUTAM Symposium on Variations of Domains and Free-Boundary Problems in Solid Mechanics*
(Paris, France, 22-25 April 1997).
The Proceedings of the Symposium, edited by P. Argoul, M. Frémond and Q.S. Nguyen, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1998. ISBN 0-7923-5450-8.
- 97-5 *IUTAM Symposium on Simulation and Identification of Organized Structures in Flows*
(Lyngby, Denmark, 25-29 May 1997).
The Proceedings of the Symposium, edited by J.N. Sørensen, E.J. Hopfinger, and N. Aubry, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1999. ISBN 0-7923-5603-9.
- 97-6 *IUTAM Symposium on Discretization Methods in Structural Mechanics*
(Vienna, Austria, 1-6 June 1997).
The Proceedings of the Symposium, edited by H.A. Mang and F.G. Rammerstorfer, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands 1999. ISBN 0-7923-5591-1.
- 97-7 *IUTAM Symposium on Material Instabilities in Solids*
(Delft, The Netherlands, 9-13 June 1997)
The Proceedings of the Symposium, edited by R. de Borst en E. van der Giessen, have been published by John Wiley & Sons, Chichester, UK, 1998 . ISBN 0-471-97460-9.
- 97-8 *IUTAM Symposium on Statistical Energy Analysis*
(Southampton, UK. 8-11 July 1997).
The Proceedings of the Symposium, edited by F.J. Fahy and W.G Price, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1998, ISBN 0-7923-5457-5.

- 97-9 *IUTAM Symposium on Rheology and Computation*
(Sydney, Australia, 20-25 July 1997).
No formal Proceedings of the Symposium have been published. Selected papers have been published in several 1999-volumes of the "Journal of Non-Newtonian Fluid Mechanics", with a footnote attached to each of those papers.
- 97-10 *IUTAM Symposium on New Applications of Nonlinear and Chaotic Dynamics in Mechanics*
(Ithaca, NY, USA, 27 July-1 August 1997).
The Proceedings of the Symposium, edited by Francis C. Moon, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1998. ISBN 0-7923-5276-9.
- 97-11 *IUTAM Symposium on Computational Methods for Unbounded Domains*
(Boulder, USA, 3-7 August 1997).
The Proceedings of the Symposium, edited by Thomas L. Geers, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1998. ISBN 0-7923-5266-1.
- 97-12 *IUTAM Symposium on Micro- and Macrostructural Aspects of Thermoplasticity*
(Bochum, Germany, 25-29 August 1997).
The Proceedings of the Symposium, edited by O.T. Bruhns and E. Stein, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1998. ISBN 0-7923-5265-3.
- 97-13 *IUTAM Symposium on Dynamics of Slender Vortices*
(Aachen, Germany, 31 August - 3 September 1997).
The Proceedings of the Symposium, edited by E. Krause and K. Gersten, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1998. ISBN 0-7923-5041-3.
- 97-14 *IUTAM Symposium on Rheology of Bodies with Defects*
(Beijing, China, 2-6 September 1997).
The Proceedings of the Symposium, edited by Ren Wang, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1998. ISBN 0-7923-5297-1.

1998

- 98-1 *IUTAM Symposium on Three-Dimensional Aspects of Air-Sea Interaction*
(Nice, France, 17-21 May 1998)
The Proceedings of the Symposium, edited by F. Dias and C. Khariff, have been published as a special issue of the "European Journal of Mechanics B / Fluids", Vol. 18, No. 3 (1999)

- 98-2 *IUTAM Symposium on Synthesis in Bio Solid Mechanics*
(Lyngby, Denmark, 24-27 May 1998).
The Proceedings of the Symposium, edited by Pauli Pedersen and Martin P. Bendsøe, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1999. ISBN 0-7923-5615-2.
- 98-3 *IUTAM/IUGG Symposium on Developments in Geophysical Turbulence*
(Boulder, USA, 16-19 June 1998).
The Proceedings of the Symposium, edited by R.M. Kerr and Y. Kimura, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2000 ISBN 0-7923-6673-5.
- 98-4 *IUTAM Symposium on Viscoelastic Fluid Mechanics*
(Stanford, USA, 21-25 June 1998).
A Report on this Symposium by E.S.G. Shaqfeh and a collection of selected papers have been published in the "Journal of Non-Newtonian Fluid Mechanics", Vol. 82 (1999), pp. 127-457.
- 98-5 *IUTAM Symposium on Unilateral Multibody Contacts*
(Munich, Germany, 3-7 August 1998).
The Proceedings of the Symposium, edited by F. Pfeiffer and Ch. Glocker, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1999. ISBN 0-7923-6030-3.
- 98-6 *IUTAM/IFTToMM Symposium on Synthesis of Nonlinear Dynamical Systems*
(Riga, Latvia, 24-28 August 1998).
The Proceedings of the Symposium, edited by E. Lavendelis and M. Zakrzhevsky, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1999. ISBN 0-7923-6106-7.
- 98-7 *IUTAM Symposium on Advanced Optical Methods and Applications in Solid Mechanics*
(Poitiers, France, 31 August-4 September 1998).
The Proceedings of the Symposium, edited by A. Lagarde, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2000. ISBN 0-7923-6604-2.
- 98-8 *IUTAM/IASS Symposium on Deployable Structures: Theory and Applications*
(Cambridge, UK, 6-9 September 1998).
The Proceedings of the Symposium, edited by S. Pellegrino and S.D. Guest, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2000. ISBN 0-7923-6516-X.

- 98-9 *IUTAM Symposium on Mechanics of Passive and Active Flow Control* (Göttingen, Germany, 7-11 September 1998).
The Proceedings of the Symposium, edited by G.E.A. Meier and P.R. Viswanath, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 1999. ISBN 0-7923-5928-3.
- 1999**
- 99-1 *IUTAM Symposium on Nonlinearity and Stochastic Structural Dynamics* (Madras, India, 4-8 January 1999).
The Proceedings of the Symposium, edited by S. Narayanan and R.N. Iyengar, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2000. ISBN 0-7923-6733-2.
- 99-2 *IUTAM Symposium on Mechanical and Electromagnetic Waves in Structured Media* (Sydney, NSW, Australia, 18-22 January 1999).
The Proceedings of the Symposium, edited by R.C. McPhedran, L.C. Botten and N.A. Nicorovici, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2001. ISBN 0-7923-7038-4.
- 99-3 *IUTAM Symposium on Recent Developments in Nonlinear Oscillations of Mechanical Systems* (Hanoi, Vietnam, 2-5 March 1999).
The Proceedings of the Symposium, edited by N. Van Dao and E.J. Kreuzer, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2000. ISBN 0-7923-6470-8.
- 99-4 *IUTAM/IACM/IABEM Symposium on Advanced Mathematical and Computational Mechanics Aspects of the Boundary Element Method* (Cracow, Poland, 31 May-3 June 1999).
The Proceedings of the Symposium, edited by T. Buczynski, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2001. ISBN 0-7923-7081-3.
- 99-5 *IUTAM Symposium on Segregation in Granular Flows* (Cape May, New Jersey, USA, 5-10 June 1999).
The Proceedings of the Symposium, edited by A.D. Rosato and D.L. Blackmore, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2000. ISBN 0-7923-6547-X.

- 99-6 *IUTAM Symposium on Nonlinear Wave Behaviour in Multi Phase Flow*
(Notre Dame, Indiana, USA, 7-9 July 1999)
The Proceedings of the Symposium edited by H.C. Chang, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2000. ISBN 0-7923-6454-6.
- 99-7 *IUTAM Symposium on Theoretical and Numerical Methods in Continuum Mechanics of Porous Materials*
(Stuttgart, Germany, 5-10 September 1999).
The Proceedings of the Symposium, edited by W. Ehlers, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2001. ISBN 0-7923-6766-9.
- 99-8 *IUTAM Symposium on Laminar-Turbulent Transition*
(Sedona, Arizona, USA, 12-18 September 1999).
The Proceedings of the Symposium, edited by H. Fasel and W.S. Saric, have been published by Springer-Verlag, Berlin/Heidelberg/New York, 2000. ISBN 3-540-67947-2.
- 99-9 *IUTAM Symposium on Geometry and Statistics of Turbulence*
(Hayama, Japan, 1-5 November 1999).
The Proceedings of the Symposium edited by T. Kambe, T. Nakano and T. Miyauchi, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2001. ISBN 0-7923-6711-1.
- 2000**
- 00-1 *IUTAM Symposium on Creep in Structures*
(Nagoa, Japan, 3-7 April 2000).
The Proceedings of the Symposium, edited by S. Murakami and N. Ohno, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2000. ISBN 0-7923-6737-5.
- 00-2 *IUTAM Symposium on Bluff Body Wakes and Vortex-induced Vibration*
(Marseille, France, 13-16 June 2000).
The Proceedings of the Symposium edited by T. Leweke, P.W. Bearman and C.H.K. Williamson, have been published by Academic Press in the Journal of Fluids and Structures, Special Issue on Bluff Body Wakes and Vortex-Induced Vibrations, London, 2001. ISSN 0889-9746, Vol. 15, nos. 3/4.
- 00-2a *IUTAM Symposium on Scaling Laws in Ice Mechanics and Ice Dynamics*
(Fairbanks, Alaska, USA, 13-16 June 2000).
The Proceedings of the Symposium, edited by J.P. Dempsey and H.H. Shen, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2001. ISBN 1-4020-0171-1.

- 00-3 *IUTAM Symposium on Mechanical Waves for Composite Structures Characterization*
(Chania, Crete, Greece, 14-17 June 2000).
The Proceedings of the Symposium, edited by D.A. Sotiropoulos, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2001. ISBN 0-7923-7164-X.
- 00-4 *IUTAM Symposium on Advances in Mathematical Modelling of Atmosphere and Ocean Dynamics*
(Limerick, Ireland, 2-7 July 2000).
The Proceedings of the Symposium, edited by P.F. Hodnett, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2001. ISBN 0-7923-7075-9.
- 00-5 *IUTAM Symposium on Free Surface Flows*
(Birmingham, United Kingdom, 10-14 July 2000).
The Proceedings of the Symposium, edited by A.C. King and Y.D. Shikhmurzaev, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2001. ISBN 0-7923-7085-6.
- 00-6 *IUTAM Symposium on Diffraction and Scattering in Fluid Mechanics and Elasticity*
(Manchester, England, 17-20 July 2000).
The Proceedings of the Symposium, edited by I.D. Abrahams, P.A. Martin and M.J. Simon, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2002. ISBN 1-4020-0590-3.
- 00-7 *IUTAM Symposium on Field Analyses for Determination of Material Parameters-Experimental and Numerical Aspects*
(Kiruna, Sweden, 31 July-4 August 2000).
The Proceedings of the Symposium, will be published by Kluwer Academic Publishers, Dordrecht, The Netherlands, in 2002.
- 00-8 *IUTAM Symposium on Smart Structures and Structronic Systems*
(Magdeburg, Germany, 26-29 September 2000).
The Proceedings of the Symposium, edited by U. Gabbert and H.S. Tzou, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2001. ISBN 0-7923-6968-8.
- 00-9 *IUTAM Symposium on Designing for Quietness*
(Bangalore, India, 12-14 December 2000).
The Proceedings of the Symposium, edited by M.L. Munjal, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2002. ISBN 1-4020-0765-5.

2001

- 01-1 *IUTAM Symposium on Flow in Collapsible Tubes and Past Other Highly Compliant Boundaries*
(Warwick, Coventry, March 26-30, 2001).
The Proceedings of the Symposium, edited by P.W. Carpenter and T.J. Pedley, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2003. ISBN 1-4020-1161-X.
- 01-2 *IUTAM Symposium on Material Instabilities and the Effect of Microstructure*
(Austin, Texas, USA, 7-11 May 2001).
The Proceedings of the Symposium, edited by S. Kyriakides and N. Triantafyllidis, have been published by Elsevier Science Ltd. as a special issue of the International Journal of Solids and Structures, number 39, 2002.
- 01-3 *IUTAM Symposium on Turbulent Mixing and Combustion*
(Kingston, Ontario, Canada, 3-6 June 2001).
The Proceedings of the Symposium, edited by A. Pollard and S. Candel, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2002. ISBN 1-4020-0747-7.
- 01-4 *IUTAM Symposium on Micromechanics of Martensitic Phase Transformation in Solids*
(Hong Kong, 11-15 June 2001).
The Proceedings of the Symposium, edited by Q.P. Sun, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2002. ISBN 1-4020-0741-8
- 01-5 *IUTAM Symposium on Analytical and Computational Fracture Mechanics of Non-Homogeneous Materials*
(Cardiff, England, 18-22 June 2001).
The Proceedings of the Symposium, edited by B.L. Karihaloo, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2002. ISBN 1-4020-0510-5
- 01-6 *IUTAM Symposium on Computational Mechanics of Solid Materials at Large Strains*
(Stuttgart, Germany, 20-24 August 2001).
The Proceedings of the Symposium, edited by C. Miehe, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2003. ISBN 1-4020-1170-9

01-7 *IUTAM Symposium on Tubes, Sheets and Singularities In Fluid Dynamics*
(Zakopane, Poland, 2-7 September 2001).

The Proceedings of the Symposium, edited by K. Bajer and H.K. Moffatt, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2002. ISBN 1-4020-0980-1

Proceedings of the International Congresses on Theoretical and Applied Mechanics (ICTAM)

Until September 4, 1964 the organization of the International Congresses for Applied Mechanics was supervised by the "International Committee for the Congresses of Applied Mechanics" and for each Congress the organization was separately entrusted to a local Organizing Committee who also undertook the publication of the Proceedings. Consequently, there is no central point from which Proceedings may be ordered, and for each volume, application must be made to the publishers who took care of that particular volume.

Since September 4, 1964 the same task will be fulfilled by the Standing Congress Committee of IUTAM, and local Organizing Committees to be established. The titles of the volumes and the names of the publishing firms are given below.

1st Congress, Delft (Netherlands), 22–26 April 1924.

Proceedings of the First International Congress for Applied Mechanics, Delft 1924, edited by C.B. Biezeno and J.M. Burgers (one vol.). Technische Boekhandel en Drukkerij J.Waltman Jr. Delft, 1925. No more copies are available for sale at Delft.

2nd Congress, Zürich (Switzerland), 12–17 September 1926.

Verhandlungen - Comptes rendus - Proceedings of the 2nd International Congress for Applied Mechanics, Zürich, 12–17 September 1926, herausgegeben von E. Meissner (one vol.). Orell Füssli Verlag, Zürich und Leipzig, 1927.

3rd Congress, Stockholm (Sweden), 24–29 August 1930.

Verhandlungen - Comptes rendus - Proceedings of the 3rd International Congress for Applied Mechanics, herausgegeben von A.C.W. Oseen und W. Weibull (3 vol.). AB. Sveriges Litografiska Tryckerier, Stockholm, 1931.

4th Congress, Cambridge (UK), 3–9 July 1934.

Proceedings of the Fourth International Congress for Applied Mechanics, Cambridge, UK, 3–9 July, 1934 (one vol.). University Press, Cambridge (UK), 1935.

5th Congress, Cambridge (Massachusetts, USA), 12–16 September 1938.

Proceedings of the Fifth International Congress for Applied Mechanics, held at Harvard University and the Massachusetts Institute of Technology, Cambridge, Massachusetts, September 12–16, 1938, edited by J.P. den Hartog and H. Peters (one vol.), John Wiley and Sons, Inc. New York (USA), and Chapman and Hall Ltd. London (UK), 1939.

6th Congress, Paris (France), 22–29 September 1946.

Proceedings not published (was given in the hands of Gauthier-Villars, Paris).

7th Congress, London (UK), 5–11 September 1948.

Proceedings of the Seventh International Congress for Applied Mechanics, 1948, published by the Organizing Committee (Introduction, Vol. I, Vol. II - Parts 1 and 2, Vol. III, Vol. IV).

8th Congress, Istanbul (Turkey), 20–28 August 1952.

Proceedings published by the Organizing Committee (Vol. I, Vol. II). Faculty of Sciences, University of Istanbul, P.O. Box 245, Istanbul (Turkey), 1953.

9th Congress, Brussels (Belgium), 5–13 September 1956.

Proceedings published by the Organizing Committee (Vol. I to Vol. VIII). Free University of Brussels, 50, avenue Franklin-Roosevelt, Brussels (Belgium), 1957.

10th Congress, Stresa (Italy), 31 August–7 September 1960.

Proceedings published by the Consiglio Nazionale delle Ricerche, Piazzelle delle Scienze 7, Roma (Italia), printed by Elsevier Publishing Company, Amsterdam–New York, 1962.

11th International Congress on Theoretical and Applied Mechanics (ICTAM), Munich (Germany), 30 August–5 September 1964.

The Proceedings, edited by H. Görtler, have been published by Springer–Verlag, Heidelberger Platz 3, Berlin (Germany), 1966.

12th International Congress on Theoretical and Applied Mechanics (ICTAM), Stanford, Cal. (USA), 26–31 August 1968.

The Proceedings, edited by M. Hetényi and W.G. Vincenti, have been published by Springer–Verlag, Berlin (Germany), 1969.

13th International Congress on Theoretical and Applied Mechanics (ICTAM), Moscow (USSR), 21–26 August 1972.

The Proceedings, edited by E. Becker and G.K. Mikhailov, have been published by Springer–Verlag, Berlin (Germany), 1973.

14th International Congress on Theoretical and Applied Mechanics (ICTAM), Delft (Netherlands), 30 August–4 September 1976.

The Proceedings, edited by W.T. Koiter, have been published by North–Holland Publishing Company, Amsterdam–New York–Oxford, 1976, 1977.

15th International Congress on Theoretical and Applied Mechanics (ICTAM), Toronto (Canada), 17–23 August 1980

The Proceedings, edited by F.P.J. Rimrott and B. Tabarrok, have been published by North–Holland Publishing Company, Amsterdam–New York–Oxford 1980.

16th International Congress on Theoretical and Applied Mechanics (ICTAM),
Lyngby (Denmark), 19–25 August 1984.

The Proceedings, edited by F.I. Niordson and N. Olhoff, have been published by Elsevier Science Publishers (North–Holland), Amsterdam, 1985.

17th International Congress on Theoretical and Applied Mechanics (ICTAM),
Grenoble (France), 21–27 August 1988.

The Proceedings, edited by P. Germain, M. Piau and D. Caillerie, have been published by North–Holland, Elsevier Science Publishers, Amsterdam, 1989. ISBN 0-444-87302-3.

18th International Congress on Theoretical and Applied Mechanics (ICTAM),
Haifa (Israel), 22–28 August 1992.

The Proceedings, edited by S.R. Bodner, J. Singer, A. Solan and Z. Hashin, have been published by Elsevier Science Publishers, Amsterdam, 1993.
ISBN 0-444-88889-6.

19th International Congress on Theoretical and Applied Mechanics (ICTAM),
Kyoto (Japan), 25-31 August 1996.

The Proceedings, edited by T. Tatsumi, E. Watanabe, T. Kambe, have been published by Elsevier Science Publishers, Amsterdam, 1997.
ISBN 0-444-82446-4.

20th International Congress on Theoretical and Applied Mechanics (ICTAM),
Chicago (USA), 27 August-2 September 2000.

The Proceedings, entitled “Mechanics for a new Millenium and edited by H.Aref and J.W.Phillips, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2001. ISBN 0-7923-7156-9.

Publications on the history of IUTAM*IUTAM – A Short History,*

edited by S. Juhasz, has been published by Springer– Verlag, Berlin, Germany, 1988. ISBN 3–540–50043–X.

The short history is dedicated to the memory of Professor Theodore von Karman who had an essential role in the formation of IUTAM. Contributions by S. Juhasz, Sir James Lighthill, G. Battimelli, J. Hult, N.J. Hoff, D.C. Drucker and F.I. Niordson are included in the book.

Mechanics at the Turn of the Century,

edited by W. Schiehlen and L. van Wijngaarden, has been published by Shaker Verlag, Aachen, Germany, 2000. ISBN 3-8265-7714-0.

This Report is the result of an initiative of the Bureau of IUTAM to provide some landmarks on the developments in Mechanics during the 20th Century, to report on the 50 years of impulse to Mechanics by the International Union of Theoretical and Applied Mechanics (IUTAM), to visualize by a poster Meters of Motion on the occasion of the 20th International Congress of Theoretical and Applied Mechanics (ICTAM), to look ahead on a very personal basis and to show the broad international involvement of scientists in IUTAM in recent years.

The booklet “Mechanics at the Turn of the Century” is accessible free of charge on the website of Shaker Verlag. The internet address is www.shaker.de and search for Schiehlen as the author. Moreover, this booklet is available upon request at the IUTAM Secretariat

Please note again:

The publications listed above, with the exception of the Annual Reports over the last five years and the booklet “Mechanics at the Turn of the Century”, are not available at the IUTAM Secretariat. Please order directly from the publisher.

Details of all IUTAM publications may be found at

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