

REPORT 2015

INTERNATIONAL UNION OF THEORETICAL AND
APPLIED MECHANICS

REPORT 2015



Ecole Normale Supérieure de Cachan, France
and
University College Dublin, Ireland

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Bureau: Officers and Members

The following members of the Bureau of IUTAM have been elected for the period 1 November 2012 to 31 October 2016:

Officers

Professor V. Tvergaard (Denmark)	President
Professor T.J. Pedley (UK)	Vice-President
Professor P. Eberhard (Germany)	Treasurer
Professor F. Dias (Ireland)	Secretary-General

Members

Professor N. Aubry (USA)	(elected 2012)
Professor M. Rubin (Israel)	(elected 2012)
Professor B. Schrefler (Italy)	(elected 2012)
Professor W. Yang (China)	(elected 2012)

Secretariat

IUTAM-Secretariat, Centre de Mathématiques et de Leurs Applications,
Ecole Normale Supérieure de Cachan, 94235 Cachan, France

Telephone: +33 1 47 40 59 00, Telefax: +33 1 47 40 59 01

E-mail: frederic.dias@cmla.ens-cachan.fr; Internet: <http://www.iutam.net>

Past Officers

Elected	President	Vice-President	Treasurer	Secretary
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)
2000	H.K. Moffatt (UK)	W. Schiehlen (Germany)	L.B. Freund (USA)	D.H. van Campen (Netherlands)
2004	L.B. Freund (USA)	H.K. Moffatt (UK)	J. Engelbrecht (Estonia)	D.H. van Campen (Netherlands)
2008	T. Pedley (UK)	L.B. Freund (USA)	N. Olhoff (Denmark)	F. Dias (France)

Past Congress Presidents

Nr.	Year	Place	Congress-President
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
21	2004	Warsaw, Poland	W. Gutkowski
22	2008	Adelaide, Australia	E. Tuck
23	2012	Beijing, China	Y. Bai

Adhering Organizations

Australia (1964)

The Australian National Committee for Mechanical and Engineering Sciences of the Australian Academy of Science
GPO Box 783, Canberra City, ACT 2601
President/Chair: Prof. I. (Ivan) Marusic
Representatives in IUTAM: Prof. I. (Ivan) Marusic, Prof. S. (Scott) Sloan

Austria (1951)

Austrian National Committee for Theoretical and Applied Mechanics of the Austrian Academy of Sciences
Dr.-Ignaz-Seipel-Platz 2, A-1010 Wien
President/Chair : Prof. F. (Franz) Rammerstorfer
Contact: Prof. A. (Alfred) Kluwick
Representative in IUTAM: Prof. A. (Alfred) Kluwick

Belgium (1949)

The National Committee for Theoretical and Applied Mechanics of the Royal Academies for Science and Arts of Belgium
Hertogsstraat 1 rue Ducale, B-1000 Brussels
President/Chair: Prof. J. P. (Jean-Philippe) Ponthot
Contact: Prof. W. (Walter) Bosschaerts
Representatives in IUTAM: Prof. W. (Wim) Desmet, Prof. D. (Dirk) Vandepitte, Prof. J. (Jan) Vierendeels

Brazil (1982)

Associação Brasileira de Engenharia e Ciências Mecânicas – ABCM
Avenida Rio Branco 124/18° andar, 20040-001 Rio de Janeiro
President/Chair: Prof. S. (Sergio) Möller
Contact: Prof. A. (Atila) Freire
Representatives in IUTAM: Prof. A. (Atila) Freire, Prof. A. (Alvaro) Prata

Bulgaria (1969)

Bulgarian National Committee on Theoretical and Applied Mechanics of the Bulgarian Academy of Sciences
1, 15 novembre str., BG-1040 Sofia
President/Chair: Prof. S. (Stefan) Radev
Representative in IUTAM: Prof. S. (Stefan) Radev

Canada (1963)

The National Research Council of Canada,
Montreal Road, Ottawa, Canada K1A 0R6

National Committee for IUTAM

President/Chair: Prof. S. (Suresh) Shrivastava

Contact: Prof. J.M. (Maciej) Floryan

Representatives in IUTAM: Prof. S. (Sadik) Dost, Prof. J.M. (Maciej) Floryan, Prof. S. (Suresh) Shrivastava, Prof. J.W. (Jean) Zu

Chile (1996)

The Chile National Committee on Theoretical and Applied Mechanics Academia Chilena de Ciencias

Almirante Montt 454, Santiago, Chile

President/Chair: Dr. J. (Juan) Asenjo

Secretary: Dr. F. (Francisco) Hervé

Contact: Prof. F. (Fernando) Lund

Representatives in IUTAM: Prof. F. (Fernando) Lund

China (1980)

The Chinese Society of Theoretical and Applied Mechanics

15 Beisihuanxi Road, Beijing 100190

President/Chair: Prof. H. (Haiyan) Hu

Secretary: Prof. X. (Xiqiao) Feng

Contact: Prof. X. (Xiqiao) Feng

Representatives in IUTAM: Prof. Y. (Yi-long) Bai, Prof. H. (Haiyan) Hu, Prof. J (Jiachun) Li, Prof. W. (Wei) Yang

China-Hong Kong (1996)

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

Department of Mechanical Engineering, City University of Hong Kong, 83 Tat Chee av.,
Kowloon Tong, HK

President/Chair: Dr. J. (Jane) Lu

Secretary: Dr. Jeff Jianfeng Wang

Representative in IUTAM: Prof. A. (Andrew) Leung

China-Taipei (1980)

The Society of Theoretical and Applied Mechanics

Department of Civil Engineering, National Cheng Kung University

1, University Road, Tainan 70101, Taiwan

President/Chair: Prof. T. (Tungyang) Chen

Secretary: Prof. C. M. (Chi-Ming) Lai

Contact: Prof. C.M. (Chi-Ming) Lai

Representatives in IUTAM: Prof. C.-C. (Chien-Cheng) Chang, Prof. W.-C. (Wei-Chung) Wang

Croatia (1994)

Croatian Society of Mechanics
Ivana Lucica 5, HR-10000 Zagreb .
President/Chair: Prof. Dr-Ing L. (Lovre) Krstulovic-Opara
Contact: Prof. G. (Goran) Turkalj
Representative in IUTAM: Prof. G. (Goran) Turkalj

Cyprus (2010) (*Associate Organization*)

Cyprus Mathematical Society,
36 Stanisou street, Office 102, Strovolos 2003, Nicosia
President/Chair: Prof. G. (Gregory) Makrides
Contact: Prof. Y.-S. (Yorgos-Socrates) Smyrlis

Czech Republic (1993/1949)

The National Committee of Theoretical and Applied Mechanics
Academy of Sciences of the Czech Republic, Institute of Thermomechanics,
Dolejškova 5, CZ-18200 Prague 8
President/Chair: Prof. M. (Miloslav) Okrouhlík
Secretary: Dr. J. (Jiri) Naprstek
Contact: Prof. M. (Miloslav) Okrouhlík
Representative in IUTAM: Prof. M. (Miloslav) Okrouhlík

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/Chair: Prof. T. (Tom) Fenchel
Secretary: Prof. H. (Henrik) Breuning-Madsen
Contact: Dr C. (Christian) Niordson, Prof. J.N. (Jens Nørkær) Sørensen
Representatives in IUTAM: Dr C. (Christian) Niordson, Prof. J.N. (Jens Nørkær)
Sørensen

Egypt (1976)

Academy of Scientific Research and Technology
Egyptian Committee of Theoretical and Applied Mechanics, 101 Kasr El Eini Street,
Cairo, Egypt.
President/Chair: Prof. M.K. (Mohamed) Ismail
Representative in IUTAM: Prof. M.K. (Mohamed) Ismail

Estonia (1992)

Estonian Committee for Mechanics,
Akadeemia tee 21, EE-12618 Tallinn
President/Chair: Prof. A. (Andrus) Salupere
Representative in IUTAM: Prof. A. (Andrus) Salupere

Finland (1952)

The Finnish National Committee on Mechanics
Aalto University, Attent. Prof. Juha Paavola, P.O.Box 12100, FIN-00076 Aalto, Finland
President/Chair: Prof. J. (Juha) Paavola
Secretary: Prof. R. (Reijo) Kouhia
Contact: Prof. J. (Juha) Paavola
Representatives in IUTAM: Prof. R. (Reijo) Kouhia, Prof. J. (Juha) Paavola

France (1949)

Comité National Français de Mécanique, Académie des Sciences
23, quai Conti, F-75006 Paris
President/Chair: Prof. P. (Pierre) Suquet
Secretary: Prof. J. (Jacques) Magnaudet
Representatives in IUTAM: Prof. S. (Sébastien) Candel, Prof. F. (François) Charru, Prof.
D. (Djimedjo) Kondo, Prof. A. (Alain) Molinari

Georgia (2000)

National Committee of Theoretical and Applied Mechanics
I. Vekua Institute of Applied Mathematics of Tbilisi State University, 2 University Str.,
Tbilisi 0186
President/Chair: Prof. G. (George) Jaiani
Contact: Prof. G. (George) Jaiani
Representative in IUTAM: Prof. G. (George) Jaiani

Germany (1950)

Deutsches Komitee für Mechanik (DEKOMECH)
Clausthal University of Technology, Institute of Applied Mechanics, Adolph-Roemer-
Str. 2a, D-38678 Clausthal-Zellerfeld
President/Chair: Prof. Dr-Ing. S (Stefan) Hartmann
Contact: Prof. P. (Peter) Eberhard
Representatives in IUTAM: Prof. R. (Reinhold) Kienzler, Prof. M. (Martin) Oberlack,
Prof. J. (Jorg) Schumacher, Prof. R. (Robert) Seifried

Greece (1979)

Hellenic Society for Theoretical and Applied Mechanics
National Technical University of Athens, Mechanics Division, Zographou, GR-15773
President/Chair: Prof. J.T. (John) Katsikadelis
Secretary: Prof. H.G. (Haralambos) Georgiadis
Representative in IUTAM: Prof. N. (Nicos) Makris

Hungary (1948)

Hungarian National Committee for IUTAM
Department of Structural Mechanics, Budapest University of Technology and
Economics, Műegyetem rkp. 3, H-1521 Budapest
President/Chair: Prof. G. (Gábor) Stépán
Secretary: Dr. P. (Peter) Varkonyi
Representative in IUTAM: Prof. G. (Gábor) Stépán

India (1950)

National Committee for Theoretical and Applied Mechanics of the Indian National
Science Academy
Bahadur Shah Zafar Marg, New Delhi - 110 002
President/Chair: Prof. V.D. Sharma
Contact: Prof. S. Gopalakrishnan
Representatives in IUTAM: Dr G. (Gautam) Biswas, Dr S. (Sanjay) Mittal, Prof. V.D.
Sharma

Ireland (1984)

Irish National Committee for Mathematical Sciences
Royal Irish Academy, 19 Dawson Street, Dublin 2
Contact: Y. (Yvonne) Graham
Representative in IUTAM: Prof. M. (Michael) Gilchrist

Israel (1950)

The Israel Society for Theoretical and Applied Mechanics (ISTAM)
Faculty of Mechanical Engineering, Technion-Israel Institute of Technology, Haifa
32000
President/Chair: Prof. G. (Gal) deBotton
Contact: Prof. M.B. (Miles) Rubin
Representatives in IUTAM: Prof. M.B. (Miles) Rubin, Prof. G. (Gal) deBotton

Italy (1949)

Associazione Italiana di Meccanica Teorica ed Applicata
Piazza Leonardo da Vinci 32, I-20133 Milano
President/Chair: Prof. P. (Paolo) Luchini
Secretary: Prof. G. (Guido) Borino
Contact: Prof. P. (Paolo) Luchini
Representatives in IUTAM: Prof. D. (Davide) Bigoni, Prof. A. (Alessandro) Bottaro,
Prof. E.F. (Emiliano Fortunato) Campana, Prof. G. (Giuseppe) Rega

Japan (1951)

The National Committee for Theoretical and Applied Mechanics
Science Council of Japan, 7- 22-34 Roppongi, Minato-ku, Tokyo 106-8555
President/Chair: Prof. K. (Kikuo) Kishimoto
Contact: Prof. K. (Kikuo) Kishimoto
Representatives in IUTAM: Prof. K. (Kikuo) Kishimoto, Prof. Y. (Youichirou)
Matsumoto, Prof. N. (Naosi) Nishimura, Prof. O. (Osamu) Sano

Korea, Republic of (2012/1989)

Korean Committee for Theoretical and Applied Mechanics
Department of Aerospace Engineering, Seoul National University, Seoul 151-742
President/Chair: Prof. J.Y. (Jung Yul) Yoo
Contact: Prof. S.J. (Sang Joon) Lee
Representative in IUTAM: Prof. H.J. (Hyung Jin) Sung

Mexico (2008)

Mexican Academy of Sciences
Km 23.5 Carretera Federal México-Cuernavaca, "Casa Tlalpan", Av. Cipreses s/n Col.
San Andrés Totoltepec, Tlalpan, 14400 Mexico
Representative in IUTAM: Prof. E. (Eduardo) Ramos

Netherlands (1952)

Netherlands Mechanics Committee
c/o Eindhoven University of Technology, Department of Mechanical Engineering,
P.O. Box 513, NL 5600 MB Eindhoven.
President/Chair: Prof. D.H. (Dick) van Campen
Contact: Prof. D.H. (Dick) van Campen
Representatives in IUTAM: Prof. M. (Marc) Geers, Prof. G. (GertJan) van Heijst

New Zealand (1979)

The Royal Society of New Zealand, Committee on Mathematical & Information
Sciences
P.O. Box 598, Wellington
Contact: Prof. R. (Rosalind) Archer
Representative in IUTAM: Prof. R. (Rosalind) Archer

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/Chair: Prof. J. (John) Grue
Contact: Prof. J. (John) Grue
Representative in IUTAM: Prof. J. (John) Grue

Poland (1952)

Committee for Mechanics of the Polish Academy of Sciences

ul. Pawlinskiego 5B, 02-106, Warszawa, Poland

President/Chair: Prof. T. (Tadeusz) Burczynski

Contact: Prof. T. (Tadeusz) Burczynski

Representatives in IUTAM: Prof. T. (Tadeusz) Burczynski, Prof. H. (Henryk) Petryk

Portugal (1968)

Portuguese Society of Theoretical, Applied and Computational Mechanics

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

President/Chair: Prof. C.A. (Carlos) Mota Soares

Contact: Prof. C.A.B. (Carlos) Pina

Representative in IUTAM: Prof. D.R.Z. (Dinar) Camotim

Romania (1956)

Romanian Academy, Department of Mathematics, Romanian National Committee of Theoretical and Applied Mechanics

Calea Victoriei 125, 71102 Bucharest, Romania

President/Chair: Prof. H. (Horia) Ene

Representative in IUTAM: Prof. H. (Horia) Ene

Russia (1992/1956)

Russian National Committee on Theoretical and Applied Mechanics

Prospekt Vernadskogo 101 : 1 , Moscow 119526

President/Chair: Prof. I. (Irina) Goryacheva

Secretary: Prof. V. (Vladimir) Karev

Representatives in IUTAM: Prof. F.L. (Felix) Chernousko, Prof. I. (Irina) Goryacheva,

Prof. V. (Vladimir) Levin, Prof. N.F. (Nikita) Morozov

Saudi Arabia (1988)

King Abdullaziz City for Science and Technology

Directorate of Technology and International Cooperation, P.O. Box 6086, Riyadh 11442

President/Chair: Dr. M.I. (Mohammed ibn Ibrahim) Al-Suwaiyel

Contact: Mr. F.S. (Fahad) Huraib, Dr. M.I. (Mohammed ibn Ibrahim) Al-Suwaiyel

Representative in IUTAM: Dr. M.I. (Mohammed ibn Ibrahim) Al-Suwaiyel

Serbia (2006/1952)

Serbian Society of Mechanics

Kneza Milosa 9/1, 11000 Belgrade

President/Chair: Prof. M. (Mihailo) Lazarevic

Secretary: Prof. D. (Damir) Madjarevic

Representative in IUTAM: Prof. M. (Mihailo) Lazarevic

Slovenia (1994)

Slovene Mechanics Society, Faculty of Mechanical Engineering
University of Maribor, Smetanova 17, 2000 Maribor
President/Chair: Prof. L. (Leopold) Skerget
Secretary: Prof. J. (Jure) Marn
Representative in IUTAM: Prof. L. (Leopold) Skerget

South Africa (1994)

National Research Foundation (NRF), South African Association for Theoretical and Applied Mechanics (SAAM)
South African ICSU Secretariat, P.O. Box 2600, Pretoria 0001
President/Chair: Prof. S. (Schalk) Kok
Contact: Prof. S. (Schalk) Kok
Representative in IUTAM: Prof. S. (Schalk) Kok

Spain (2014/1950)

Asociación Española de Integridad Estructural. Grupo Español de Fractura
Dpto. Ciencia de Materiales. ETSI Caminos, Canales y Puertos. , c/ Profesor Aranguren
s/n, 28040, Madrid
Representative in IUTAM: Prof. P. (Pilar) Ariza

Sweden (1950)

Swedish National Committee for Mechanics
Malmö University, 205 06 Malmö
President/Chair: Dr. A. (Anders) Klarbring
Secretary: Prof. H. (Hakan) Hallberg
Representatives in IUTAM: Prof. D. (Dan) Henningson, Prof. S. (Staffan) Lundström,
Prof. P. (Per) Stahle

Switzerland (1950)

Board of the Federal Institutes of Technology
(Rat der Eidgenössischen Technischen Hochschulen)
ETH-Zentrum, CH-8092 Zürich
President/Chair: Dr. F. (Fritz) Schiesser
Contact: Prof. J. (Jürg) Dual, Prof. P.A. (Peter) Monkewitz
Representatives in IUTAM: Prof. J. (Jürg) Dual, Prof. P.A. (Peter) Monkewitz

Turkey (1977)

Turkish National Committee of Theoretical and Applied Mechanics
Istanbul Teknik Üniversitesi, Fen-Edebiyat Fakültesi, Maslak 80626 Istanbul
Secretary: Prof. M.A. (Mehmet Ali) Tasdemir
Contact: Prof. E.S. (Erdogan) Suhubi
Representative in IUTAM: Prof. E.S. (Erdogan) Suhubi

UK (1948)

The Royal Society, UK Panel for IUTAM

6 Carlton House Terrace, London SW1Y 5AG

President/Chair: Prof. N.A. (Norman) Fleck

Secretary: Prof. R. (Richard) Kerswell

Contact: Prof. N.A. (Norman) Fleck

Representatives in IUTAM: Prof. N.A. (Norman) Fleck, Prof. B.L. (Bhushan) Karihaloo,
Prof. N. (Nigel) Peake, Prof. T.J. (Timothy) Pedley

Ukraine (1995)

National Committee of Ukraine on Theoretical and Applied Mechanics

S.P.Timoshenko Institute of Mechanics, 3 Nesterov Str., Kyiv 03680

President/Chair: Prof. A.N. (Alexandr) Guz

Secretary: Prof. J.J. (Jeremiah) Rushchitsky

Representative in IUTAM: Prof. A.N. (Alexandr) Guz

USA (1949)

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

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

President/Chair: Prof. W. K. (Wing Kam) Liu

Secretary: Prof. L. (Linda) Franzoni

Representatives in IUTAM: Prof. W. (Wendy) Crone, Prof. L. P. (Linda) Franzoni, Prof.
S. (Stelios) Kyriakides, Prof. W. K. (Wing Kam) Liu, Prof. G. (Gareth) McKinley

Viet Nam (1990)

Vietnam Association of Mechanics (VAM)

264 Doi Can Str., Hanoi

President/Chair: Prof. N. (Nguyen) Hoa Thinh

Secretary: Prof. D. (Dinh) Van Phong

Contact: Prof. N. (Nguyen) Tien Khiem

Representative in IUTAM: Prof. N. (Nguyen) Tien Khiem

Affiliated Organizations

CISM (1970)

International Centre for Mechanical Sciences
Palazzo del Torso, Piazza Garibaldi, I-33100 Udine, Italy
Rectors of CISM: Prof. Elisabeth Guazzelli,
Prof. Friedrich Pfeiffer and Prof. Franz Rammerstorfer
President/Chair: Mario Pezzetta
Secretary: Prof. B.A. (Bernhard) Schrefler
Contact: Prof. B.A. (Bernhard) Schrefler
Representative of CISM in IUTAM: Prof. B.A. (Bernhard) Schrefler
Representative of IUTAM in CISM: Prof. F. (Frederic) Dias

ICHMT (1972)

International Centre for Heat and Mass Transfer
Mechanical Engineering Dept., Middle East Technical University,
06531 Ankara, Turkey
President/Chair: Prof. K. (Kemal) Hanjalić
Secretary: Prof. F. (Faruk) Arinc
Contact: Prof. F. (Faruk) Arinc
Representative of ICHMT in IUTAM: Prof. F. (Faruk) Arinc
Representative of IUTAM in ICHMT: Dr. R. (Rudolf) Dvorač

ICR (1974)

International Committee on Rheology
President/Chair: Prof. I. (Igor) Emri
Secretary: Prof. M.H. (Manfred) Wagner
Representative of ICR in IUTAM: Prof. L.G. (Gary) Leal
Representative of IUTAM in ICR: *To be nominated*

IAVSD (1977)

International Association for Vehicle System Dynamics
Prof. Michael Valásek, Department of Mechanics, Faculty of Mechanical Engineering,
Czech International University in Prague, Kalovo Nanesti 13,
121 35 Praha 2, Czech Republic
President/Chair: Prof. H. (Hans) True
Secretary: Prof. M. (Michael) Valásek
Contact: Prof. M. (Michael) Valásek
Representative of IAVSD in IUTAM: Prof. M. (Mats) Berg
Representative of IUTAM in IAVSD: Prof. W. (Werner) Schiehlen

EUROMECH (1978)

European Mechanics Society

University of Padova, Faculty of Engineering, Dipartimento di Costruzioni e Trasporti,
35131 Padova, Italy

President/Chair: Prof. G. (GertJan) van Heijst

Secretary: Prof. P. (Pierre) Suquet

Contact: Prof. B.A. (Bernhard) Schrefler

Representative of EUROMECH in IUTAM: Prof. P. (Patrick) Huerre

Representative of IUTAM in EUROMECH: Prof. T.J. (Timothy) Pedley

ISIMM (1978)

International Society for the Interaction of Mechanics and Mathematics

President/Chair: Prof. A. Visintin

Secretary: Prof. U. Stefanelli

Contact: Prof. L. Truskinovsky

Representative of ISIMM in IUTAM: Prof. M.A. (Michael) Hayes

Representative of IUTAM in ISIMM: Prof. G. (Gérard) Iooss

ICF (1978)

International Conference on Fracture

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

President/Chair: Prof.S. (Shouwen) Yu

Secretary: Prof. T. (Toshimitsu) Yokobori Jr.

Representative of ICF in IUTAM: Prof. R.M. (Robert) McMeeking

Representative of IUTAM in ICF: Prof. J.B. (Jean-Baptiste) Leblond

ICM (1982)

International Congress on Mechanical Behaviour of Materials,

President/Chair: Prof. O. (Oliver) Kraft

Secretary: Prof. T. (Toshihiko) Hoshide

Contact: Prof. S.W. (Soo Woo) Nam

Representative of ICM in IUTAM: Prof. S.W. (Soo Woo) Nam

Representative of IUTAM in ICM: *To be nominated*

AFMC (1982)

Asian Fluid Mechanics Committee

Center for Atmospheric and Oceanic Sciences

Indian Institute of Science, Bangalore, India 560012

President/Chair: Prof. G. S. Bhat

Contact: Prof. G. S. Bhat

Representative of AFMC in IUTAM: Prof. G. S. Bhat

Representative of IUTAM in AFMC: Prof. F. (Frederic) Dias

IACM (1984)

International Association for Computational Mechanics
International Center for Numerical Methods in Engineering,
Edificio C-1, Gran Capitán s/n, E-08034 Barcelona, Spain
President/Chair: Prof. W.K. (Wing Kam) Liu
Secretary: Prof. A. (Antonio) Huerta
Representative of IACM in IUTAM: Prof. P. (Pierre) Ladeveze
Representative of IUTAM in IACM: Prof. R. (Eduardo) de Arantes e Oliveira

CACOFD (1992-2010)

Caribbean Congress of Fluid Dynamics
(the acronym CACOFD has been changed into LACCOTAM in 2010 – see LACCOTAM below)

IABEM (1994)

International Association for Boundary Element Methods
President/Chair: Prof. M. (Martin) Schanz
Representative of IABEM in IUTAM: Prof. N. (Naosi) Nishimura
Representative of IUTAM in IABEM: Prof. N. (Naosi) Nishimura

ISSMO (1996)

International Society for Structural and Multidisciplinary Optimization
President/Chair: Prof. G. (Gengdong) Cheng
Secretary: Prof. J.K. (James) Guest
Contact: Prof. N. (Niels) Olhoff
Representative of ISSMO in IUTAM: Prof. Prof. J.K. (James) Guest
Representative of IUTAM in ISSMO: Prof. N. (Niels) Olhoff

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/Chair: Prof. R. (René) Moreau
Secretary: Prof. A. (André) Thess
Contact: Prof. A. (André) Thess
Representative of HYDROMAG in IUTAM: Prof. R. (René) Moreau
Representative of IUTAM in HYDROMAG: Prof. H.K. (Keith) Moffatt

IIAV (1997)

International Institute of Acoustics and Vibration

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

President/Chair: Prof. M. (Marek) Pawelczyk

Secretary: Prof. S. (Semyung) Wang

Contact: Prof. M.J. (Malcolm) Crocker

Representative of IIAV in IUTAM: Prof. M.J. (Malcolm) Crocker

Representative of IUTAM in IIAV: Prof. J.D. (Jan) Achenbach

ICA (1998)

International Commission for Acoustics

President/Chair: Mrs. M. (Marion) Burgess

Secretary: Dr. M. (Michael) Stinson

Contact: Dr. M. (Michael) Stinson

Representative of ICA in IUTAM: Mrs. M. (Marion) Burgess

Representative of IUTAM in ICA: Prof. A. (Andrew) Norris

ICTS (2002)

International Congresses on Thermal Stresses

St. Raphael, Apt. 1209, 7117 Pelican Bay Blvd., Naples, FL 34108, USA

President/Chair: Prof. R.B. (Richard) Hetnarski

Secretary: Prof. T.R. (Theodore) Tauchert

Contact: Prof. R.B. (Richard) Hetnarski

Representative of ICTS in IUTAM: Prof. R.B. (Richard) Hetnarski

Representative of IUTAM in ICTS: Prof. M. (Masato) Abe

BICTAM (2010)

Beijing International Center for Theoretical and Applied Mechanics

Institute of Mechanics, Chinese Academy of Sciences, 15 Beisihuanxi Road, 100190,
Beijing, China

President/Chair: Prof. J. (Jiachun) Li

President/Chair: Prof. H. (Haiyan) Hu

Representative of BICTAM in IUTAM: Prof. H. (Haiyan) Hu

Representative of IUTAM in BICTAM: Prof. N. (Narinder) Gupta

LACCOTAM (2010)

Latin American and Caribbean Conference on Theoretical and Applied Mechanics

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

President/Chair: Prof. F. Malpica

Secretary: Dr. D. M. G. (Donna) Comissiong

Contact: Prof. H. (Harold) Ramkissoon

Representative of LACCOTAM in IUTAM: Prof. H. (Harold) Ramkissoon

Representative of IUTAM in LACCOTAM: *To be nominated*

IASCM (2014)

International Association for Structural Control and Monitoring, USA

Secretary: Professor Sami Masri

Representative of IASCM in IUTAM: Prof. Sami Masri

Representative of IUTAM in IASCM: Prof. Robert Seifried

IMSD (2014)

International Association for Multibody System Dynamics

President/Chair: Professor Sung-Soo Kim

Secretary: Professor Javier Cuadrado

Representative of IMSD in IUTAM: Prof. Peter Eberhard

Representative of IUTAM in IMSD: Prof. Werner Schiehlen

Members of the General Assembly

<i>Member</i>	<i>Representative of</i>	<i>Remarks</i>
Prof. J. (Jan) Achenbach		Member-at-Large
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Prof. R. (Rosalind) Archer	New Zealand	
Prof. P. (Pilar) Ariza	Spain	
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Prof. Y. (Yi-long) Bai	China	
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Prof. G. (Gautam) Biswas	India	
Prof. B. (Bruno) Boley		Member-at-Large
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Prof. F. (Francois) Charru	France	
Prof. F.L. (Felix) Chernousko	Russia	
Prof. W. (Wendy) Crone	USA	
Prof. G. (Gal) deBotton	Israel	
Prof. W. (Wim) Desmet	Belgium	
Prof. F. (Frédéric) Dias		Bureau member
Prof. S. (Sadik) Dost	Canada	
Prof. J. (Jürg) Dual	Switzerland	
Prof. P. (Peter) Eberhard		Bureau member Representative of IMSD
Prof. H. (Horia) Ene	Romania	
Prof. N.A. (Norman) Fleck	UK	Chair SP Solids
Prof. M. (Maciej) Floryan	Canada	
Prof. L. P. (Linda) Franzoni	USA	
Prof. A. (Atila) Freire	Brazil	
Prof. B. (Ben) Freund		Member-at-Large
Prof. M.G.D. (Marc) Geers	Netherlands	
Prof. M. (Michael) Gilchrist	Ireland	

<i>Member</i>	<i>Representative of</i>	<i>Remarks</i>
Prof. I.G. (Irina) Goryacheva	Russia	
Prof. J. (John) Grue	Norway	
Prof. A.N. (Alexandr) Guz	Ukraine	
Prof. G.J.F.(GertJan) van Heijst	Netherlands	
Prof. D. (Dan) Henningson	Sweden	
Prof. H. (Haiyan) Hu	China	Representative of BICTAM
Prof. M.K. (Mohamed) Ismail	Egypt	
Prof. G. (George) Jaiani	Georgia	
Prof. B.L. (Bhushan) Karihaloo	UK	
Prof. R. (Reinhold) Kienzler	Germany	
Prof. K. (Kikuo) Kishimoto	Japan	
Prof. A. (Alfred) Kluwick	Austria	
Prof. S. (Schalk) Kok	South Africa	
Prof. D. (Djimedjo) Kondo	France	
Prof. R. (Reijo) Kouhia	Finland	
Prof. S. (Stelios) Kyriakides	USA	
Prof. M. (Mihailo) Lazarevic	Serbia	
Prof. G. (Gary) Leal		Chair SP Fluids Representative of ICR
Prof. A.Y.T. (Andrew) Leung	China-Hong Kong	
Prof. V. (Vladimir) Levin	Russia	
Prof. J. (Jiachun) Li	China	
Prof. W.K. (Wing Kam) Liu	USA	
Prof. F. (Fernando) Lund	Chile	
Prof. S. (Staffan) Lundstrom	Sweden	
Prof. G. (Giulio) Maier		Member-at-Large
Prof. N. (Nicos) Makris	Greece	
Prof. Y. (Yvan) Marusic	Australia	
Prof. Y. (Youichirou) Matsumoto	Japan	
Prof. G. (Gareth) McKinley	USA	
Prof. R.M. (Robert) McMeeking		Secretary CC Representative of ICF
Prof. S. (Sanjay) Mittal	India	
Prof. K. (Keith) Moffatt		Member-at-Large
Prof. A. (Alain) Molinari	France	
Prof. P.A. (Peter) Monkewitz	Switzerland	
Prof. N.F. (Nikita) Morozov	Russia	
Prof. R. (Roddam) Narasimha		Member-at-Large
Dr C. (Christian) Niordson	Denmark	
Prof. N. (Naosi) Nishimura	Japan	Representative of IABEM
Prof. M. (Martin) Oberlack	Germany	
Prof. M. (Miloslav) Okrouhlik	Czech Republic	

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Prof. N. (Niels) Olhoff		Member-at-Large
Prof. J. (Juha) Paavola	Finland	
Prof. N. (Nigel) Peake	UK	
Prof. T.J. (Timothy) Pedley	UK	Bureau member
Prof. H. (Henryk) Petryk	Poland	
Prof. A. (Alvaro) Prata	Brazil	
Prof. S. (Stefan) Radev	Bulgaria	
Prof. E. (Eduardo) Ramos	Mexico	
Prof. G. (Giuseppe) Rega	Italy	
Prof. M.B. (Miles) Rubin	Israel	Bureau member
Prof. A. (Andrus) Salupere	Estonia	
Prof. O. (Osamu) Sano	Japan	
Prof. W. (Werner) Schiehlen		Member-at-Large
Prof. B.A. (Bernhard) Schrefler		Bureau member Representative of CISM
Prof. J. (Jorg) Schumacher	Germany	
Prof. R. (Robert) Seifried	Germany	
Prof. V.D. Sharma	India	
Prof. S. (Suresh) Shrivastava	Canada	
Prof. L. (Leopold) Skerget	Slovenia	
Prof. S. (Scott) Sloan	Australia	
Prof. Y.S. (Yorgos-Socrates) Smyrlis	Cyprus	<i>Observer</i>
Prof. P. (Per) Stahle	Sweden	
Prof. G. (Gabor) Stepan	Hungary	
Prof. E.S. (Erdogan) Suhubi	Turkey	
Prof. H.J. (Hyung Jin) Sung	Republic of Korea	
Prof. J.N. (Jens Nørkær) Sørensen	Denmark	
Prof. T. (Tomomasa) Tatsumi		Member-at-Large
Prof. N. (Nguyen) Tien Khiem	Viet Nam	
Prof. G. (Goran) Turkalj	Croatia	
Prof. V. (Viggo) Tvergaard		Bureau member
Prof. D. (Dirk) Vandepitte	Belgium	
Prof. J. (Jan) Vierendeels	Belgium	
Prof. W.C. (Wei Chung) Wang	China-Taipei	
Prof. L. (Leen) van Wijngaarden		Member-at-Large
Prof. W. (Wei) Yang	China	Bureau member
Prof. J.W. (Jean) Zu	Canada	

Observers to the General Assembly

<i>Name</i>	<i>Country</i>	<i>Representative of</i>
Prof. F. (Faruk) Arinc	Turkey	ICHMT
Prof. M. (Mats) Berg	Sweden	IAVSD
Prof. G.S. Bhat	India	AFMC
Prof. M. (Marion) Burgess	Australia	ICA
Prof. M.J. (Malcolm) Crocker	USA	IIAV
Prof. J. (James) Guest	USA	ISSMO
Prof. M. (Michael) Hayes	Ireland	ISIMM
Prof. R.B. (Richard) Hetnarski	USA	ICTS
Prof. P. (Patrick) Huerre	France	EUROMECH
Prof. P. (Pierre) Ladeveze	France	IACM
Prof. S. (Sami) Masri	USA	IASC
Prof. R. (René) Moreau	France	HYDROMAG
Prof. S.W. (Soo Woo) Nam	Korea	ICM
Prof. H. (Harold) Ramkissoon	Trinidad & Tobago	LACCOTAM

Members of the Congress Committee

*Year indicates end of term

Member	Country	Year*	Remarks
Prof. L. (Leslie) Banks-Sills	Israel	2016	
Prof. D. (Davide) Bigoni	Italy	2018	
Prof. D.H. (Dick) van Campen	Netherlands	2016	Member of XCCC
Prof. R. (Renato) Cotta	Brazil	2018	
Prof. F. (Frédéric) Dias	Ireland	2016	
Prof. P. (Peter) Eberhard	Germany	2018	
Prof. B. (Bruno) Eckhart	Germany	2016	Member of XCCC
Prof. H. (Horacio) Espinosa	USA	2016	
Prof. M. (Maciej) Floryan	Canada	2016	Member of XCCC
Prof. H. (Huajian) Gao	USA	2016	
Prof. M. (Michael) Gilchrist	Ireland	2018	
Prof. N.K. (Narinder) Gupta	India	2016	
Prof. G. (Gertjan) van Heijst	Netherlands	2018	
Prof. P. (Patrick) Huerre	France	2016	
Prof. Y. (Yukio) Kaneda	Japan	2016	
Prof. A. (Ann) Karajozian	USA	2016	
Prof. D. (Djimedjo) Kondo	France	2016	
Prof. P. (Paul) Linden	UK	2018	
Prof. T.J. (Tian Jian) Lu	China	2016	
Prof. J. (Jacques) Magnaudet	France	2016	Member of XCCC
Prof. N. (Nicos) Makris	Greece	2016	
Prof. V. (Valery) Matveenko	Russia	2016	
Prof. R.M. (Robert) McMeeking	USA	2016	Secretary of XCCC
Prof. S. (Sanjay) Mittal	India	2018	
Prof. R. (Renzo) Piva	Italy	2016	
Prof. K. Ravi-Chandar	USA	2018	
Prof. E. (Eric) Shaqfeh	USA	2016	
Prof. G. (Gabor) Stépan	Hungary	2016	Member of XCCC
Prof. H. (Howard) Stone	USA	2018	
Prof. K. (Kazuo) Tanishita	Japan	2018	
Prof. V. (Viggo) Tvergaard	Denmark	2016	President of XCCC
Prof. J. (Jens) Walther	Denmark	2016	
Prof. J. (Jianxiang) Wang	China	2018	

Members of the Symposia Panels

In 1977 the Bureau of IUTAM 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.

Symposia Panel for Fluid Mechanics:			
<i>Member</i>	<i>Country</i>	<i>Year*</i>	<i>Remarks</i>
Prof. H. (Haecheon) Choi	Korea	2018	
Prof. R. (Rama) Govindarajan	India	2018	
Prof. L.G. (Gary) Leal	USA	2016	Chair
Prof. D. (Detlef) Lohse	Netherlands	2018	
Prof. N. (Nigel) Peake	UK	2016	
Symposia Panel for Solid Mechanics			
<i>Member</i>	<i>Country</i>	<i>Year*</i>	<i>Remarks</i>
Prof. A. (Alberto) Corigliano	Italy	2016	
Prof. N.A. (Norman) Fleck	UK	2016	Chair
Prof. H. (Huajian) Gao	USA	2016	
Prof. J.-B. (Jean-Baptiste) Leblond	France	2016	
Prof. T.J. (Tian Jian) Lu	China	2018	

*Year indicates end of term

Donations in 2015

Donations given to IUTAM Symposia are recorded under the heading “Financial Support” of the Reports of Symposia and Summer Schools held in 2015.

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. V. Tvergaard
COSPAR	Committee on Space Research	<i>To be nominated</i>
SCOR	Scientific Committee on Oceanic Research	<i>To be nominated</i>

Report of IUTAM Symposia held in 2015

15-1 IUTAM Symposium on Bubbly Flows

Oaxaca, Mexico, March 9 – March 12, 2015

The IUTAM Symposium on Bubbly Flows was held at the Instituto de Investigaciones Estéticas (Oaxaca Campus) of Universidad Nacional Autónoma de México, during the week of March 9-12, 2015.

a) Scientific and Organizing Committee

Roberto Zenit (Chair), Universidad Nacional Autónoma de México (Mexico); Detlef Lohse (Co-Chair), University of Twente (The Netherlands); Gretar Tryggvason, University of Notre Dame, (USA); Andrea Prosperetti, Johns Hopkins University (USA); Frederic Risso, Institut de Mécanique des Fluides de Toulouse (France); Octavio Cazares, Instituto Mexicano del Petróleo (Mexico); Jacques Magnaudet (IUTAM Representative), Institut de Mécanique des Fluides de Toulouse (France).

b) Short summary of scientific progress achieved

This meeting brought together the leading researchers in the subject of bubbly flows. The main objective of the meeting was to expose the leading ideas in the subject to the community. There are several aspects of the field which are nearly resolved, for instance, the mixing induced by bubbles. Conversely, other subjects are hardly understood, such as the mechanics of surface nano-bubbles. As expected, the symposium helped advance the field by direct discussion among small groups of researchers in a relaxed and highly specialized atmosphere.

Similarly, there were several presentations that were directly motivated by emerging technologies. Examples of these are the glass manufacturing and the liquid metal refining industries. In both of these, bubbles are ever present. Advances in their respective technologies will only be possible if the fundamentals are understood. The meeting was successful in bringing together applied and fundamental researchers to exchange ideas. On the one hand, what is already known in fundamental research is very helpful to improve the operation of industrial applications; conversely, many unresolved issues in industry may motivate and re-direct more fundamental research projects.

The symposium brought together people in the field. Such synergies were explored. Several collaborations started as a result of the meeting.

Another important aspect of the symposium was the exposure of the Mexican scientific community to a wider audience. Although several Mexican researchers are well known in the fields, the careers of some others remain modest. The meeting

helped these less know researchers to enter in direct contact with international leaders. Such interactions help to promote the improvement of the scientific community in Mexico.

c) Countries represented and number of participants

The number of registered participants was 41, all of which were researchers and professors; additionally, 16 graduate students from Mexico also attended (no presentations were given by students). Researchers from Japan (3), France (11), USA (8), The Netherlands (3), Italy (2), Germany (2), Australia (1), Spain (1) and Mexico (10) participated.

d) Publication of Proceedings

A symposium report will be published in the International Journal of Multiphase Flow (to appear in 2016). In this report all the extended abstracts of the symposium will be included. To ensure wide access, the report will be made Open Access.

e) Financial and other support

The following institutions provided financial support for the event: IUTAM (\$5000 USD) and CONACyT (\$110,000 Mexican pesos, aprox. \$6500 USD). UNAM (The National Autonomous University of Mexico) provided significant non-financial support (meeting room, wifi, computer and projection equipments, administrative assistance free of charge.)

f) Scientific program

Monday March 9, 2015

11:00am, S. Takagi, Bubble clustering and turbulence modulation

11:40am, E. Climent, Mass transfer and chemical reactions around a bubble rising under Stokes flow

12:00pm, D. Fuster, Mass transfer effects during the collapse of gas/vapor cavities

12:20pm, E. Ramos, Perturbation of the temperature distribution in a fluid due to the transit of bubbles

12:40pm, E. Johnson, Single-bubble dynamics in tissue-like media

3:00pm, J. Katz, Performance breakdown of turbomachines by cavitating vortical structures

3:40pm, C. Sun, Wake effects on light Lagrangian particles in turbulence

4:00pm, M. Lance, Experimental study of stratification and regime transition in horizontal bubbly flow

4:20pm, O. Cazarez, Modeling of upward water-heavy oil-gas bubbly flow in vertical pipes

4:40pm, A. Aguilar, Determination of the bubble diffusion coefficient in a thin channel

Tuesday March 10, 2015

9:00am, G. Tryggvason, DNS of bubbly flows: Multiscale issues

9:40am, J. Rodriguez, Topics on the growth and dissolution of CO₂ bubbles and on the translation of bubbles under the effect of a sound field

10:00am, T. Tagawa, Bubble path instability in various surfactant solutions

10:20am, A. Aliseda, Hydrodynamic forces on microbubbles under ultrasound excitation

11:00am, C. Clanet, Bubbles and cavities

11:40am, F. Risso, Mixing induced by bubbles

12:00am, D. Van der Meer, Collapse of a non-axisymmetric air cavity in water

12:20pm, T. Sanada, Generation, deformation, wake, and interaction of bubbles at intermediate Reynolds number

12:40pm, A. Ruiz, Drift by air bubbles crossing an interface of a stratified medium at small Re

3:00pm, R. Verzicco, Numerical simulation of bubbly flows by a multi-physics Lagrangian model

3:40pm, M. Schuler, Experimental investigations on mass transfer in reactive bubbly flows

4:00pm, J. Ramirez, Simulation of free surface vortex and air drawdown in an unbaffled tank stirred with a high shear impeller

4:20pm, F. Pigeonneau, Gravity-driven thinning of a high viscous liquid and interface deformation as a bubble reaches a free surface

4:40pm, A. Belmonte, Sedimentation and splashing against the odds

Wednesday March 11, 2015

9:00am, A. Prosperetti, Vapor bubbles and vaporous bubbly liquids

9:40am, A. Sangani, Bubbly liquids subjected to ambient pressure changes

10:00am, D. Legendre, Looking under the skirt of ... a bubble

10:20am, R. Zenit, The pearls of mezcal: A traditional technique explained

11:00am, L. Van Wijngaarden, Professor Andrea Prosperetti 70 Years !

11:40am, A. Soldati, Coalescence and breakup of large droplets in shear and turbulent flows

12:00am, M. Ramirez, Physical modeling of two-phase and three-phase gas stirred ladles

12:20am, H. Chanson, Bubbly flow in hydraulic jumps at large Reynolds numbers

12:40am, G. Espinosa, Equations for multiphase flow without length-scale restrictions

Thursday March 12, 2015

9:00am, J. Magnaudet, Rising, settling, tailing: How do air bubbles and heavy particles fight with fluid-fluid interfaces?

- 9:40am, A. Loisy, Macroscale modeling of passive scalar transport in bubbly suspensions
- 10:00am, B. Figueroa, Symmetric and asymmetric motion of Taylor bubbles in vertical ducts and flowing liquid
- 10:20am, D. Bothe, On the multi-physics of mass-transfer across fluid interfaces: modeling and numerical simulation
- 11:00am, D. Lohse, Surface nanobubbles and nanodroplets: the big picture
- 11:40am, P. Ern, The oscillatory motion and wake of a bubble freely rising in a thin-gap cell
- 12:00pm, S. Baz, Interfacial force on gas-liquid bubbly flows: a volume averaging approach to the closure issue
- 12:20pm, M. Bourgoin, Turbulent pair dispersion as a ballistic cascade process
- 12:40pm, C. Brennen, Bubbles emerging from a submerged granular bed

Report composed by R. Zenit

15-2 IUTAM Symposium on Ductile Failure and Localization

Paris, France, March 17 – March 20, 2015

The IUTAM Symposium on Ductile Failure and Localization was held at the “Maison des Polytechniciens” conference venue in Paris from March 17-20, 2016. 50 participants from 11 different countries attended the symposium; 39 presentations, each lasting 35 minutes were delivered. The symposium was co-chaired by Professor D. Mohr from Ecole Polytechnique and Prof. K. Ravi-Chandar from the University of Texas. Financial support from the Solid Mechanics Laboratory (LMS), Ecole Polytechnique and Altair Engineering (Sophia-Antipolis, France) was gratefully acknowledged. A special volume on this IUTAM Symposium will be published shortly in the International Journal of Fracture.

a) Scientific Committee

F. Barlat, Pohang University, Korea; D. Mohr, Ecole Polytechnique, France; M. Kuroda, Yamagata University, Japan; S. Kyriakides, UT Austin, USA; T. Pardoen, University of Louvain, Belgium; K. Ravi-Chandar, UT Austin, USA; S. Reese, RWTH Aachen, Germany; J.W. Yoon, Swinburne University, Australia

b) Short summary of the progress achieved

The symposium brought together leading physicists and engineering scientists working in both academia and industry with interest in ductile failure and plastic localization. The number of participants was balanced in the sense that the talks could be grouped into three subareas, namely microscopic observations and analysis, phenomenological modeling of ductile fracture and porous plasticity. The attendance was equally strong on all four days. We observed a remarkably active discussion among all subgroups of researchers working in the field which usually do not meet or exchange at regular international conferences. In particular, the recent progress on in-situ tomography fracture experiments has been well demonstrated and eventually generated a needed stimulus and guidance for the theoretically-inclined researchers working on advanced porous plasticity models. The presentations from researchers taking an industrial approach have also been enriching as they provided a valuable insight into the advanced state of modeling ductile fracture in industrial practice that is usually not visible in the scientific literature.

c) Countries represented and number of participants

There were 50 participants from Australia (1), Belgium (2), Canada (3), France (22), Germany (2), India (1), Japan (4), Russia (1), Sweden (1), Turkey (1), USA (12).

d) Publication of proceedings of the symposium

The review and processing of the manuscripts is nearly complete. The Special Volume of the International Journal of Fracture is expected to appear in March 2016.

e) Financial support

Each participant paid a registration fee of 420 EUR. To cover all third party expenses (conference center, meals, social events), the company Altair Engineering contributed 5000€ and Ecole Polytechnique contributed about 7000€. Springer will publish the special volume free of charge.

f) Scientific program

Tuesday, March 17, 2015

9:00 – 9:35 am Patrick LeTallec, Director of the LMS; Dirk Mohr & K. Ravi-Chandar, co-chairs; Welcome Address

9:35 – 10:10 am Eric Maire

Ductile Damage Studied by X-Ray Computed Tomography

10:10 – 10:45 am Hiroyuki Toda

Origin of Ductile Fracture in Aluminium Alloys

11:15 – 11:50 am David Wilkinson

Studies of Ductile Fracture in Pure Metals Using Model Materials

11:50 – 12:25 pm Kengo Yoshida

Stretchability and Local Strain Heterogeneity in Az31 Rolled Sheet

12:25 – 1:00pm Lionel Morancay

R&D on Ductile Fracture at Altair Engineering (Symposium Sponsor)

2:30 – 3:05 pm Thilo Morgeneyer

Strain and Damage Interactions in a Ductile Polycrystalline Solid Containing Initial Porosity: In Situ 3D Measurements

3:05 – 3:40 pm François Hild

Experimental Analysis of Ductile Failure in Metal Sheets: Early Strain Localization Precedes Crack Path

3:40 – 4:15 pm Gilles Rousselier

Strain Localization in Porous Plasticity Combined with Coulomb and Portevin-Le Chatelier Models

4:45 – 5:20 pm Cihan Tekoğlu

Plastic Flow Localization Leading To Ductile Fracture

5:20 – 5:55 pm Thomas Pardoen; Closing Lecture – DAY 1

Wednesday, March 18, 2015

9:00 – 9:35 am Jeong Whan Yoon

Ballistic Fracture Modeling Under Temperature Dependent Strain Rate Sensitivity

9:35 – 10:10 am Michael Brüning

Stress State Dependence of Ductile Damage and Fracture: Biaxial Experiments and Numerical Simulations

10:10 – 10:45 am Xiaosheng Gao

Modeling the Effects of Stress State on Plastic Deformation and Ductile Fracture

11:15 – 11:50 am Cliff Butcher

Ductile Fracture of Advanced High Strength Steels in a Sheared Edge Stretching Operation

11:50 – 12:25 pm Michael Worswick

Failure Criteria for Tailored Hot Stamped Boron Steel Sheet Under Varying Strain Paths

12:25 – 1:00pm Thomas Stoughton

New Solutions for Modeling Necking & Fracture

2:30 – 3:05 pm Stelios Kyriakides

Ductile Failure of an Aluminum Alloy Under Combined Shear and Tension

3:05 – 3:40 pm Toshihiko Kuwabara

Forming Limit Analyses of Low Carbon Steel Sheet Using a Differential Hardening Model

3:40 – 4:15 pm Yannis Korkolis

Necking of Pressurized Tubes of 304L Stainless Steel Under Tension

4:45 – 5:20 pm Olivier Allix

Evaluation of Stress Triaxiality in a Notched Titanium Alloy Sample Via Integrated DIC

5:20 – 5:55 pm Dirk Mohr; Closing Lecture – DAY 2

Thursday, March 19, 2015

9:00 – 9:35 am Nicolas Triantafyllidis

Localization and Loss of Macroscopic Ellipticity In Microstructured Solids

9:35 – 10:10 am Christian Miehe

Phase Field Modeling of Ductile Fracture

10:10 – 10:45 am Jacques Besson

A Two Length Scale Model for Ductile Fracture: Application to Cup-Cone Fracture

11:15 – 11:50 am Mitsutoshi Kuroda

A Strain Gradient Plasticity Model with a Corner-Like Effect and its Application to Shear Band Analysis at Finite Strains

11:50 – 12:25 pm Lallit Anand

Plasticity and Strain Localization in Metallic Glasses and Granular Materials

12:25 – 1:00pm Markus Feucht

Failure Prediction in Automotive Crash Analysis: Aspects of Current Modeling Techniques

2:30 – 3:05 pm Sergei Alexandrov

Plastic Strain Localization and Ductile Fracture Near Surfaces With High Friction

3:05 – 3:40 pm Mark Messner and Robert Dodds

A Multiscale Model for Delamination Fracture in Al-Li Alloys

3:40 – 4:15 pm R. Narasimhan

Effect of Tensile Twinning on Mode I Fracture Behavior of Magnesium

4:45 – 5:20 pm Pierre-Olivier Bouchard

Analysis of Void Clusters Arrangements on Coalescence Using a New Body-Fitted Immersed Volume Method for the Modeling of Ductile Fracture at the Microscale
5:20 – 5:55 pm K. Ravi-Chandar; Closing Lecture – DAY 3

Friday, March 20, 2015

9:00 – 9:35 am Sebastien Mercier

Dynamic Behavior of Porous Ductile Materials With Spheroidal Voids: Effect of Micro Inertia

9:35 – 10:10 am Alain Molinari

Modelling of the Void Coalescence Stage in Dynamic Ductile Failure

10:10 – 10:45 am Jonas Faleskog

An Imperfection Based Localization Analysis of Porous Plastic Solids That Depends on I_1 , J_2 and J_3

11:15 – 11:50 am Jean-Baptiste Leblond

Numerical Study and Theoretical Modeling of Ductile Rupture Under Cyclic Loadings

11:50 – 12:25 pm Pedro Ponte Castañeda

The Effect of Void Rotations on The Macroscopic Response of Porous Metals and Implications for Shear Localization

12:25 – 1:00 pm Kostas Danas

Modeling Of Porous Materials Consisting of Isotropic and Anisotropic Matrix and Implications on Deformation Localization

2:30 – 3:05 pm Oana Cazacu

Importance of Consideration of the Specificities of the Plastic Flow of the Matrix on the Response of Porous Solids

3:05 – 3:40 pm Ahmed Benallal

On the Structure of Constitutive Equations for Ductile Porous Solids with Complex Matrix Behavior

3:40 – 4:15 pm Alan Needleman; Closing Lecture – DAY 4

Report composed by D. Mohr

15-3 IUTAM Symposium on Growing Solids

Moscow, Russia, June 23 – 27, 2015

a) Scientific Committee

Alexander Manzhurov (Chair), Institute for Problems in Mechanics of the Russian Academy of Sciences, Russia; Holm Altenbach, Otto von Guericke University Magdeburg, Germany; James De Yoreo, Pacific Northwest National Laboratory, USA; Marcelo Epstein, Schulich School of Engineering, University of Calgary, Canada; Gerard Maugin, Institut Jean Le Rond d'Alembert, Pierre-and-Marie-Curie University, France; John Middleton, Biomaterials/Biomechanics Research Centre, Cardiff University School of Dentistry, UK; Qing-Ping Sun, Hong Kong University of Science & Technology, China; IUTAM Representative: Narinder Gupta, Indian Institute of Technology Delhi, India

b) Short summary of scientific progress achieved

The symposium program covers such topics as the fundamental problems of growth processes of solids, numerical modeling of growth, moving boundaries and interfaces, surface science, phase transitions, dislocations and disclinations in solids, crystal growth, growth of bone and soft tissues, laser deposition, solidification of melts, electrolytic formation, and engineering applications. During the IUTAM Symposium on Growing Solids, a joint discussion of fundamental, computational, and applied problems of the new scientific area by leading mechanicians, mathematicians, physicists, and technologists and exchange of the latest ideas and achievements, as well as working out the main directions of its further development, were carried out.

c) Countries represented and number of participants

88 participants: Armenia (2); Canada (1); France (4); Germany (4); Hong Kong (1); India (3); Iran (1); Japan (1); Latvia (3); Russia (62); South Africa (5); United Kingdom (1)

d) Publication of Proceedings of the Symposium

The Proceedings of the Symposium will be published under the title “IUTAM Symposium on Growing solids,” and the final approved manuscript will be submitted to the Publisher not later than half a year after the Symposium.

e) Financial support

The Symposium was supported by an IUTAM Grant of \$6,000.00. The financial report was sent to the Treasurer of IUTAM Prof. Eberhard on June 29, 2015.

f) Scientific Program

24 June 2015 (Wednesday)

Keynote Session 1

Chairs: N. Gupta and G. Maugin

10:00–10:15 Opening Ceremony

10:15–10:50 A. Manzhairov and N. Gupta, Fundamentals of Continuous Growth Processes in Technology and Nature

10:50–11:25 A. Freidin, N. Morozov, L. Sharipova, and E. Vilchevskaya, Kinetics of Phase Boundaries and Chemical Reaction Fronts in Deformable Solids

11:50–12:25 S. Lychev and H. Altenbach, Growing Shells. Theoretical Modeling and Experimental Identification

12:25–13:00 M. Epstein, Between Remodeling, Aging and Growth

Oral Session 1

Chairs: Q.-P. Sun and A. Freidin

14:00–14:15 H. Altenbach and V. Eremeyev, On Mechanics of Growing Shells and Plates

14:15–14:30 G. Balaganesan, N. Gupta, and R. Velmurugan, Impact Loading of Laminated Nanocomposites in Thermal Environment

14:30–14:45 M. Wolff and M. Böhm, Some Aspects About Moving Sharp Interfaces

14:45–15:00 M. Starostenkov, P. Chaplygin, A. Chaplygina, and A. Potekaev, Investigation of Growth Ordered Phases in the Alloy Nial Equiatomic Composition During Stepwise Cooling

15:15–15:30 K. Kukudzhanov and A. Levitin, Phase Transformations in Metals Stimulated by a Pulsed High-Energy Electromagnetic Field

15:30–15:45 I. Sapchenko, O. Komarov, S. Zhilin, and D. Potianikhin, The Influence of Alkali Metal Chlorides on the Manufacturing Process and Steel Properties in Aluminothermic Reduction of Iron

15:45–16:00 M. Shatalov, J. Bidie, and G. Lekalakala, Quasi-Resonance Behavior of Viscoelastic Growing Rods Subjected to Free and Forced Longitudinal Vibrations

16:00–16:15 G. Lekalakala, M. Shatalov, and I. Fedotov, The Behavioural Pattern of the Longitudinally Vibrating Rod that is Accreting in Cross-Sectional Area

16:15–16:30 R. Faiez, Numerical Simulation of Axisymmetric Oscillatory Flow in a Semi-Transparent Czochralski Oxide Melt

25 June 2015 (Thursday)

Keynote Session 2

Chairs: H. Altenbach and M. Epstein

10:00–10:35 N. Shakura, K. Postnov, and G. Lipunova, Accretion Disks in Astrophysics

- 10:35–11:10 A. Voloshin, T. Nishinaga, A. Prostomolotov, and N. Verezub, The Reconstruction of GaSb:Te Crystal Growth in Space Experiment
- 11:30–12:05 P. Ciarletta, Mathematical Approaches to Morphogenesis in Growing Living Matter
- 12:05–12:40 Q.-P. Sun, The Impact of Material Internal Length Scales on the Growth of Phases in Solids

Oral Session 2

Chairs: P. Ciarletta and V. Hakobyan

- 14:00–14:15 E. Kossovich, A. Golyadkina, N. Chelnokova, I. Kirillova, L. Kossovich, A. Polienko, and M. Shevtsova, Biomechanical Study of Atherogenesis in Thoracic Aortic Segment
- 14:15–14:30 S. Logvenkov and A. Stein, Mathematical Modeling of Plant Root Growth
- 14:30–14:45 D. Parshin and V. Hakobyan, Analysis of the Stress-Strain State of an Aging Viscoelastic Arch Fabricated Additively under Gravity for Various Time Modes of Layer-by-Layer Accretion
- 14:45–15:00 V. Erofeev, Nonlinear Acoustic Waves in Solids with Dislocations
- 15:00–15:15 M. Polonik and E. Murashkin, On Compatibility Condition for Moving Surfaces with Additional Constraints
- 15:30–15:45 D. Razdoburdin, A Study of Transient Dynamics of Perturbations in Keplerian Discs Using a Variational Approach
- 15:45–16:00 K. Malanchev, Numerical Simulation of X-Ray Nova Light Curves
- 16:00–16:15 O. Smetannikov and V. Matveenko, Shape Defects of Cell-Filled Photopolymer DLP-Prototypes
- 16:15–16:30 K. Koyfman and A. Sahakian, Growing Elastic Hemisphere on a Smooth Rigid Foundation
- 16:30–16:45 R. Khmyrov and A. Gusarov, Synthesis of Nanostructured WC-Co Hardmetal by Selective Laser Melting

26 June 2015 (Friday)

Poster Session

Chair: M. Shatalov and J. Middleton

- 10:00–11:30 Yu. Chirkunov, Nonlinear Diffusion in the Inhomogeneous Medium Involving Absorption
- E. Dats, E. Murashkin, and N. Gupta, On the Formation of Plastic Flow Areas under Thermo-mechanical Effect
- J.-F. Ganghoffer and G. Ibrahim, A Multiscale Model for Bone Remodelling Based on Eshelby Stress
- Sh. Guseynov, J. Kaupuzs, and A. Medvid', Analytical-Numerical Modeling Of Surface Nanostructure Formations After Laser Irradiation

- G. Gvozdeva, T. Tarasova, and S. Nowotny, Laser Microcladding of Al-Si Alloys: Solidification Behavior and Structure Features
- J. Kaupuzs, A. Medvid, and Sh. Guseynov, Growth of Microcones on a Solid Surface after Laser Irradiation
- E. Kossovich, A. Golyadkina, N. Chelnokova, I. Kirillova, and L. Kossovich, Hystomorphological and Biomechanical Study of Atherogenesis
- S. Lychev, P. Bychkov, and I. Saifutdinov, Holographic Interferometry of Thin-walled Structure Distortion During the Stereolithography Process
- S. Lychev, A. Manzhairov, M. Shatalov, and I. Fedotov, Transient Temperature Fields in Growing Bodies Subject to Discrete and Continuous Growth Regimes
- M. Mikhin and V. Klindukhov, Some Plane Problems in Mechanics of Growing Solids
- N. Stadnik, Mathematical Modeling of Surface Growth of Biological Tissues
- M. Starostenkov, P. Tabakov, V. Romanenko, and E. Chernykh, Regularities Filling Coordination Spheres in the Crystal Lattice of the Cubic Symmetry
- T.V. Tarasova and A.A. Filatova, Methods for Controlling Particle Size in Corrosion-Resistant Steel Powders

27 June 2015 (Saturday)

Oral Session 3

Chair: A. Manzhairov and S. Lychev

10:00–10:15 K. Kazakov, S. Kurdina, and A. Manzhairov, Multibody Contact Problems for Discretely Growing Systems

10:15–10:30 A. Okunkova, P. Peretyagin, P. Podrabinnik, I. Zhirnov, and A. Gusarov, Development of Laser Beam Modulation Assets for Process Productivity Improvement of Selective Laser Melting

10:30–10:45 C. Protasov and A. Gusarov, Modeling the Effect of Beam Shaping at Selective Laser Melting

10:45–11:00 D. Kotoban, A. Nazarov, and I. Shishkovsky, Comparative Study of Selective Laser Melting and Direct Laser Metal Deposition of Ni₃Al Intermetallic Alloy

11:00–11:15 R. Khmyrov, I. Shishkovsky, V. Safronov, and A. Nazarov, Fabrication of Gradient Structures in the Ni-Al System via SLM Process

11:15–11:30 P. Podrabinnik and I. Shishkovsky, Laser Post Annealing of Cold-Sprayed Al–Ni Composite Coatings for Green Energy Tasks

12:00–13:00 Closing Ceremony

CONCLUSIONS

- IUTAM Symposium on Growing solids has made for substantial progress in the solution of fundamental and applied problems in mechanics, physics, astronomy, biology, and medicine as well as of various interdisciplinary problems in natural sciences.

- The Symposium has been the first to bring together scientists, engineers, technologists, and other specialists interested in growth problems, which permitted exchange of information on the most recent original results, which are often unknown even to specialists in related fields.
- The Symposium has laid foundations for further international and interdisciplinary collaboration on growth problems.
- The Symposium has been held at a high scientific level. Its program has been completely fulfilled, and the aims met.
- The participants note the flawless operation of the Organizing Committee of the Symposium, which has made their stay in Moscow not only very useful but also interesting and pleasant.

THE IUTAM SYMPOSIUM ON GROWING SOLIDS DECLARATION

- The problem of growth of solids is a topical problem of natural science, which is yet to be solved completely.
- To solve this problem, coordinated effort of specialists in various fields of science, including mechanics, physics, chemistry, and biology, is needed.
- International events held under the aegis of IUTAM should become an efficient tool for information exchange and for the organization of interdisciplinary studies on growth problems.
- The IUTAM Symposium on Growing solids expresses the opinion that the following directions of fundamental and applied research are most promising:
 - Development and construction of a theory of surface and volume growth of solids with regard to phase transitions.
 - Creation of efficient mathematical models and experimental background for the description of technological processes of additive manufacturing, crystal growth, solidification, etc.
 - Modeling growth processes in organic and inorganic nature, including tissue growth processes in biology and medicine.

Report composed by A. Manzhurov

15-4 IUTAM Symposium on Analytical Methods in Nonlinear Dynamics Frankfurt, Germany, June 6 – 9, 2015

a) Scientific Committee

Prof. Peter Hagedorn (Germany – Chairman); Dr. Gottfried Spelsberg-Korspeter (Germany); Prof. Jan Awrejcewicz (Poland); Prof. Giuseppe Rega (Italy); Prof. Jon Juel Thomsen (Denmark) Prof. Richard Rand (USA); Prof. Alois Steindl (Austria); Prof. Ferdinand Verhulst (The Netherlands); Prof. Peter Eberhard (Germany – IUTAM Representative)

b) Short summary of the scientific progress achieved

From the abstracts submitted for the Symposium, 46 papers had been selected for oral presentation. Due to uncontrollable circumstances, 1 scientist could not give his talk, i.e. 45 presentations were finally given at the Symposium. In addition, 10 papers were selected for a poster session, but of these only 3 were presented.

In the past decades various new approaches for the analytical analysis of nonlinear dynamics have been developed and others have been perfected. In particular different perturbational approaches have been applied to nonlinear dynamics, including in particular center manifold and normal form theory multi-scale methods, nonlinear normal mode analysis, embedding techniques, and others. Major challenges are for example the study of bifurcations, the estimation of basins of attraction, and the detection of chaotic behavior.

The symposium succeeded in bringing together leading scientists in applied mathematics, mechanics, and engineering science and thus contributed to further develop the analytical and semi-analytical methods in nonlinear dynamics, in particular those applied to systems described by ODEs and PDEs. Also nonlinear systems were studied together with stochasticity in several of the presented papers. A particular focus was also on the reduction of large systems to the significant reduced spaces (via normal forms, etc.), where then the critical behavior could be studied by mainly analytical means. It can therefore be said that the symposium fully fulfilled the expectations, making a substantial contribution to the state of the art in the dynamic analysis of multibody systems.

c) Countries represented and number of participants

The Symposium had 68 participants from the following 20 countries: Austria, Belgium, Brazil, China, Denmark, France, Germany, Great Britain, India, Ireland, Israel, Italy, Japan, Mexico, Morocco, New Zealand, Poland, Russia, The Netherlands, and USA.

d) Publication of proceedings of the Symposium

The proceedings of the Symposium will be published in the IUTAM Procedia. The corresponding agreement with Elsevier was made on May 19, 2015, and signed by the Symposium chairman Peter Hagedorn as well as by Laura Hassink and Ronald Buitenhuis on behalf of the publisher Elsevier.

e) Financial support

The Symposium fee for participants amounted to €330 for early registration and €380 for late registration. This fee included also lunches, the social program and the conference dinner. Additional funding could be raised from Deutsche Forschungsgemeinschaft (DFG) in Bonn and from the Graduate School of Excellence Computational Engineering (CE) at Technische Universität Darmstadt. Furthermore, the financial support by an IUTAM Grant is gratefully acknowledged.

f) Scientific program:

Monday, July 6, 2016

09:00-09:30 Welcome Address and Opening Session

09:30-09:50 F. Verhulst: Torus breakdown and bifurcations in coupled oscillators

09:50-10:10 Elisabeth Wesson, Richard Rand: A Model of Evolutionary Dynamics with Quasiperiodic Forcing

10:10-10:30 Firdaus E. Udawadia, Harshavardhan Mylapilli: An Analytical Dynamics Approach to the Energy Control of General Nonlinear Lattices

11:00-11:20 V. Settimi, Giuseppe Rega, Stefano Lenci: Analytical and numerical control of global bifurcations in a noncontact atomic force microcantilever

11:20-11:40 Valery N. Pilipchuk: Effective Hamiltonians for Resonance Interaction Dynamics and Interdisciplinary Analogies

11:40-12:00 M. R. Hernandez-Garcia, Sami F. Masri, R. Ghanem: Characterization of dynamic properties of a nonlinear mechanical joint from experimental data

14:00-14:20 Johannes Störkle, Nicolai Wengert, Peter Eberhard: Simulation and Optimization of the Dynamical-Optical Behavior of Mirror Systems

14:20-14:40 Wim T. van Horssen: On the mathematical analysis of vibrations of axially moving strings

14:40-15:00 Stefano Lenci, Giuseppe Rega: Nonlinear free vibrations of planar elastic beams: A unified treatment of geometrical and mechanical effects

15:00-15:20 Alexander Fidlin, Olga Drozdetskaya: On the averaging in strongly damped systems: The general approach and its application to asymptotic analysis of the Sommerfeld effect

16:00-16:20 Hartmut Hetzler: Attractivity and Bifurcations of Stationary Solutions in Systems with Non-Smooth Frictional Damping

16:20-16:40 Giuseppe Habib, Gaetan Kerschen: Enforcing Force-Displacement Proportionality in Nonlinear Systems through the Addition of Nonlinearity

16:40-17:00 Oleg Gendelman, Aviv Alloni: Dynamics of forced system with vibro-impact energy sink

Tuesday, July 7, 2015

09:00-09:20 Arnaldo Casalotti, Walter Lacarbonara: Nonlinear Vibration Absorber Optimal Design via Asymptotic Approach

09:20-09:40 Iliya I. Blekhman, V. S. Sorokin: Extension of the Method of Direct Separation of Motions for Problems of Oscillating Action on Dynamical Systems

09:40-10:00 Angelo Luongo, Sara Casciati, Daniele Zulli: A perturbation scheme to solve a bistable energy harvester

10:00-10:20 A. F. Vakakis, Leonid I. Manevitch: Nonlinear Oscillatory Sonic Vacua

10:20-11:00 Poster Session – Posters by: T. Akkaya, W. T. van Horssen: On the Effectiveness of Boundary Dampers for Strings or Beams; Eugen Kremer: Coupled Oscillators: Harmonical Balance as an Optimization; J. P. Meijaard: The Motion of a Railway Wheelset on a Track or a Roller Rig; Konrad Weisheit, Steffen Marburg: Calculation of the response of a periodically excited beam with frictional contact using the harmonic balance method

11:00-11:20 Alois Steindl: Detecting the Shilnikov scenario in a Hopf-Hopf bifurcation with 1:3 resonance

11:20-11:40 Alexei A. Mailybaev, Gottfried Spelsberg-Korspeter: Resonant effects in stability of a rotor due to time-periodic terms

11:40-12:00 Nishanth Lingala, N. Sri Namachchivaya, Ilya Pavlyukevich: Random Perturbations of Periodically Driven Nonlinear Oscillators

14:00-14:20 Ivana Kovacic: Strongly Nonlinear Oscillators with a Zero, Negative and Positive Linear Stiffness Term: Generalised Perturbation Techniques for Free and Forced Systems

14:20-14:40 Mikael A. Langthjem, Tomomichi Nakamura: Highly nonlinear liquid surface waves in the dynamics of the fluid balancer

14:40-15:00 D. Hochlenert: Analysis of Engineering Systems by Normal Form Theory

15:00-15:20 E. Hacker, S. Pandey, Oded Gottlieb: Nonlinear Dynamics Orbital Instabilities and Transient Chaos in Magnetic Resonance Force Microscopy

15:20-16:00 Continuation of Poster Session

16:00-16:20 Paulo B. Gonçalves, Frederico M. A. da Silva, Zenón Del Prado: Reduced Order Models for the Nonlinear Dynamic Analysis of Shells

16:20-16:40 Olga Drozdetskaya, Alexander Fidlin: On the dynamic balancing of a planetary moving rotor using a passive pendulum type device

Wednesday, July 8, 2015

08:40-09:00 V. S. Sorokin, Jon J. Thomsen: The Method of Varying Amplitudes for Solving (Non) linear Problems Involving Strong Parametric Excitation

09:00-09:20 Carlos E. N. Mazzilli, Fabio Rizza, Thiago Dias: Heave-imposed motion in vertical risers: a reduced-order modelling based on Bessel-like modes

09:20-09:40 Leonid I. Manevitch: Limiting Phase Trajectories as an Alternative to Nonlinear Normal Modes

09:40-10:00 Lauren Lazarus, Matthew Davidow, Richard Rand: Dynamics of a delay limit cycle oscillator with self-feedback

10:00-10:20 D. S. Dobrynin, Alexander S. Kuleshov: Solvable cases in the problem of motion of a heavy rotationally symmetric ellipsoid on a perfectly rough plane

10:50-11:10 A. Kovaleva: Asymptotic Analysis of Autoresonant Oscillatory Chains

11:10-11:30 Leo Dostal, Edwin J. Kreuzer: Analytical and Semi-Analytical Solutions of Some Fundamental Nonlinear Stochastic Differential Equations

Thursday, July 9, 2015

09:00-09:20 C.-H. Lamarque, S. Charlemagne, M. Weiss, B. Vaurigaud, A. Ture Savadkoohi: Analysis of the 1:1 resonant energy exchanges between two coupled nonlinear oscillators

09:20-09:40 Henrik Westermann, Jörg Wallaschek: Evaluation of a Kinematic Approach for Backward Whirl with an Application to Drillstring Dynamics

09:40-10:00 Márcio José Horta Dantas, Rubens Sampaio, Roberta Lima: Phase Bifurcations in an electromechanical system

10:00-10:20 Jun Jiang, Ling Hong, Yanhua Chen: Knowledge-based Analytical Approaches to Characterization of Self-excited Oscillations in Rotor-Stator Rubbing Systems

11:00-11:20 Jan Awrejcewicz, Roman Starosta, Grażyna Sypniewska-Kamińska: Stationary and transient resonant response of spring pendulum

11:20-11:40 Walter V. Wedig: New Resonances and Velocity Jumps in Nonlinear Road-Vehicle Dynamics

11:40-12:00 Balakrishnan Santhosh, Sadagopan Narayanan, Padmanabhan Chandramouli: Discontinuity Induced Bifurcations in Nonlinear Systems

14:00-14:20 Elzbieta M. Jarzębowska: Analytical Dynamics Based Strategy for Acceleration Control of a Car-Like Vehicle Motion

14:20-14:40 Konstantin E. Starkov, Alexander P. Krishchenko: Global Dynamics of Raychaudhuri Equations

14:40-15:00 Francesco Romeo, Oleg Gendelman: Discrete breathers in forced chains of oscillators with cubic nonlinearities

15:40-16:00 Vladimir I. Babitsky, Vikrant R. Hiwarkar: Nonlinear Dynamic Structures with Developing Discontinuity

16:00-16:20 Faouzi Lakrad, Mourad Khadraoui, Mohamed Belhaq: Effects of a Slow Harmonic Excitation on an Atomic Force Microscope System

16:20-16:40 A. Boyaci: Numerical Continuation Applied to Nonlinear Rotor Dynamics

Report composed by P. Hagedorn

15-5 IUTAM Symposium on Multi-Phase Continuum Modeling of Particulate Flows

Gainesville, Florida, December 9 – December 11, 2015

The IUTAM Symposium on Multi-Phase Continuum Modeling of Particulate Flows was held at the Hilton University of Florida Conference Center, adjacent to the campus of the University of Florida, over the days of December 9th - 11th, 2015.

a) Scientific and Organizing Committee

S. “Bala” Balachander (USA - Co-Chair Organizing Committee), Jason E. Butler (USA - Chair), Elisabeth Guazzelli (France - Co-Chair), John Hinch (UK), L. Gary Leal (USA - IUTAM representative), Jeffrey F. Morris (USA), Prabhu Nott (India), Andrea Prosperetti (USA)

b) Short summary of scientific progress achieved

Researchers focused on the hydrodynamics and rheology of particulate systems met to discuss the state-of-the art regarding continuum modeling of such systems and ideas that might advance the field. Particles suspended in fluids play a vital role in a variety of natural and industrial processes. Describing the bulk dynamics of these systems remains an outstanding challenge whether examining the motion of river or ocean sediment, the flow of fibers in paper production or in formation of advanced composites, or the flow of deformable particles, such as blood cells in arteries. Significant advances on the study of suspensions at the particle level have been made through experiments owing to improvements in particle imaging tools as well as in discrete simulations. However, simulations are inherently limited in size of the system and, whether data is generated from experiments or simulations, a systematic approach relying on averaged equations of motion becomes necessary for predicting flows in arbitrarily large systems.

This symposium aimed to address both the generation of reliable and appropriate information at the particle level and the development of rigorous, averaged equations of motion that can accurately predict complex flows of particulate laden fluids on large scales. A diverse group of investigators from engineering, physics, and applied mathematics, approaching the issues from a variety of experimental, computational, and theoretical standpoints, participated. Plus, numerous young researchers and graduate students were exposed to the subject.

Highlights of the meeting included the exchange of ideas regarding the proper closure relationships for multiphase equations of motions and the exploration of the relatively new concept of pressure-controlled rheology. Regarding the latter topic, the inclusion of researchers from the area of granular media flows proved invaluable. Most work on suspensions assumes that the particles are spherical and

suspended in Newtonian fluids. Hence, an additional theme of the symposium discussions centered around the effects of non-Newtonian suspending fluids and non-spherical particle shapes, which brings new perspectives to the entire field.

c) Countries represented and number of participants

The number of symposium participants was 50, with the participants coming from Canada, France, India, Italy, Sweden, United Kingdom, and the United States. Approximately half were graduate students and post-doctoral researchers and the other half were senior academics.

d) Publication of Proceedings

Papers for the proceeding are in the process of being collected and edited.

e) Financial and other support

The following institutions have provided financial support for this symposium: IUTAM (\$4,500), National Science Foundation (\$15,000), and the University of Florida (\$3,000). The University of Florida also provided, without charge, the webpage creation and hosting and much of the accounting services.

f) Scientific program

Wednesday, December 9th

08:45 John Hinch (Cambridge University, UK) Introductory Remarks on the History and Relevance of Continuum Modeling of Particulate Flows.

09:20 Daniel Lhuillier (University Paris 6, France) Rheological behavior of colloidal suspensions with focus on migration phenomena.

10:15 John F. Brady (California Institute of Technology, USA) Reviving the Suspension Balance Model.

10:50 Georges Gauthier (NRS-Solvay-Universite de Bordeaux, France)

Measurement of a shear-induced partial pressure in a bidisperse suspension.

11:25 V. Kumaran (Indian Institute of Science Bangalore, India) Turbulence modification and particle dynamics in a turbulent particle-gas suspension at high Stokes number.

13:30 Andrea Prosperetti (Johns Hopkins University, USA) Fully resolved simulation of fluid flow with suspended particles.

14:05 Luca Brandt (KTH Mechanics, Sweden) Channel flow of particle suspensions: mass and volume fraction effects.

14:40 Jeffrey F. Morris (CUNY City College of New York, USA) Particle and bulk scale inertia in suspension flows.

15:30 James Gilchrist (Lehigh University, USA) Direct visualization of near-wall structure of sheared monosized suspensions.

16:05 Roger T. Bonnecaze (University of Texas at Austin, USA) Multiscale Models of Magnetically Generated Flows in Dead-Ends.

16:40 Carlos Rinaldi (University of Florida, USA) On the Existence of Flows Driven by Body Couples and Couple Stresses in Magnetic Nanoparticle Suspensions.

Thursday, December 10th

8:30 Arun Ramachandran (University of Toronto, Canada) A macrotransport equation for the Hele-Shaw flow of concentrated suspensions of non-colloidal spheres in Newtonian fluids.

9:05 Pascale Aussillous (Aix-Marseille University, France) Investigation of the mobile granular layer in bed-load transport.

10:00 Elisabeth Guazzelli (Aix-Marseille University, France) Dynamics of shear-induced migration of spherical particles in pipe flow.

10:35 Martin Maxey (Brown University, USA) Particle migration in non-uniform flows of Stokes suspensions.

11:10 Wilson Poon (University of Edinburgh, UK) A unified description of suspension rheology for intermediate-sized particles.

11:45 Poster Session

14:15 Eric S.G. Shaqfeh (Stanford University, USA) Understanding shear in particulate suspensions with elastic suspending fluids: Rheology and Sedimentation.

14:50 Sarah Hormozi (Ohio University, USA) Rheology of dense suspensions of non-colloidal spheres in yield-stress fluids.

15:55 Xavier Chateau (Universite Paris-Est, France) Upscaling Approach to the Behavior of Non-Newtonian Suspensions.

16:30 Guillaume Ovarlez (CNRS-Solvay-Universite de Bordeaux, France) Suspensions of particles and bubbles in yield stress fluids.

Friday, December 11th

8:45 Elisabeth Lemaire (Universite Nice Sophia Antipolis, France) Normal stress differences in non-Brownian fiber suspensions.

9:20 (University of Florida, USA) Structure and stresses in suspensions of rigid fibers.

9:55 Pierre-Yves Lagree (CNRS d'Alembert UPMC, France) Volume of fluids numerical simulations of granular flows in the $\mu(I)$ framework.

10:30 Ken Kamrin (Massachusetts Institute of Technology, USA) Incorporating cooperativity in continuum modeling of granular flows.

11:05 Nico Gray (University of Manchester, UK) Particle segregation and spontaneous levee formation in geophysical mass flow.

Report prepared by J. E. Butler

Report of the IUTAM Summer School held in 2015

IUTAM-CISM Summer School on Measurement, Analysis, and Passive Control of Thermoacoustic Oscillations

The Summer School took place at CISM, Udine, Italy, from 29 June to 03 July 2015. The coordinator was M. Juniper.

1. Summary

The aim of this workshop was: to describe how thermoacoustic oscillations arise, to show the flame dynamics that cause fluctuating heat release, to show how these details are uncovered through experimental measurements, to introduce linear and nonlinear methods of analysis, to introduce methods that can reveal which details of a thermoacoustic system are most influential, and to give examples of these processes in industrial thermoacoustic systems. The course was given by experts from academia and industry.

The lecturers alternated in order to introduce the subject in a pedagogical manner. The first lectures focused on the physical mechanisms behind thermoacoustic oscillations in gas turbines and rocket engines (if more heat release than average occurs during moments of high pressure and less heat release than average occurs during moments of low pressure then, over a cycle, more work is done during the expansion phase than is absorbed during the compression phase, causing oscillations to grow.) Acoustics and Thermoacoustics were treated from first principles, before more specific models and analysis techniques were introduced. The second set of lectures focused on experimental techniques, both at the laboratory scale and at the industrial scale. The third set of lectures focused on new analysis techniques for the passive control of thermoacoustic oscillations.

2. The audience

The course was addressed to graduate students, PhD candidates and early career researchers in the field of applied mathematics, physics, and engineering. Apart from the lecturers, there was one established career researcher who wished to move into this field from another. The total number of participants was 32, from Australia (1), United Kingdom (5), Germany (9), France (7), Swizerland (4), Hong Kong (2), China (1), Austria (1), Italy (2). The feedback was universally positive, both about the course and the environment at CISM and in Udine.

3. The lecturers

Tim Lieuwen (The Georgia Institute of Technology, USA)
6 lectures on:

Introduction to thermoacoustic oscillations; Flame Dynamics Modeling (flame kinematics, equiv ratio, swirl effects, laminar & turbulent flames); Disturbance propagation in reacting flow environments; Thermoacoustic Instabilities (linear and nonlinear methods); Entropy waves; Combustion noise. High frequency and Transverse modes; Mechanisms for dissipation of mechanical energy.

R. I. Sujith (The Indian Institute of Technology Madras, India)

6 lectures on:

Classical Acoustics: Derivation of wave equation; Standing wave and travelling wave solutions; Impedance, eigenvalues; Acoustic Boundary Conditions; Nonlinear time series analysis: Bifurcation diagrams, quasiperiodicity, frequency-locking, routes to chaos; Analysis techniques; Experimental observations and data processing.

Thierry Schuller (Ecole Centrale Paris, France)

6 lectures on:

Acoustic measurements and diagnostics: Acoustic pressure, density and velocity measurements (Hot wire, LIV, LDV); signal measurement, conditioning and analysis; impedance reconstruction (different techniques 2M, Multi-M, 1M 1V and post-processing); acoustic response of a combustor (modal characterization, end corrections (radiation impedance), damping, burner transfer function). Flow measurement: unsteady flow imaging (Mie scattering, LDV, tomography, PIV); Deconvolution and tomographic reconstructions (Abel, 3D, multi-views); Velocity, vortex dynamics, mixture composition and entropy fluctuation; Characterizations (techniques and post-processing); Two-phase flow diagnostics (LDA, droplets dynamics). Flame measurement: Flame imaging (chemiluminescence, Schlieren, LIF); Heat release rate estimation (chemiluminescence, LIF, emerging techniques); Forcing techniques (loudspeaker, sirens, fuel modulation); FTF and IR reconstruction. Flame Describing Function & frequency domain stability analysis.

Wolfgang Polifke (TU Munich, Germany)

6 lectures on:

Linear Analysis; Frequency domain/time domain linear analysis; n-tau model and its deficiencies; Transfer functions & its measurement, SISO and MIMO model structures; Transfer matrix; thermoacoustic network analysis; Calculation of growth rates, Nyquist Plots; Non-normality; active control of thermoacoustic systems.

Bruno Schuermans (Alstom Power, Baden, Switzerland)

6 lectures on:

Industrial Thermoacoustics: background to industrial scale problems; thermoacoustic mechanisms; modelling of real thermoacoustic systems; analysis of real systems; control of real systems.

Matthew Juniper (University of Cambridge, UK)

5 lectures on:

Helmholtz solvers, adjoint sensitivity analysis, applications of adjoint sensitivity analysis to simple thermoacoustic models, applications of adjoint sensitivity analysis to thermoacoustic Helmholtz solvers.

Report prepared by Matthew Juniper

2015 Treasurer's Report

Statement of Change in Fund Balance	USD
Balance, 31 December 2014	434,506
Net revenues minus expenses for 2015	49,453
Balance, 31 December 2015	483,959
 Statement of Cash Revenues Collected over Expenses Paid	
Revenues collected during 2015:	
Subscription dues	125,284
Interest income	3,394
Total	128,678
 Expenses paid during 2015:	
Symposia	22,500
Summer school	6,000
Contribution to ICSU	3,952
Symposia – Refund	–5,917
Travel, Bureau	4,755
Travel, Congress Committee and Executive Committee	1,577
Travel, others	1,167
Website	4,604
Office expenses & Printing	23,593
Auditor's fee	2,696
Bank fees	392
Total	65,319
 Revenues minus expenses for 2015	 63,359
Gain (loss) from exchange of currency	–13,906
 Net revenues minus expenses for 2015	 49,453

**Statement of IUTAM Bank Accounts
(1 January 2015 through 31 December 2015)**

Bank (Running Accounts)	Balance 31 Dec 14	Withdrawals 2015	Deposits 2015	Balance 31 Dec 15	Currency
Spar Nord Bank Aalborg 9236 457 73 07097	224,548.41	72,589.17	133,184.57	285,143.81	USD
Spar Nord Bank 9236 457 73 07089	3,342.72	0.00	0.00	3,342.72	EUR
Spar Nord Bank 9236 457 22 92520	756.75	0.00	0.48	757.23	DKK
Nordea Bank Horsholm 6887 390 760	0.00	0.00	0.00	0.00	DKK
Nordea Bank 0745 417 701	17,751.02	0.00	16,875.00	34,626.02	DKK

Bank (Savings Accounts)	Balance 31 Dec 14	Withdrawals 2015	Deposits 2015	Balance 31 Dec 15	Currency
Spar Nord Bank Aalborg	80,000.00	0.00	0.00	80,000.00	USD
Nordea Bank Horsholm	750,000.00	0.00	0.00	750,000.00	DKK

Treasurer:

Prof. P. Eberhard, Institute of Engineering and Computational Mechanics,
University of Stuttgart, Pfaffenwaldring 9, 70569 Stuttgart, Germany

Assistant Treasurer:

Prof. N. Olhoff, Department of Mechanical and Manufacturing Engineering,
Aalborg University, Fibigerstraede 16, DK-9220 Aalborg East, Denmark

Subscription Dues Paid in Membership Units

<i>Adhering Organization</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>
Australia	3	3	3	3	3
Austria	1	1	1	1	1
Belgium	5	5	5	–	5
Brazil	3	3	3	3	3
Bulgaria	1	1	1	1	1
Canada	8	8	8	8	8
Chile	1	1	1	1	1
China/Beijing	8	8	8	8	8
China/Hong Kong	1	1	1	1	1
China/Taipei	3	3	3	3	3
Croatia	1	1	1	1	1
Cyprus*					1
Czech Republic	1	1	1	1	1
Denmark	3	3	3	3	3
Egypt	1	1	1	1	1
Estonia	1	1	1	1	1
Finland	3	3	3	3	3
France	8	8	8	8	–
Georgia	1	1	1	1	–
Germany	8	8	8	8	8
Greece	1	1	1	1	1
Hungary	1	1	1	1	1
India	5	5	5	5	5

Ireland	1	1	1	1	1
Israel	3	3	3	3	3
Italy	8	8	8	8	8
Japan	8	8	8	8	8
Korea	1	1	1	1	1
Mexico**	–	–	–	–	1
Netherlands	5	5	5	3	3
New Zealand	1	1	1	1	1
Norway	1	1	1	1	1
Poland	3	3	3	3	3
Portugal	1	1	1	1	1
Romania	1	1	1	1	1
Russia	8	8	8	8	8
Saudi Arabia	1	1	1	–	–
Serbia	1	1	1	1	1
Slovenia	1	1	1	1	1
South Africa	1	1	1	1	1
Spain***	1	–	–	1	1
Sweden	5	5	5	5	5
Switzerland	3	3	3	3	3
Turkey	1	1	1	1	1
Ukraine	1	1	1	1	1
United Kingdom	8	8	8	8	8
United States	12	12	12	12	12
Vietnam	1	1	1	1	1

Note: For any particular year, a dash (–) indicates that dues had not been paid as of 31 December 2015. Dues are expressed in membership units of 1, 3, 5, 8 or 12, corresponding to the category of membership from I through V, respectively.

* Cyprus' Mathematical Society entered IUTAM as an Associate Adhering Organization in 2011. The dues have been paid until 2018.

** Mexico has entered IUTAM as an Adhering Organization, and the first dues payment was invoiced in 2011 (but never paid).

*** Spain has renewed its membership in 2014 with a different organization.

Reports on Affiliated Organizations

AFMC (Asian Fluid Mechanics Committee)

www.afmc.org.cn

The major activity of AFMC is organizing the Asian Congress of Fluid Mechanics (ACFM) every 2-3 years. A total of 14 congresses have been convened so far (Bangalore, Beijing, Tokyo, Hong Kong, Daejeon, Singapore, Chennai, Shenzhen, Isfahan, Peradeniya, Kuala Lumpur, Daejeon, Dhaka and Hanoi). This has enormously helped in advancing fluid mechanics research in Asia and strengthen the links between Asian and international scientists. The 15th ACFM will be held at Pullman Hotel Kuching, Sarawak in Malaysia during 21-24 November 2016. The lead organizer is the Institute of Engineers, Malaysia. The preparations are in progress, including finalizing the meeting venue and preparing the list of invited speakers. The contributed papers abstract last date is 29 February 2016.

Report composed by G. S. Bhat

BICTAM (Beijing International Center for Theoretical and Applied Mechanics)

www.bictam.org.cn

The year 2015 has seen a rapid growth of BICTAM's brand programs. We have successfully held 2 short courses, 2 symposia and 3 workshops. In these programs, 6 distinguished scholars have been invited for short visits. The Programs in 2015 mainly focused on soft material, nanomaterial, multiphase flows modeling and superlubricity. Over 500 researchers and graduate students participated in these programs.

Summer School: Insights from Nanomaterials

BICTAM Short Course on Insights from Nanomaterials was successfully held during August 11-13, 2015 in Institute of Mechanics, Chinese Academy of Sciences. The well-prepared course was delivered by Christopher L. Muhlstein, who is an associate professor from Georgia Institute of Technology, USA. The three-day course includes the experimental results and various modeling strategies to better understand how structure and length scale controls deformation and damage accumulation in materials. Nearly 40 participants including research specialist, graduate students all over the country attended the short course.

Short Course on Modeling and Large-Eddy Simulation of Turbulent Multiphase Flows

Professor Rodney Fox from Iowa State University gave a series of talks on “Modeling and Large-Eddy Simulation of Turbulent Multiphase Flows” in three half-day in October of 2015. The three lectures titled “Quadrature-based moment method for kinetic models”, “Cluster-induced multiphase turbulence” and “Turbulent gas-particle flow in vertical channels” respectively.

The 2nd Symposium for Asia-Pacific Young Scholars

The 2nd Symposium for Asia-Pacific Young Scholars was successfully held in Sydney during June 6-8, 2015. Eight invited lectures covering computational mechanics, biomechanics, materials, solid mechanics, etc. were delivered during the symposium. A total of more than 40 participants from domestic and abroad exchanged their latest research views in various fields of mechanics.

International Workshop on Pattern Formation in Soft Materials

This workshop on Pattern Formation in Soft Materials was successfully held in Tianjin during June 1 – 4, 2015. There were 85 scholars in total from around the world participated this workshop, including Professor Zhigang Suo (Harvard University, USA) and Professor Yibin Fu (Keele University, UK) as the co-chairmen, invited guests such as Professor John W. Hutchinson (Harvard University, USA), Professor Martine Ben Amar (Ecole Normale Supérieure, France), Professor Davide Bigoni (Università di Trento, Italy) and Professor Ryan Hayward (University of Massachusetts Amherst, USA).

Workshop: Wave Mechanics in Heterogeneous materials

Workshop on Wave Mechanics in Heterogeneous Materials was successfully held in Beijing during June 20-21, 2015. More than 50 scientists from China, USA, and France attended the workshop and took part in the discussions. The success of the workshop carries out a beneficial attempt for further promoting academic exchanges and rapid developments in wave mechanics to move forward.

International Workshop on Superlubricity: Fundamental and Applications

International Workshop on “Superlubricity: Fundamental and Applications” was successfully held during October 18-20, 2015 at Tsinghua University, Beijing. The workshop brought international top researchers, leading industrial applicants, and a big audience of more than 200 together, and having 20 keynote lectures, posters session, and intensive discussions and interactions.

Report composed by Jie Chen

CISM (International Centre for Mechanical Sciences)

www.cism.it

Courses and Seminars

The regular programme of courses and seminars, planned for the Centre for 2015 by the Scientific Council, took place in two Scientific Sessions, the Frans T.M. Nieuwstadt Session (May-July 2015) and the Piero Villaggio Session (September-October 2015). The topics, always at an advanced level, included different fields of mechanics and related sciences, both at a basic and applied level.

The Frans T.M. Nieuwstadt Session

- COST Training Summer School on "Interaction of Microscopic Structures and Organisms with Fluid Flows"
- Dynamics of Bubbly Flows
- Bone Cell and Tissue Mechanics
- 21th CISM-IUTAM International Summer School on "Measurement, Analysis and Passive Control of Thermoacoustic Oscillations"
- Mixing and Dispersion in Flows Dominated by Rotation and Buoyancy
- CISM – AIMETA Advanced School on "The Art of Modeling Mechanical Systems"

The Piero Villaggio Session

- CISM-ECCOMAS International Summer School on "Modelling, Simulation and Characterization of Multi-Scale Heterogeneous Materials"
- Particles in Wall-Bounded Turbulent Flows: Deposition, Re-Suspension and Agglomeration
- Material Parameter Identification and Inverse Problems in Soft Tissue Biomechanics

National APT Courses

A series of courses on Advanced Professional Training (APT) in the fields of structural and geotechnical engineering, environmental, surveying, industrial engineering and bioengineering were given in Italian.

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 2015:

D. Bigoni: “Extremely Deformable Structures”

O. Paris: “Structure and Multiscale Mechanics of Carbon Nanomaterials”

A. Provenzale – E. Palazzi - K. Fraedrich: “The Fluid Dynamics of Climate”

The international journal for rapid communication “Mechanics Research Communications” created by CISM and Pergamon Press, Oxford-New York in 1973, in 2015 has issued 8 volumes (the last one is seventy). It contains short communications on research related to a wide domain of both theoretical and applied mechanics.

Scholarships

A number of scholarships, including free lodging and boarding 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.

International Participation

In 2015, 57 lecturers from 16 countries delivered lectures in the The Frans T.M. Nieuwstadt and Piero Villaggio Sessions. The courses were attended by 321 participants coming from 30 countries.

Report composed by Bernhard Schrefler

EUROMECH (European Mechanics Society)

www.euromech.org

EUROMECH - European Mechanics Society 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 the 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 Chairperson. Proceedings are not normally published. Those who are interested in taking part in a Colloquium should contact the appropriate Chairperson.

EUROMECH Conferences are broad in scientific scope. They comprise

- the European Solid Mechanics Conference,
- the European Fluid Mechanics Conference,
- the European Turbulence Conference,
- the European Non-linear Dynamics Conference, and
- the European Mechanics of Materials Conference.

They are open to all those interested and generally have a number of participants between 150 and 600, although in some cases the latter number has been exceeded substantially. 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 Conferences should register through the conference website or contact the Chairman or Secretary of the appropriate LOC.

EUROMECH also promotes Specialized Workshops, aiming at training of PhD students and postdocs in rather specialized topical areas; these workshops have a limited size (approx. 20 participants). Additional support to activities for junior scientists is given to the annual Postgraduate Fluid Dynamics Conference, which is organised by and for postgraduates.

Prizes and Fellowships

The EUROMECH Fluid Mechanics Prize and the EUROMECH Solid Mechanics Prize are awarded on the occasions of the Fluid and Solid Mechanics conferences for outstanding and fundamental accomplishments in mechanics. At those conferences Fellowships are awarded to members who have contributed significantly to the advancement of mechanics and related fields. Also, Young Scientist Prizes are awarded at these conferences to the best oral presentations.

EUROMECH COLLOQUIA in 2015

556 – *Theoretical, Numerical and Experimental Analyses in Wood Mechanics*, 27-29 May 2015, Dresden, Germany.

559 – *Multi-scale computational methods for bridging scales in materials and structures*, 23 – 25 February 2015, Eindhoven, The Netherlands

560 – *Mechanics of Biological Membranes*, 8 – 12 February 2015, Ascona, Switzerland.

562 – *Stability and control of nonlinear vibrating systems*, 25 - 29 May 2015, Sperlonga, Italy.

566 – *Anisotropic particles in turbulence*, 10 – 12 June 2015, Trondheim, Norway.

567 – *Turbulent mixing in stratified flows*, 22 – 25 March 2015, Cambridge, UK.

568 – *Coherent structures in fully developed turbulence*, 19 – 22 May 2015, Universidad Politécnica Madrid, Spain.

570 – *Multi-scale analysis of the impact of microstructure on plasticity and fracture in interface-dominated materials*, 20 – 23 October 2015, Houffalize, Belgium.

573 – *Coupling and Nonlinear interactions in Rotating Machinery*, 25 – 27 August 2015, Lyon, France.

574 – *Recent Trends in Modeling of Moving Loads on Elastic Structures*, 15 – 17 April 2015, Anadolu University, Turkey.

575 – *Contact Mechanics and Coupled Problems in Surface Phenomena*, 30 March – 2 April 2015, Lucca, Italy.

577 – *Micromechanics of Metal Ceramic Composites*, 2 – 5 March 2015, University of Stuttgart, Germany.

EUROMECH CONFERENCES in 2015

ESMC9 – *9th European Solid Mechanics Conference*, 6 – 10 July 2015, Madrid, Spain.

ETC15 – *15th European Turbulence Conference*, 25 – 28 August 2015, Delft, The Netherlands.

OTHER EVENTS

Two Solid Prizes were awarded to N. Fleck (Cambridge, UK) and P. Ladeveze (Cachan, France).

Five new Fellows were elected in Solid Mechanics: A. Corigliano (Milano, Italy), A. DeSimone (Trieste, Italy), G. Holzappel (Graz, Austria), A. Movchan (Liverpool, UK) and T. Pardoen (Louvain, Belgium).

Report composed by Pierre Suquet

HYDROMAG (International Association for Hydromagnetic Phenomena and Applications)

www.hydromag.eu

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 field, 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.

This WWW-site contains information on membership, forthcoming conferences and the electronic HYDROMAG newsletter. During the year 2015 several workshops and scientific meetings have been conducted involving the active participation of HYDROMAG and its members.

In October 2015 during the EPM conferences in Cannes (France), the HYDROMAG council nominated Alban Pothérat as the new chairman of the association. With this nomination, the intention is for HYDROMAG to strengthen its role in promoting the fields of MHD, EFM and MF amongst early career scientists and widen its scope to new disciplines involving fluids and electromagnetism.

Report composed by Alban Pothérat

IABEM (International Association for Boundary Element Methods)

www.iabem.org

The International Association for Boundary Element Methods (IABEM) announces the 2016 Symposium on Boundary Element Methods to be held at the Colorado School of Mines in Golden, Colorado, USA August 8–10, 2016. The conference is organized by the Department of Mechanical Engineering and the Department of Applied Mathematics and Statistics at the Colorado School of Mines.

IABEM 2016, like its predecessors, will provide a venue for both engineers and applied mathematicians to interact on problems of mutual interest.

Report composed by Frederic Dias

IACM (International Association for Computational Mechanics)

www.iacm.info

The following IACM supported events took place in 2015:

- 4th International African Conference on Computational Mechanics - AfriComp'15, 7-9 January 2015 / Marrakech, Morocco
- 18th International Conference on Finite Elements in Flow Problems – FEF 2015, Taipei, Taiwan, 16-18 March, 2015

- 1st Pan American Congresses on Computational Mechanics- PANACM 2015, 27-29 April 2015 / Buenos Aires, Argentina
- 6th Int. Conference on Coupled Problems in Science and Engineering - COUPLED PROBLEMS 2015, 18-20 May 2015, Venice Italy
- 3rd International Conference on Isogeometric Analysis (IGA 2015) 1-3 June 2015 / Trondheim, Norway
- 7th International Conference on Adaptive Modeling and Simulation (ADMOS 2015) 7-10 June 2015 / Nantes, France
- 6th International Conference on Computational Methods in Marine Engineering (Marine 2015) 15-17 June 2015 / Rome, Italy
- 4th International Conference on Computational and Mathematical Biomedical Engineering 29 June-1 July 2015 / Cachan, France
- 13th Int. Conference on Computational Plasticity. Fundamentals and Applications (COMPLAS 2015), 1-3 September 2015 / Barcelona, Spain
- X-DMS 2015: eXtended Discretization MethodS 9-11 September 2015 / Ferrara, Italy
- ICCB 2015 VI International Conference on Computational Bioengineering 14-16 September 2015 / Barcelona, Spain
- 4th International Conference on Particle-Based Methods. Fundamentals and Applications (PARTICLES 2015), 28-30 Sept. 2015, Barcelona, Spain
- 7th Int. Conference on Textile Composites and Inflatable Structures (Structural Membranes 2015), 19-21 October 2015, Barcelona, Spain
- 3rd Workshop Reduced Basis, POD or PGD-Based Model Reduction Techniques 4-6 November 2015 / Cachan, France

Next IACM World Congress

IACM is currently organizing the 12th World Congress on Computational Mechanics (WCCM 2016). It will take place in Seoul, Korea, on July 24 - 29, 2016, in conjunction with the 6th Asia-Pacific Congress on Computational Mechanics (APCOM VI). In accordance with the tradition of the IACM and APCOM events, the congress is mainly intended to broaden the fields of application of the disciplines to include new computation- oriented areas in both engineering and sciences.

The expected number of participants is over 2,000. Twelve plenary lectures and twenty-three semi-plenary lectures, addressed by scientists of international reputation in the fields of the congress, complemented by over 220 minisymposia, will make this an outstanding, enjoyable and memorable congress.

Further details are available at: <http://www.wccm-apcom2016.org/>.

Report composed by Antonio Huerta

IASCM (International Association for Structural Control and Monitoring)

The International Association of Structural Control and Monitoring (IASCM) represents the diverse and interdisciplinary community of international researchers engaged in advancing the state-of-art in structural control and monitoring technologies. The mission of IASCM is to accelerate the advancement of the science and practice of structural control and monitoring, by means of education, research, and application of knowledge. This includes the response of large-scale structures to earthquakes, wind, and man-made forces.

The major activity of IASCM in 2015 consisted of the planning of the *Seventh Workshop on Structural Control and Monitoring (7IWSCM)*, in Korea, during the period 25-26 July 2016. The venue will be at Inha University, in Incheon, Korea.

The Workshop theme, objectives, and scope are summarized below:

Theme: Latest advances and applications in structural control and monitoring

Objectives:

- Network the researchers in the field
- Discuss the research trend and next stage work of task groups
- Promote structural control and monitoring in Korea
- Showcase the latest advances in structural control and monitoring

The workshop will follow the tradition established in previous Workshops in this series to create a true workshop atmosphere, rather than simply another mini-conference with a series of presentations alone. There will be no call for submission of papers; however, there will be an opportunity for participating researchers to present a brief (on the order of 5 minutes) summary of their activities during the Working Group sessions.

Scope of the Workshop

The workshop will focus on some aspects of:

- Smart materials and structures
- Smart sensors, wireless sensors, and sensor networks
- Smart control, smart actuators, dampers and systems
- Damage identification and localization, and model updating
- Safety evaluation and reliability forecast
- Life-cycle maintenance of infrastructure
- Structural health monitoring
- Structural control theories and devices
- Benchmark problems of structural control and monitoring

- Control and monitoring for mitigation, prevention, and alarm of disaster

Report composed by Sami F Masri

IAVSD (International Association for Vehicle Systems Dynamics)

www.iavsd.org

The 24th IAVSD Symposium was held at Graz, Austria from 17th to 21st August 2015. IAVSD 2015 was organized by VIRTUAL VEHICLE Research Center in cooperation with Graz University of Technology, Vienna University of Technology and the industrial partners AVL, MAGNA STEYR, MAGNA POWERTRAIN and SIEMENS.

A total of 335 abstracts were submitted of which 163 were road related and 172 were rail related. 124 papers (37%) were accepted for oral presentation including 62 Road papers and 62 Rail papers and a further 72 papers (21%) were accepted for poster presentation including 36 Road papers and 36 Rail papers. Additionally there were 5 invited state-of-the-art papers which were published in a special issue of Vehicle System Dynamics issued to all delegates.

316 Delegates attended the symposium from 31 Countries with the following countries sending ten or more delegates: Austria 54, China, 45, Germany 42, Japan, 26, United Kingdom 25, Sweden 24, Italy 14, France 12, United States 11, Netherlands 10.

Several technical visits to road and rail related industry factories, test tracks and research institutes were arranged as follows:

Road:

- AVL LIST GmbH, Graz

AVL is the world's largest independent company for the development of powertrain systems with internal combustion engines as well as instrumentation and test systems.

- Magna Steyr & Magna Powertrain, Graz

Magna, the most diversified automotive supplier in the world, designs, develops and manufactures automotive systems, assemblies, modules and components, and engineers and assembles complete vehicles to our global customers.

- Virtual Vehicle Research Center, Graz & Graz University of Technology

Virtual Vehicle is an internationally operating research center that develops technologies for affordable, safe and environmentally friendly vehicles for road and rail. In worldwide competition with comparable institutions, Graz University of Technology pursues top teaching and research in the fields of science and engineering, especially in the field of mobility.

Rail:

- Siemens AG Austria, Graz

As the World Competence Center for Bogies within the Mobility Division of the Siemens Group, the Siemens AG Austria plant located In Graz Eggenberg specializes in the development and production of innovative bogies (including sub-components and Services) for all types of rail vehicles in the product range of the Mobility Division.

- voestalpine Schienen GmbH, Leoben

As European market leader and innovation pioneer with a worldwide reputation, voestalpine has played a decisive role in the development of modern railway rails.

- voestalpine VAE GmbH, Zeltweg

The voestalpine VAE group, a wholly owned subsidiary of voestalpine AG, headquartered in Zeltweg Austria, is the global market and technology leader for railway turnout solutions.

4th International Tyre Colloquium, University of Surrey, Guildford, UK

Tyre Models for Vehicle Dynamics Analysis 20th and 21st April 2015
organized by Patrick Gruber and Robin Sharp

The 4th International Tyre Colloquium, organized in association with the IAVSD, was held at the University of Surrey, Guildford, UK on 20-21 April 2015. 47 technical presentations were delivered, including 4 invited keynote lectures and 4 poster presentations. 132 delegates from 20 different countries participated. The full papers were published in the official Tyre Colloquium Proceedings included in the delegate packs (ISBN: 978-7-84469-031-2). Also, an e-book of the Proceedings will be made available online through open access (unlimited and free access by readers) in due course.

The colloquium focused on today's challenges by discussing a wide range of topics, including tyre measurements and measurement techniques, application of tyre models to vehicle dynamics, determination of tyre model parameters, measurement and modelling of rubber friction, tyre-road contact simulation, and evaluation and verification of tyre models.

IASVSD supported and participated in the *6th International Munich Chassis Symposium, June 16th and 17th, in Munich, Germany.*

The symposium was organized by ‘Automobil Technische Zeitschrift’ (ATZ), and the main topics of the symposium were: ‘New Chassis Systems’, ‘Active Chassis Systems’, ‘Energy Efficiency and Safety’, and ‘Driver Assistance Systems’.

Report composed by Hans True

ICA (International Commission for Acoustics)

www.icacommission.org

The ICA welcomed a new member, the Icelandic Acoustical Society. In early 2016 the Society of Acoustics Singapore joined the ICA bringing our total membership to 50 member societies, including 4 observers, plus 8 international affiliates.

The 2015 ICA Board meeting was held 1 June in Maastricht, Netherlands during the occasion of a major European acoustical meeting. Several items are of note:

- During the year, Jing Tian resigned as Vice President. The Board approved Jeong-Guon Ih to complete the current term (until October 2016) as Vice President.
- The guidelines for organizing an ICA Congress were reviewed and updated.
- The organization of the 22nd International Congress on Acoustics, to be held in September 2016 in Buenos Aires, Argentina is on track. A FIA (Ibero- American Federation of Acoustics) congress is being incorporated into the technical program.
- The 2019 ICA congress will be held in Aachen, Germany. Planning is on track.
- A decision was made that three member societies (Acoustical Society of China, Acoustical Society of Egypt, and Acoustical Society of Korea) will be invited to submit proposals to host the 2022 ICA congress.
- Planning continues for the International Year of Sound to be held during 2019. It was agreed that a Prospectus would be prepared and that supportive organizations would be identified.

Following the Board meeting, considerable progress was made on the initiative to have 2019 be the International Year of Sound (IYS). A steering committee, chaired by Marion Burgess, was formed. An initial Prospectus was prepared and widely

circulated, and hundreds of organizations have responded with their support. Significant contacts have been made with several national delegations to UNESCO.

An initiative to involve the student acousticians was to hold an IYS logo design competition for students worldwide to come up with a logo for IYS2019. The response was very good and the winning logo from an acoustics student from the Netherlands is shown below.



The ICA provides financial support for symposia which provide opportunities for those working in particular areas of acoustics to meet. The guidelines for selection require international involvement and there is priority for developing countries. The Acoustical Society of America provides additional funding to the program administered by the ICA. The meetings supported in 2015 were:

- Vienna Talk 2015 on Music Acoustics "Bridging the Gaps", September 16-19 (Vienna, Austria)
- 20th International Symposium on Nonlinear Acoustics (20th ISNA), June 29 - July 3 (Ecully, France)
- Audio and Acoustic Signal Processing 2015, October 8 (Ben-Gurion University of the Negev, Israel)
- The SCIENCE of ACOUSTICS serving the Food, the Nutrition and the Environment, September 25 (Milan, Italy)
- 3rd International Conference of the Acoustical Society of Nigeria (ASON 2015), June 8-11 (Nsukka, Nigeria) (funding provided by Acoustical Society of America)
- XXXII Symposium on Hydroacoustics, May 19-22 (Jurata, Poland)
- EAA European Symposium on Virtual Acoustics and Ambisonics, September 21-23 (Valencia, Spain)

The ICA acknowledges the ongoing collaboration with IUTAM and looks forward to further strengthening this link especially as we work towards seeking approval for an International Year of Sound in 2019.

Report composed by Marion Burgess and Michael Stinson

ICF (International Conference on Fracture)

www.icf14.org

The 14th International Conference on Fracture (ICF14) will be held in 2017 (18-23 June) in Rhodes, Greece.

Report composed by Frederic Dias

ICHMT (International Centre for Heat and Mass Transfer)

www.ichmt.org

ICHMT organized two international symposia and sponsored eleven in 2015.

Meetings organized by ICHMT:

“International Symposium on Advances in Computational Heat Transfer, CHT-15”, 25-29 May 2015, in New Jersey, USA. The Symposium Chair was Professor Yogesh Jaluria, Rutgers University, USA.

“9th International Symposium on Turbulence, Heat and Mass Transfer, THMT-15”, 15-18 September 2015, Sarajevo, Bosnia and Herzegovina. The symposium Chairman was Professor Kemal Hanjalic, Delft University of Technology, The Netherlands; co-chairman was Professor Toshio Miyachi, Tokyo Institute of Technology, Japan.

Meetings Co-Sponsored by ICHMT:

“Computational Thermal Radiation in Participating Media V, CTRPM-V”, 01-03 April 2015, Albi and Toulouse, France. The symposium Chairmen were M. El Hafi, Mines-Albi, France and R. Fournier, Laplace, Université de Toulouse, France.

“ASME-ATI-UIT-2015 Thermal Energy Systems: Production, Storage, Utilization and the Environment”, 17-20 May 2015, Naples, Italy. The symposium Chairmen were Richard Goldstein, University of Minnesota, USA; Oronzio Manca, Seconda Università di Napoli, Italy; Vincenzo Naso, Università di Napoli Federico II, Italy and Terrence Simon, University of Minnesota, USA.

20th School-Seminar of Young Scientists and Specialists “Problems of Gas Dynamics and Heat and Mass Transfer in Power Engineering”, 24-29 May 2015, Zvenigorod, Moscow region, Russia. The symposium Chairman was A.I. Leontiev, Moscow State Technical University.

“Ninth Mediterranean Combustion Symposium, MCS-15”, 07-11 June 2015, Rhodes, Greece. The symposium Co-Chairmen were Dr. Federico Beretta, Consiglio Nazionale delle Ricerche, Napoli, Italy; Prof. Nevin Selcuk, Middle East Technical University, Ankara, Turkey; Prof. Mohy S. Mansour, Cairo University, Cairo, Egypt; Prof. Andrea d’Anna, University Federico II, Naples, Italy.

“11th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics, HEFAT-2015”, 20-24 July, 2015, Kruger National Park, South Africa. The symposium Chairman was Prof. Josua P. Meyer, University of Pretoria, South Africa.

“First Thermal and Fluids Engineering Summer Conference, TFESC”, 09-12 August 2015, New York City, USA. The symposium Chairmen were Richard Goldstein, University of Minnesota, USA and Yong X. Tao, University of North Texas, USA.

“7th Baltic Heat Transfer Conference, BHTC-2015”, 24-26 August 2015, Tallinn, Estonia. The symposium Chairman was Prof. B. Sundén, Lund Institute.

“9th Minsk International Seminar on Heat Pipes, Heat Pumps, Refrigerators, Power Sources”, 07-10 September 2015 Minsk, Belarus. The symposium Chairman was Prof. Leonard L. Vasiliev, National Academy of Sciences of Belarus.

“3rd International Workshop on Heat Transfer Advances for Energy Conservation and Pollution Control, IWHT-2015”, 16-19 October 2015, Taipei, Taiwan. The symposium Chairman was Prof. C.C. Wang, Chiao Tung University, Taiwan.

“International Conference on Flow Dynamics, ICFD-2015”, 27-29 October 2015, Sendai, Japan. The symposium Chairman was Prof. Shigenao Maruyama, Tohoku University, Japan.

“23rd National Heat and Mass Transfer Conference, ISHMT-2015”, 18-21 December 2015, Liquid Propulsion Systems Centre, Indian Space Research Organization at Thiruvananthapuram, Kerala, India. The symposium Chairman was Prof. S. Srinivasa Murthy, IIT Madras, India.

The organization of several future meetings have continued. These are:

“The 8th International Symposium on Radiative Transfer, RAD-16”, 6-10 June 2016, Cappadocia, Turkey. The Symposium Co-Chairmen are Professor Brent W. Webb, Brigham Young University, USA and Dr. Denis Lemonnier, LET-ENSMA, France. Detailed information can be found on the Web site:

<http://www.ichmt.org/rad-16>

“Heat and Mass Transfer in Nuclear Safety Applications: Severe Accident, Contamination, Waste Storage, HMTNS-16”, 25-28 October 2016, Antibes - Juan

les Pins, France. The symposium Chairmen are Professor Michel Quintard, Institut de Mécanique des Fluides de Toulouse, France and Dr. Florian Fichot, IRSN (Institute for Radiation Protection and Nuclear Safety), France. Detailed information can be found on the Web site:

<http://www.ichmt.org/hmtns-16>

Co-Sponsored by ICHMT:

“12th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics, HEFAT-2016”, 11-13 July, 2016, Costa del Sol, Malaga, Spain. The symposium Chairman is Prof. Josua P. Meyer, University of Pretoria, South Africa. Detailed information can be found on the Web site:

<http://edas.info/web/hefat2016/>

“The 4th International Forum on Heat Transfer, IFHT-2016”, 2-4 November, 2016, Sendai, Japan. The symposium Chairman is Taku Ohara, Tohoku University, Japan. Detailed information can be found on the Web site:

<http://ifht2016.org/>

Report composed by Tugba Gun

ICM (International Congress on the Mechanical Behaviour of Materials)

No report was submitted by ICM.

ICR (International Committee on Rheology)

www.icr.tu-berlin.de

The science of rheology is well-represented throughout the world. The major rheology meetings in North America, Europe, and Asia continue to attract greater numbers of registrants. The 2008 Congress at Monterey attracted more than 1000 participants from around the globe, making it the largest such Congress on record, and with 962 participants from 39 countries, the 2012 Congress at Lisbon attracted similar numbers. This healthy growth in the rheological community reflects the vital position of our science in addressing world-wide technological challenges in energy, the environment, and manufacturing.

The current roster of active member societies of the ICR (<http://www.icr.tu-berlin.de/>) is given in the following, together with foundation date:

1. The Society of Rheology (USA) (1929)
2. The British Society of Rheology (1940)

3. Nederlandse Reologische Vereniging (1950)
4. Deutsche Rheologische Gesellschaft (1951)
5. Nordic (formerly Swedish) Society of Rheology (1956)
6. Australian Society of Rheology (1959)
7. Arbeitsgruppe Rheologische Gesellschaft Österreich.Chemiker (1959)
8. Groupe Français de Rhéologie (1964)
9. Rheology Group of the Czechoslovak Chemical Society (1970)
10. Societa Italiana de Reologia (1971)
11. The Society of Rheology, Japan (1973)
12. Belgian Group of Rheology (1974)
13. Sociedad Mexicana de Reologia (1975)
14. Israël Society of Rheology (1980)
15. Grupo Espanol de Reologia (1981)
16. Canadian Rheology Group/Groupe Canadien de Rhéologie (1982)
17. Indian Society of Rheology (1983)
18. Chinese Society of Rheology (1985)
19. Slovene Society of Rheology (1987)
20. Korean Society of Rheology (1989)
21. Swiss Group of Rheology (1990)
22. Vinogradov Society of Rheology (1991)
23. Hellenic Society of Rheology (1998)
24. Portuguese Society of Rheology (1998)
25. Southern African Society of Rheology (2006)
26. Romanian Society of Rheology (2009)
27. Brazilian Society of Rheology (2010)

The XVIIth International Congress on Rheology (<http://icr2016.com/>) will be held at Kyoto, Japan (August 8-13), jointly organized by the Japanese Society of Rheology, the Japanese Society of Biorheology, and the Japanese Society of Polymer. Chairman of the Organizing Committee is Hiroshi Watanabe (Kyoto University).

Report composed by Manfred H. Wagner

ICTS (International Congresses on Thermal Stresses)

ts2016.tumblr.com/home

The 11th International Congress on Thermal Stresses will be held at the University of Salerno in Italy on June 5 to 9, 2016.

Report composed by Frederic Dias

IIAV (International Institute of Acoustics and Vibration)

www.iiav.org

The 19th IIAV annual election was held in 2015 in which all members voted on candidates for five new director positions, one president-elect and one vice-president for professional relations positions. The elected directors replaced the directors whose four-year terms had expired. The vice-president for professional relations also serves a four-year term. The president-elect serves a two-year term. The five directors elected were: Luis Bento Coelho (Portugal), John Davy (Australia), Georges Kouroussis (Belgium), Ricardo Musafir (Brazil), and James Talbot (UK.) Marek Pawelczyk (Poland) was elected as Vice-President for Professional Relations. Eleonora Carletti (Italy) was elected as President-Elect. The IIAV Honorary Fellow award will be made in 2016 to Jens Blauert, Germany, to recognize his scientific contributions in the Assessment of Sound Quality.

IIAV cooperates with scientific and engineering societies and institutes around the world and lists 46 such affiliated organisations on its website at www.iiav.org. During 2015, a new formal agreement of cooperation was signed between IIAV and the G.S. Pisarenko Institute for Problems of Strength of the National Academy of Sciences of Ukraine (IPS, NAS of Ukraine).

The Twenty-second International Congress on Sound and Vibration (ICSV22), sponsored by the International Institute of Acoustics and Vibration (IIAV) took place in Florence, Italy, 12-16 July, 2015. ICSV22 was held in cooperation with the Acoustical Society of Italy (AIA) and IMAMOTER - National Research Council of Italy and DIEF - University of Florence. Over 1,250 abstracts from 60 different countries on all areas of acoustics, noise and vibration were received.

Seven distinguished plenary lectures were presented during ICSV22 by engineers and scientists from around the globe. The seven keynote lectures were as follows: Otto von Estorff, Germany, Recent Developments of BEM and FEM and their Application to Real Life Acoustics Problems; Kirill Horoshenkov, United Kingdom, Porous Material Characterization via Acoustical Methods; Dick Botteldooren, Belgium, Modeling and Monitoring the Effects of Environmental Sound; Semyung Wang, South Korea, Sound Focusing and its Practical Applications; Lily M. Wang, USA, Room Acoustics Effects on Speech Comprehension of English-as-Second-Language Talkers and Listeners; Wim Van Keulen, Netherlands, Experiencing Noise-Reducing Pavements; Roberto Pompili, Italy, Acoustics Of Italian Opera Houses: a Cultural Heritage.

The ICSV22 technical proceedings were made available to all delegates at the congress itself on CD-ROM. The ICSV22 CD includes all abstracts and the full texts of all the accepted papers and is now available to everyone including IIAV members on the IIAV website.

The International Journal of Acoustics and Vibration (IJAV), the quarterly refereed journal of IIAV, continues to receive a steady flow of good papers and to be published on schedule. The full papers of current and all back issues of IJAV are displayed on the IIAV website. In addition, hard copies of IJAV are airmailed to all IIAV members and to subscribing libraries all over the world. During the last two years issues of IJAV have now been made open-access for all interested scientists and engineers around the world to view. It has been decided to make the IJAV completely open access starting with the first issue published in 2016.

Report composed by Malcolm J. Crocker (Executive Director IIAV)

IMSD (International Association of Multibody System Dynamics)

www.itm.uni-stuttgart.de/imsd

IMSD is a successor to the Joint International Conference on Multibody System Dynamics formed on May 26, 2010. It is the essential mission of the Association, to establish biannual international conferences on multibody dynamics that address computational mechanics, nonlinear dynamics and control design; to foster research on the dynamics of multibody systems and related fields; and to promote international cooperation between scientists and engineers in industry.

The IMSD conference is a biannual series that serves as a meeting point for the international multibody community and as an opportunity to exchange high-level, current information on the theory and applications of multibody systems. As a rapidly growing branch of engineering dynamics, Multibody System Dynamics is seeing more and more use, and is becoming increasingly important in the development of complex systems. The continual new challenges faced by the IMSD community demand productive conference forums where ideas are freely exchanged and a spirit of cooperation is encouraged.

The year 2015 has been mainly devoted to the preparation of The Fourth IMSD Conference that will take place in Montreal, Canada, from May 29 to June 2, 2016. More than 250 two-page abstracts have been received by the submission deadline of December 11, 2015. There will be 7 keynote lectures delivered by international well-known scientists and 11 invited sessions organized on the most recent topics as follows:

- Benchmark Problems in Multibody System Dynamics
- Biomechanics
- Computational Methods and Real-Time Applications
- Contact, Impact, and Constraints
- Control, Mechatronics, and Robotics
- Dynamics of Vehicles
- Flexible Multibody Systems
- Modeling, Formalisms, and Theoretical Methods
- Multibody Kinematics
- Multidisciplinary Methods, Applications and Other Topics
- Optimization, Sensitivity Analysis, and Parameter Identification

In 2015, IMSD has also contributed proposals to some dynamics-oriented sessions at the 24th International Congress of Theoretical and Applied Mechanics (ICTAM), to be held in Montreal, Canada, from August 21 to August 26, 2016.

IMSD displays some information on the association at the end of each number of the Springer journal *Multibody System Dynamics* which is the official journal of IMSD. This journal is the leading publication organ in multibody dynamics.

Report composed by Javier Cuadrado and Peter Eberhard

ISIMM (International Society for the Interaction of Mechanics and Mathematics)

www.mat.univie.ac.at/~isimm/

The International Society for the Interaction of Mechanics and Mathematics is active in fostering the interaction of mathematics and mechanics. The history of both mechanics and mathematics shows much evidence of the beneficial influence of each of these disciplines on the other. Mechanics is understood here in the broad sense of the word, including relevant physical phenomena such as electromagnetic and thermal fields. A major activity of the society concerns the organization of international meetings for the presentation and discussion of research at the interface of the two disciplines.

The 2015 activity of the ISIMM has been focused on the planning of the XX International Symposium of the Society. This will take place in Rome on September 5-9, 2016 under the frame of the INdAM Workshop on Trends on Applications of Mathematics to Mechanics. The meeting is co-organized by Elisabetta Rocca, Ulisse

Stefanelli, Lev Truskinovsky, and Augusto Visintin. The confirmed speakers include Davide Bigoni, Andrea Braides, Antonin Chambolle, Pierluigi Colli, Elisa Davoli, Harald Garcke, Alain Goriely, Klaus Hackl, Pavel Krejčí, Martin Kružík, John Lowengrub, Alexander Mielke, Alain Miranville, Barbara Niethammer, Pablo Pedregal, Mark Peletier, Errico Presutti, Riccarda Rossi, Tommaso Ruggeri, Ben Schweizer, Antonio Segatti, Jürgen Sprekels, Roger Temam, Marita Thomas, Giuseppe Toscani, and Arghir Zarnescu.

Additional information can be found at the website:

www.mat.univie.ac.at/~stefanelli/stamm16.html

The Workshop will be the occasion to celebrate also the new ISIMM Prize and ISIMM Junior Prize laureates. The ISIMM Prize 2016 will be presented to Prof. Dr. Roger Temam (Indiana). The ISIMM Junior Prize 2016 has been awarded to Prof. Dr. Antonio Segatti (Pavia). These prizes will be awarded in a special session.

Report composed by Ulisse Stefanelli

ISSMO (International Society for Structural and Multidisciplinary Optimization)

www.issmo.net

1. ISSMO Biennial World Congress on Structural and Multidisciplinary Optimization (WCSMO):

WCSMO-11: The ISSMO World Congress in 2015 was held Sydney, Australia, June 07-12, 2015. Profs. Qing Li and Grant Steven, University of Sydney, served as Co-Chairs of the Organizing Committee. There were 363 registrants from 31 countries, with 217 oral presentations and 26 poster presentations. Additional information on the conference can be found at:

<http://www.aeromech.usyd.edu.au/WCSMO2015/>

WCSMO-12: ISSMO issued a call for proposals to host WCSMO-12 in 2017. Four proposals were received. The proposal to host WCSMO-12 in Braunschweig, Germany, June 5-9, 2017, with Conference Chairman Prof. Axel Schumacher, was selected.

2. Young Researcher ISSMO/ Springer Prize:

The ISSMO-Springer Prize 2015 was awarded to Dr Joe Alexandersen (DTU) for his paper titled “Topology optimisation of passive coolers for light-emitting diode lamps”, with Ole Sigmund and Niels Aage as co-authors.

The award ceremony will be held at the WCSMO-12 in Braunschweig, Germany, June 5-9, 2017.

3. Congress Fellowship Awards for Early Career Researchers (ECR):

PhD students, postdocs, and other academics within 5 years of PhD, who submitted a full-length paper (without major revision) were eligible for a WCSMO-11 Congress Fellowship Award. The Local Organizing Committee of WCSMO-11 awarded ten fellowships.

4. ISSMO endorsed the following international scientific meetings during 2015:

- 16th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, June 22 – 26, 2015, Dallas, Texas
- Meeting, Large Scale Industrial Structural Optimisation for Advanced Applications, Sofia, Bulgaria, November, 2015

5. ISSMO will endorse the following international scientific meetings during 2016:

- EngOpt2016 – Fifth International Conference on Engineering Optimization, Iguassu Falls, Brazil, 19-23 June, 2016
- ICTAM 2016 - 24th International Congress of Theoretical and Applied Mechanics, Montreal, Canada, 21-26 August, 2016.
- ACSMO 2016 – Asian Congress of Structural and Multidisciplinary Optimization, Nagasaki, Japan, May, 2016

Report composed by James K. Guest

LACCOTAM (Latin American & Caribbean Congress of Theoretical and Applied Mechanics)

A general LACCOTAM meeting was held at the University of the West Indies in Trinidad and Tobago to select a new executive committee. The new executive committee of LACCOTAM (to serve from December 2015 until December 2018) is as follows:

Honorary President: Professor F. Malpica (Venezuela)
President: Professor Harold Ramkissoon (Trinidad & Tobago)
Vice-president: Dr. Sreedhara Rao Gunakala (Trinidad & Tobago)
Secretary: Dr. Donna Comissiong (Trinidad & Tobago)
Treasurer: Dr. Curtis Boodoo (Trinidad & Tobago)
Public Relations Officer: Dr. Joanna Sooknanan (Trinidad & Tobago)

The 3rd LACCOTAM conference is currently being organized, and it will be held on the island of Tobago from 18th-20th January 2017. The objectives of this conference are to identify existing research efforts in both theoretical and applied mechanics in the region and beyond, and to provide a forum for professionals from the larger scientific and engineering community to discuss problems of mutual interest.

Report composed by Donna Comissiong

Reports on ICSU and its Scientific Committees

ICSU (International Council for Science)

No report.

COSPAR (Committee on Space Research)

No report has been submitted by COSPAR.

SCOR (Scientific Committee on Oceanic Research)

No report has been submitted by SCOR.

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 les personnes et les organisations engagées dans le travail scientifique dans toutes les branches de la mécanique théorique et appliquée, par des recherches analytiques, numériques et expérimentales;
- b) d'organiser les congrès internationaux de mécanique théorique et appliquée par l'intermédiaire de son Comité permanent des Congrès (cf. Art. XIII 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.

*) *Article II adopté par l'Assemblée Générale de l'Union, le 18 août 2004 à Varsovie, Pologne*

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 des membres suivants avec droit de vote:

- a) des représentants des «organisations adhérentes» (cf. art. VIII);
- b) des membres du Bureau (cf. art. XII);
- c) des membres cooptés par l'Assemblée Générale de l'Union;
- d) le Secrétaire du Comité de Congrès (cf. art. XIII c);
- e) les présidents des «Symposia Panels» Fluides et Solides nommés par le Bureau.

La durée de mandat d'un membre coopté est précisée, lors de son élection, par l'Assemblée Générale. La durée de mandat des membres du Bureau coïncide avec celle de leur appartenance au Bureau.

Les catégories suivantes d'observateurs sont invitées à participer, sans droit de vote, à l'Assemblée Générale de l'Union:

- i) des représentants des «organisations affiliées» (cf. art. XI);
- ii) les présidents des «Working Parties»;
- iii) des représentants des « organisations associées adhérentes » (cf. art. IX)
- iv) des représentants des pays candidats à l'adhésion;
- v) s'il y a lieu, et sur décision de l'Assemblée Générale, des représentants de comités ou groupes de scientifiques.

***) *Article VI adopté par l'Assemblée Générale de l'Union, le 19 août 2014 à Lyngby, Danemark*

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*** Des organisations de scientifiques en mécanique théorique ou appliquée qui représentent une activité scientifique indépendante dans un pays ou dans un territoire du monde en voie de développement et qui ne sont pas déjà représentées par des « organisations adhérentes » de l'Union peuvent, avec le soutien écrit d'une « organisation adhérente », être admises en tant qu' « organisations associées adhérentes » de l'Union. La dénomination de l'organisation adhérente proposée doit être sans ambiguïté et politiquement neutre afin d'exclure tout malentendu quant à la qualification du pays ou du territoire qui est représenté.

***) *Article IX adopté par l'Assemblée Générale de l'Union, le 27 août 2008 à Adélaïde, Australie*

X**** 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. XV ci-après). Chaque « organisation associée adhérente » dispose d'un représentant dans l'Assemblée Générale de l'Union sous la forme d'un observateur sans droit de vote, et doit acquitter une seule cotisation tous les quatre ans (cf. Art. XVI ci-après).

*****) *Article X adopté par l'Assemblée Générale de l'Union, le 27 août 2008 à Adélaïde, Australie*

XI 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 XII) 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.

XII***** 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. Les candidats aux sept postes doivent avoir été membres de l'Assemblée Générale à un moment de la période précédant de six 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 1^{er} 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.

*****) *Article XII adopté par l'Assemblée Générale de l'Union, le 19 août 2014 à Lyngby, Danemark*

XIII***** L'Assemblée Générale désigne un Comité permanent des Congrès (dorénavant noté CC) chargé d'organiser à intervalles réguliers les Congrès Internationaux de Mécanique Théorique et Appliquée (ICTAM).

- a) Le Président de l'Union préside aussi le CC.
- b) Le CC nomme un Secrétaire parmi ses membres, sous entendu que cette personne soit d'accord pour être nommée. A partir de la recommandation du CC, l'Assemblée Générale élit le Secrétaire pour un mandat de quatre ans, renouvelable une fois. Il est souhaitable que le Secrétaire ait été membre du CC pour au moins quatre ans avant d'être nommé.
- c) Les Membres du CC sont élus par l'Assemblée Générale; ce sont des scientifiques actifs en mécanique théorique ou appliquée, n'appartenant pas nécessairement à l'Assemblée Générale. Avant une Assemblée Générale, le Secrétaire du CC sollicite des nominations des membres du CC, de l'Assemblée Générale, des organisations adhérentes et des organisations affiliées, et des autres sous-comités tels que les « Symposia Panels » et les « Working Parties ». La taille du CC ne doit pas dépasser un tiers de la taille de l'Assemblée Générale. Les mandats des membres du CC sont limités, sauf cas particuliers, à deux mandats successifs.

Il est souhaitable que la composition du CC soit représentative des différentes branches des sciences mécaniques ainsi que de la diversité de la communauté des sciences mécaniques.

- d) Le CC nomme un Comité Exécutif parmi ses membres. Le Président de l'IUTAM et le Secrétaire du CC jouent automatiquement les rôles respectifs de Président et de Secrétaire du comité exécutif. Quatre membres supplémentaires sont nommés. Le Président du Congrès International de Mécanique Théorique et Appliquée à venir peut également être nommé au sein du comité exécutif « ex officio ». L'un des prérequis pour être nommé au sein du comité exécutif est d'avoir une solide expérience de grands congrès. A partir des nominations effectuées par le CC, l'Assemblée Générale élit le comité exécutif du CC. Les mandats des membres supplémentaires du comité exécutif CC sont limités à deux mandats successifs.

- e) Les règles de fonctionnement du CC sont soumises à l'approbation de l'Assemblée Générale.

*****) *Article XIII adopté par l'Assemblée Générale de l'Union, le 19 août 2014 à Lyngby, Danemark*

XIV***** Les ressources financières de l'Union sont constituées par:

- a) les cotisations annuelles des «organisations adhérentes»;
- b) les cotisations des « organisations associées adhérentes » ;
- c) 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.

*****) *Article XIV adopté par l'Assemblée Générale de l'Union, le 27 août 2008 à Adélaïde, Australie*

XV Le nombre des représentants d'une «organisation adhérente» et le montant de la cotisation annuelle qu'elle doit acquitter sont définis 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.

XVI***** La cotisation d'une « organisation associée adhérente » est établie pour couvrir une période de quatre ans, et le montant de ce paiement unique est égal à la cotisation annuelle de l'année en cours d'une « organisation adhérente » de catégorie I. L'admission en tant qu'« organisation associée adhérente » devient effective dès réception de cette cotisation par le Trésorier. Le statut de chaque « organisation associée adhérente » est réexaminé après les quatre premières années, ainsi qu'après les quatre années suivantes. La catégorie de Membre Associé est normalement limitée à un maximum de huit ans. La possibilité de demander l'admission en tant que Membre de la Catégorie I est offerte à tout moment à un Membre Associé.

*****) *Article XVI adopté par l'Assemblée Générale de l'Union, le 27 Août 2008 à Adélaïde, Australie.*

XVII***** 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 XVII adopté par l'Assemblée Générale de l'Union, le 28 Août 1994 à Amsterdam, Pays-Bas.*

Règles de fonctionnement du Comité des Congrès de l'Union *

1. Le Comité des Congrès se réunit à chaque fois que l'Assemblée Générale se réunit. Typiquement, cela veut dire tous les deux ans, à l'occasion de l'Assemblée Générale entre congrès et à l'occasion du Congrès International.
2. Pendant un Congrès International, le CC passe en revue les propositions pour le Congrès International suivant et sélectionne le lieu par un vote des membres du CC présents (les votes par procuration ne sont pas autorisés). Ce processus de sélection se déroule au cours de deux réunions distinctes du CC.
3. Le Comité Exécutif est chargé de prendre au nom du CC 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 Secrétaire doit rester en contact avec tous les membres du CC et les solliciter lorsqu'il y a des questions importantes à traiter.
4. L'organisation effective d'un Congrès est confiée à un Président et à un Secrétaire-Général du Congrès, identifiés par l'organisation qui invite. Le Président et le Secrétaire-Général du Congrès sont responsables de tous les aspects du succès du Congrès, et en particulier de la publication des Comptes rendus du Congrès. Le Président et le Secrétaire-Général du Congrès maintiendront un dialogue constant avec le Comité Exécutif, feront un rapport annuel au Comité Exécutif et un rapport au CC à chaque réunion du CC, depuis le moment où le lieu a été choisi jusqu'à ce que le Congrès ait eu lieu.
5. Le Président et le Secrétaire-Général du Congrès devront obtenir l'approbation du CC (normalement par l'intermédiaire du Comité Exécutif) pour toutes les questions relevant de la politique générale du CC, en particulier pour celles qui concernent:
 - o 5.1. le but du Congrès;
 - o 5.2. la sélection des communications pour le Congrès;
 - o 5.3. le choix des conférences générales pour le Congrès;
 - o 5.4. la désignation des présidents de sessions du Congrès;
 - o 5.5. les principes généraux régissant les arrangements financiers du Congrès.

6. Les organisateurs percevront, de tous les membres du congrès, une contribution afin de couvrir les dépenses administratives du CC. Ces contributions seront reversées à l'IUTAM immédiatement après le congrès. Le montant de ces contributions restera du même ordre de grandeur de congrès à congrès.

**) Procédure adoptée par l'Assemblée Générale de l'Union, le 19 Août 2014 à Lyngby, Danemark*

Règles 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 invite les membres avec droit de vote et observateurs de l'AG, spécifiés dans l'Article VI des Statuts sous les rubriques a), b), c), i) et ii), 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 18 Août 2004 à Varsovie, Pologne*

Règles 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 in all branches of theoretical and applied mechanics and related sciences, including analytical, computational and experimental investigations;
- 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.

**) Article II adopted by the General Assembly on August 18, 2004, in Warsaw, Poland*

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 XII) 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 XII);
- c) members-at-large;
- d) the Secretary of the Congress Committee (Article XIII c);
- e) the Chairs of the Fluids and Solids Symposia panels appointed by the Bureau.

The term of a member-at-large 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.

The following categories of observers are invited to take part in the General Assembly without voting rights:

- i) representatives of affiliated organizations (Article XI);
- ii) chairmen of the Working Parties;
- iii) representatives of adhering associated organisations (Article IX);
- iv) representatives of countries applying for membership;
- v) representatives of committees and groups of scientists, if so decided by the General Assembly.

*** Article VI adopted by the General Assembly on August 19, 2014, in Lyngby (Denmark)*

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.*** Organisations of scientists in theoretical or applied mechanics which represent independent scientific activity in a country or territory of the developing world and

which are not already represented by an adhering organisation of the Union may, with the written support of one adhering organisation, be admitted as an adhering associate organisation of the Union. The name of the proposed adhering organisation must be unambiguous and politically neutral in order to avoid misunderstanding about the country or territory being represented.

****) Article IX adopted by the General Assembly on August 27, 2008, in Adelaide (Australia)*

X.**** 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 XV. Each adhering associate organisation shall have one representative as a nonvoting observer in the General Assembly of the Union, and shall pay a single subscription once for each four-year period in accordance with Article XVI.

*****) Article X adopted by the General Assembly on August 27, 2008, in Adelaide (Australia)*

XI. 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.

XII.***** 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. The candidates for all seven positions must have been full, voting members of the General Assembly at some time within the six 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 are 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 center 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 fulfill 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.

*****) *Article XII adopted by the General Assembly on August 19, 2014, in Lyngby (Denmark)*

XIII.***** The General Assembly establishes a standing Congress Committee (henceforth abbreviated CC) which 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 chair of the CC.

b) The CC shall nominate a Secretary from its membership subject to that person's willingness to be nominated. Based on the CC nomination, the General Assembly elects the Secretary of the CC for a four-year term with the possibility of renewal for a second term. It is desirable that the Secretary should have been a member of the CC for at least four years prior to nomination.

c) Members of the CC are elected by the General Assembly as individuals active in theoretical and applied mechanics and need not be members of the General Assembly. Prior to a General Assembly, the Secretary of the CC shall invite nominations from members of the CC, the General Assembly, Adhering and Affiliated Organizations, and any appropriate subcommittees, such as the Symposia Panels and Working Parties. The size of the CC shall not exceed one-third the size of the General Assembly. Terms of service as a member of the CC shall generally be limited to two, successive four-year terms.

It is desired that the composition of the CC be representative of the various mechanics disciplines, and of the diversity of the mechanics community.

d) The CC shall nominate an Executive Committee from its membership. The President of IUTAM and the Secretary of the CC automatically serve as Chair and Secretary of the Executive Committee, respectively. Four additional members shall be nominated. The President of the upcoming International Congress may also be appointed to the Executive Committee *ex officio*. Experience with large congresses is a desirable quality of nominees for the Executive Committee. Based on the CC nominations, the General Assembly elects the Executive Committee of the CC. Terms of service of the additional members on the Executive Committee of the CC are generally limited to two four-year terms.

e) The rules of procedure of the CC shall be approved by the General Assembly.

*****) *Article XIII adopted by the General Assembly on August 19, 2014, in Lyngby (Denmark)*

XIV.***** The financial means of the Union are formed by:

- a) the annual subscriptions of the adhering organizations;
- b) the subscriptions of the adhering associate organisations;
- c) 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.

*****) *Article XIV adopted by the General Assembly on August 27, 2008, in Adelaide (Australia)*

XV. 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.

XVI.***** The subscription of an associate adhering organisation shall be set to cover a four-year period, and the level of this single payment shall be equal to the current annual subscription of a Category I adhering organisation. Admission as an associate adhering organisation shall be conditional on receipt of this subscription by the Treasurer. The status of each adhering associate organisation shall be reviewed after the initial four years and again after a further four years. Associate Membership shall normally be limited to a maximum of eight years. The option to apply for Category I Membership shall be open to an Associate Member at any time.

*****) *Article XVI adopted by the General Assembly on August 27, 2008, in Adelaide (Australia)*

XVII.***** 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, Netherlands*

Rules of procedure for the Congress Committee (CC) of IUTAM*

1. The CC shall hold meetings whenever the General Assembly meets. Typically, this is every two years, during the General Assembly meeting between congresses and during the International Congress.
2. During an International Congress, the CC shall review proposals for the next International Congress and select the location by a vote of the CC members present (i.e., proxy votes are not permitted). This selection process will typically be accomplished over two separate meetings of the CC.
3. The Executive Committee handles matters arising on behalf of the CC during the period between General Assemblies. At each General Assembly the Secretary of the CC reports on all such matters and their disposition since the last General Assembly.

The Secretary should stay in close contact with the full membership of the CC and solicit input on substantive issues.

4. The actual organization of a Congress is delegated to a President and Secretary-General of the Congress, identified by the host. The President and the Secretary-General of the Congress are responsible to IUTAM for all aspects of the successful conduct of the Congress, including the publication of its Proceedings. The President and the Secretary-General of the Congress shall maintain an ongoing dialog with the Executive Committee, and shall make an annual report on progress to the Executive Committee, and a report to the full committee at every meeting of the CC, from the time the congress location is selected until the congress has been held.
5. The President and the Secretary-General of the Congress shall obtain the approval of the CC (often through the Executive Committee) with regard to all matters affecting the general policy of the CC, and in particular with regard to:
 - o 5.1. the scope of the Congress;
 - o 5.2. the screening of papers for the Congress;
 - o 5.3. the selection of general lectures for the Congress;
 - o 5.4. the appointment of chairs of sessions of the Congress;
 - o 5.5. the broad principles regarding financial arrangements for the Congress.
6. Following the congress, the host will pay a fee to IUTAM equivalent to a percentage of the registration fee paid by all attendees. The Executive Committee will ascertain that the level of the fee is consistent from congress to congress.

**) Procedure adopted by the General Assembly on August 19, 2014, in Lyngby, Denmark*

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 those voting members and observers of the GA indicated under a), b), c), i) and ii) in Article VI of the Statutes, 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 18, 2004, in Warsaw, Poland*

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 (GA) provided for in Article VI(c) of the Statutes.
2. Proposals, by members of the GA with voting rights, for Members-at-Large must be received by the Bureau at least three months before the meeting of the GA 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 GA such proposals as it deems will have at least a reasonable support by the GA, provided however that the total number of Members-at-Large is not to exceed approximately one eighth (1/8) of the total GA membership with voting rights. Such proposals will be circulated to all members of the GA 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 GA before its second session.
5. The GA will vote on those candidates mentioned in the proposals of §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. Since 2013, all these Annual Reports are available as pdf files on the IUTAM website.

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 IUTAM Newsletters are available from the IUTAM website.

c) Proceedings of IUTAM Symposia

Since 2011, the official publisher for proceedings of IUTAM Symposia is Elsevier, under the Procedia IUTAM series. Procedia IUTAM is open access. All proceedings are freely available on the website of Procedia IUTAM <http://www.journals.elsevier.com/procedia-iutam>

d) Proceedings of the International Congresses on Theoretical and Applied Mechanics (ICTAM)

Until 2008, they were only available by direct ordering from the publisher. The Proceedings of ICTAM 2012 have been published under the Procedia IUTAM series. The link is www.sciencedirect.com/science/journal/22109838/10

e) Publications on the history of IUTAM

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Proceedings of IUTAM Symposia

The Proceedings of IUTAM Symposia published since 2001 are listed below. A complete listing of all published Proceedings can be found at the IUTAM website <http://www.iutam.net> or <http://www.iutam.org>.

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 as a special issue of the International Journal of Solids and Structures, Volume 39, Issues 13-14, 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. Bajaj and H.K. Moffatt, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2002. ISBN 1-4020-0980-1

2002

- 02-1 *IUTAM Symposium on Micromechanics of Fluid Suspensions and Solid Composites* (Austin, Texas, USA, 3-5 April 2002).
The Proceedings of the Symposium have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, in a special issue of the Philosophical Transactions: Mathematical, Physical & Engineering Sciences in May 2003
- 02-2 *IUTAM Symposium on Unsteady Separated Flows* (Toulouse, France, 8-12 April 2002).
The Proceedings of the Symposium edited by M. Braza, Ch. Hirsch and F. Hussain, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, in a special issue of Flow, Turbulence and Combustion, Volume 71, Nos 1-4, 2003. ISSN 1386-6184.
- 02-3 *IUTAM Symposium on Dynamics of Advanced Materials and Smart Structures* (Yamagata, Japan, 20-24 May 2002).
The Proceedings of the Symposium edited by K. Watanabe and F. Ziegler, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2003. ISBN 1-4020-1061-3.
- 02-4 *IUTAM Symposium on Asymptotics, Singularities and Homogenisation in Problems of Mechanics* (Liverpool, UK, 8-11 July 2002).
The Proceedings of the Symposium edited by A.B. Movchan, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2003. ISBN 1-4020-1780-4.
- 02-5 *IUTAM Symposium on Complementary, Dual Variational Principles in Nonlinear Mechanics* (Shanghai, China, 13-16 August 2002).

- The Proceedings of the Symposium edited by David Y. Gao have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, in 2004. ISBN 1-4020-7887-0 (HB) and ISBN 1-4020-7888-9 (E-book)
- 02-6 *IUTAM Symposium on Nonlinear Stochastic Systems*
(Urbana-Champaign, Illinois, USA, 25-31 August 2002).
The Proceedings of the Symposium edited by N. Sri Namachchivaya and Y.K. Lin, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2003. ISBN 1-4020-1471-6.
- 02-7 *IUTAM Symposium Transsonicum IV*
(Göttingen, Germany, 02-06 September 2002).
The Proceedings of the Symposium edited by H. Sobieczky, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2003. ISBN 1-4020-1608-5.
- 02-8 *IUTAM Symposium on Reynolds Number Scaling in Turbulent Flow*
(Princeton, N.J. USA, 11-13 September 2002).
The Proceedings of the Symposium edited by A.J. Smits, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2003. ISBN 1-4020-1775-8.
- 02-9 *IUTAM Symposium on Evolutionary Methods in Mechanics*
(Cracow, Poland, 24-27 September 2002).
The Proceedings of the Symposium edited by Tadeusz Burczynski and Andrzej Osyczka have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, in 2004. ISBN 1-4020-2266-2 (HB) and ISBN 1-4020-2267-0 (E-book)
- 02-10 *IUTAM Symposium on Multiscale Modeling and Characterization of Elastic-Inelastic Behavior of Engineering Materials*
(Marrakech, Morocco, 20-25 October 2002).
The Proceedings of the Symposium edited by S. Ahzi, M. Charkaoui, M.A. Khaleel, H.M. Zbib, M.A. Zikry, and B. LaMatina, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2003. ISBN 1-4020-1861-4.
- 2003**
- 03-1 *IUTAM Symposium on Mechanics of Physicochemical and Electromechanical Interactions in Porous Media*
(Kerkrade, The Netherlands 18-23 May 2003).

The Proceedings of the Symposium edited by J.M. Huyghe, P.A.C. Raats and S.C. Cowin, have been published by Springer, Dordrecht, The Netherlands in 2006. ISBN: 978-1-4020-3864-8

03-2 *IUTAM Symposium on Integrated Modeling of Fully Coupled Fluid-Structure Interactions*

(Rutgers, N.J. USA 02-06 June 2003).

The Proceedings of the Symposium edited by Haym Benaroya and Thomothy Wei, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2003. ISBN 1-4020-1806-1.

03-3 *IUTAM Symposium on Chaotic Dynamics and Control of Systems and Processes in Mechanics*

(Rome, Italy, 08-13 June 2003).

The Proceedings of the Symposium edited by G. Rega and F. Vestroni have been published by Springer, Dordrecht, The Netherlands in 2005. ISBN 1-4020-3267-6 (HB) and ISBN 1-4020-3268-4 (E-book)

03-4 *IUTAM Symposium on Mesoscopic Dynamics of Fracture Process and Materials Strength*

(Osaka, Japan, 06-11 July 2003).

The Proceedings of the Symposium edited by H. Kitagawa and Y. Shibusaki, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2004. ISBN 1-4020-2037-6 (HB) and ISBN 1-4020-2111-9 (e-book).

2004

04-1 *IUTAM Symposium on Size Effects on Material and Structural Behavior at Micron- and Nano-Scales*

(Hong Kong, China, 30 May-4 June, 2004)

The Proceedings of the Symposium edited by Q.P. Sun and P. Tong, have been published by Springer, Dordrecht, The Netherlands in 2006. ISBN 1-4020-4945-5

04-3 *IUTAM Symposium on Non-Uniqueness of Solutions to the Navier-Stokes equations and their Connection with Laminar-Turbulent Transition*

(Manchester, UK, 9-11 August, 2004)

The Proceedings of the Symposium edited by T. Mullin and R.R. Kerswell, have been published by Springer, Dordrecht, The Netherlands in 2005. ISBN 1-4020-4048-2

04-4 *IUTAM Symposium on One Hundred Years of Boundary Layer Research*

(Göttingen, Germany, 12-14 August, 2004)

- The Proceedings of the Symposium edited by G.E.A. Meier, K.R. Sreenivasan et.al, have been published by Springer, Dordrecht, The Netherlands in 2006. ISBN 1-4020-4149-7
- 04-5 *IUTAM Symposium on Elasto-hydrodynamics and Microelasto-hydrodynamics* (Cardiff, UK, 1-3 September, 2004)
The Proceedings of the Symposium edited by R.W. Snidle and H.P. Evans, have been published by Springer, Dordrecht, The Netherlands in 2006. ISBN 1-4020-4532-8
- 04-6 *IUTAM Symposium on Mechanics and Reliability of Actuating Materials* (Beijing, China, 1-3 September, 2004)
The Proceedings of the Symposium edited by W. Yang, have been published by Springer, Dordrecht, The Netherlands in 2005. ISBN 1-4020-4130-6
- 04-7 *IUTAM Symposium on Computational Approaches to Multiphase Flow* (Argonne, Illinois, USA, 4-7 October, 2004)
The Proceedings of the Symposium edited by S. Balachandar and A. Prosperetti, have been published by Springer, Dordrecht, The Netherlands in 2006. ISBN 1-4020-4976-5
- 04-8 *IUTAM Symposium on Elementary Vortices and Coherent Structures: Significance in Turbulence Dynamics* (Kyoto, Japan, 26-28 October, 2004)
The Proceedings of the Symposium edited by Kida, Shigea, have been published by Springer, Dordrecht, The Netherlands in 2006. ISBN 1-4020-4180-2
- 04-9 *IUTAM Symposium on Laminar-Turbulent Transition* (Bangalore, India, 13-17 December, 2004)
The Proceedings of the Symposium edited by Govindarajan, Rama, have been published by Springer, Dordrecht, The Netherlands in 2006. ISBN 1-4020-3459-8
- 2005**
- 05-1 *IUTAM Symposium on Multiscale Modelling of Damage and Fracture Processes in Composite Materials* (Kazimierz Dolny, Poland 23-27 May, 2005).
The Proceedings of the Symposium edited by T. Sadowski, have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2006. ISBN 978-1-4020-4565-3.
- 05-2 *IUTAM Symposium on Mechanical Behavior and Micro-mechanics of Nanostructured Materials*

(Beijing, China 27-30 June 2005).

The Proceedings of the Symposium edited by Y.L. Bai, Q.S. Zheng and Y.G. Wei have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2007. ISBN 978-1-4020-5623-9.

05-3 *IUTAM Symposium on Impact Biomechanics: From Fundamental Insights to Applications*

(Dublin, Ireland 11-15 July, 2005).

The Proceedings of the Symposium edited by M.D. Gilchrist, have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2005. ISBN 978-1-4020-3795-5.

05-4 *IUTAM Symposium on Vibration Control of Nonlinear Mechanisms and Structures*

(Munich, Germany 18-22 July, 2005).

The Proceedings of the Symposium edited by H. Ulbrich and W. Günthner, have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2005. ISBN 978-1-4020-4160-0.

05-5 *IUTAM Symposium on Topological Design Optimization of Structures, Machines and Materials - Status and Perspectives*

(Aalborg and Lyngby, Denmark, 26-29 October, 2005).

The Proceedings of the Symposium edited by M.P. Bendsøe, N. Olhoff and O. Sigmund, have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2006. ISBN 978-1-4020-4729-9.

2006

06-1 *IUTAM Symposium on Multiscale Problems in Multibody System Contacts*

(Stuttgart, Germany, February 20-23, 2006).

The Proceedings of the Symposium edited by Peter Eberhard, have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2006. ISBN 978-1-4020-5980-3

06-2 *IUTAM Symposium on Interactions for Dispersed Systems in Newtonian and Viscoelastic Fluids*

(Guanajuato, Mexico, March 26-31, 2006).

A report on the Symposium was published and appeared in *Physics of Fluids*, Vol 18, 121501-1, 2006.

06-3 *IUTAM Symposium on Plasticity at the Micron Scale*

(Lyngby, Denmark, May 21 - May 25, 2006).

- The Proceedings of the Symposium edited by V. Tvergaard, have been published by IOP Publishing, in a special issue of Modelling and Simulation in Materials Science and Engineering, Volume 15, number 1, 2007, ISSN 0965-0393.
- 06-4 *IUTAM Symposium on Hamiltonian Dynamics, Vortex Structures, Turbulence* (Moscow, Russia, August 25-30, 2006).
The Proceedings of the Symposium edited by Borisov, A.V., Kozlov, V.V. et.al., have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2007. ISBN 978-1-4020-6743-3
- 06-5 *IUTAM Symposium on Discretization Methods for Evolving Discontinuities* (Lyon, France, September 04-07, 2006).
The Proceedings of the Symposium edited by Combescure, Alain, Borst, René de, Belytschko, Ted, have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2007. ISBN 978-1-4020-6529-3
- 06-6 *IUTAM Symposium on Computational Physics and new Perspectives in Turbulence* (Nagoya, Japan, September 11-14, 2006).
The Proceedings of the Symposium edited by Kaneda, Yukio, have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2007. ISBN 978-1-4020-6471-5
- 06-7 *IUTAM Symposium on Dynamics and Control of Nonlinear Systems with Uncertainty* (Nanjing, China, September 18-22, 2006).
The Proceedings of the Symposium edited by Hu, H.Y., Kreuzer E.J., have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2007. ISBN 978-1-4020-6331-2
- 06-8 *IUTAM Symposium on Flow Control and MEMS* (London, UK, September 19-22, 2006).
The Proceedings of the Symposium edited by Morrison, J.F., Birch, D.M., Lavoie, P., have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2007. ISBN 978-1-4020-6857-7
- 06-9 *IUTAM Symposium on Computational Contact Mechanics* (Hannover, Germany, November 05-09, 2006).
The Proceedings of the Symposium edited by Wriggers, Peter, Neckenhorst, Udo have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2007. ISBN 978-1-4020-6404-3

2007

- 07-1 *IUTAM Symposium on Shell, Plate, Beam and 3D Models* (Tbilisi, Georgia, April 23-28, 2007).
The Proceedings of the Symposium edited by Jaiani, George; Podio-Guidugli, Paolo, have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2008. ISBN 978-1-4020-8773-8.
- 07-2 *IUTAM Symposium on Recent Advances in Multiphase Flows: Numerical and Experimental* (Istanbul, Turkey, June 11-14, 2007).
The Proceedings of the Symposium have been published as a regular issue of the journal *Physics of Fluids*, Vol. 20, Issue 4, April 2008, together with selected papers from the meeting, all of which will have gone through the standard reviewing process of that journal.
- 07-3 *IUTAM Symposium on Unsteady Separated Flows and their Control* (Corfu, Greece, June 18-22, 2007).
The Proceedings of the Symposium edited by Braza, Marianna; Hourigan, K. have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2009, and as a special issue of the *Journal of Fluids and Structures*, Vol. 24, Issue 8, November 2008. ISBN: 978-1-4020 9897-0.
- 07-4 *IUTAM Symposium on Scaling in Solid Mechanics* (Cardiff, UK, June 25-29, 2007).
The Proceedings of the Symposium edited by Borodich, F., have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2009. ISBN 978-1-4020-9032-5.
- 07-5 *IUTAM Symposium on Fluid- Structure Interaction in Ocean Engineering* (Hamburg, Germany, July 23-26, 2007).
The Proceedings of the Symposium edited by Edwin Kreuzer, have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2008. ISBN 978-1-4020-8629-8
- 07-6 *IUTAM Symposium on Swelling and Shrinking of Porous Materials: From Colloid Science to Poromechanics* (Petrópolis, Brazil, August 6-10, 2007).
The Proceedings of the Symposium have been published as a special issue of the *Anais da Academia Brasileira de Ciencias*, Vol. 82(1), Mar. 2010.
- 07-7 *IUTAM Symposium on Advances in Micro- and Nanofluidics* (Dresden, Germany, September 6-8, 2007).
The Proceedings of the Symposium edited by Ellero, M.; Hu, X.; Fröhlich, J.; Adams, N., have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2009. ISBN 978-90-481-2625-5.
- 07-8 *IUTAM Symposium on Mechanical Properties of Cellular Materials* (Cachan, France, September 17-20, 2007).
The Proceedings of the Symposium edited by Zhao, Han; Fleck, N.A., have been published by Springer Academic Publishers, Dordrecht, The

- Netherlands, 2009. ISBN 978-1-4020-9403-3.
- 07-9 *IUTAM Symposium on Multi- Scale Plasticity of Crystalline Materials* (Eindhoven, The Netherlands, November 05-09, 2007).
The Proceedings of the Symposium have been published as a special issue of the Philosophical Magazine (Publisher: Taylor & Francis), Vol. 88, Issue 30 – 32, October 2008.
- 2008**
- 08-1 *IUTAM Symposium on Theoretical, Computational and Modelling Aspects of Inelastic Media* (Cape Town, South Africa, January 14-18, 2008).
The Proceedings of the Symposium edited by Daya Reddy have been published by Springer Academic Publishers, The Netherlands, 2008. ISBN: 978-1-4020-9089-9
- 08-2 *IUTAM Symposium on on Modelling Nanomaterials and Nanosystems* (Aalborg, Denmark, 19-22 May, 2008).
The Proceedings of the Symposium edited by Pyrz, R. and Rauhe, Jens C. have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2009. ISBN: 978-1-4020-9556-6
- 08-3 *IUTAM Symposium on Cellular, Molecular and Tissue Mechanics* (Woods Hole, Mass., USA, June 18-21, 2008).
The Proceedings of the Symposium edited by Garikipati, Krishna and Arruda, Ellen M. have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2010. ISBN: 978-90-481-3347-5
- 08-4 *IUTAM Symposium on Variational Concepts with Applications to the Mechanics of Materials* (Bochum, Germany, September 22-26, 2008).
The Proceedings of the Symposium edited by Hackl, Klaus have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2010 ISBN: 978-90-481-9194-9
- 08-5 *IUTAM Symposium on 150 Years of Vortex Dynamics* (Technical University of Denmark, October 12-16, 2008).
The Proceedings of the Symposium edited by Aref, Hassan have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2010 ISBN: 978-90-481-8583-2
- 08-6 *IUTAM Symposium on Progress in the Theory and Numerics of Configurational Mechanics* (Erlangen, Germany, October 20-24, 2008).
The Proceedings of the Symposium edited by Steinmann, Paul have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2009 ISBN: 978-90-481-3446-5

- 08-7 *IUTAM Symposium on Turbulence in the Atmosphere and Oceans*
(Cambridge, UK, December 8 – 12, 2008).
The Proceedings of the Symposium edited by Dritschel, David have been published by Springer, 2010. ISBN:978-94-007-0359-9
- 08-8 *IUTAM Symposium on Multi-Functional Material Structures and Systems*
(Bangalore, India, December 10-12, 2008).
The Proceedings of the Symposium edited by Dattaguru, B., Gopalakrishnan, Srinivasan and Aatre, V. K. have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2010. ISBN: 978-90-481-3770-1
- 2009**
- 09-1 *IUTAM Symposium on Dynamic Fracture and Fragmentation*
(Austin, USA, March 8-12, 2009).
The Proceedings of the Symposium have been published as a special issue of the International Journal of Fracture (Publisher: Springer), 2010 and by Springer (Ravi-Chandar, Krishnaswamy; Vogler, Tracy J. (Eds.) 2010) ISBN 978-90-481-9759-0
- 09-2 *IUTAM Symposium on Emerging Trends in Rotor Dynamics*
(New Delhi, India, March 23 - March 26, 2009)
The Proceedings of the Symposium edited by Gupta, K. have been published by Springer, 2011. ISBN 978-94-007-0019-2
- 09-3 *IUTAM Symposium on Recent Advances of Acoustic Waves in Solids*
(Taipei, Taiwan, May 25-28, 2009)
The Proceedings of the Symposium edited by Wu, Tsung-Tsong and Ma, Chien-Ching have been published by Springer, 2010
ISBN 978-90-481-9892-4
- 09-4 *IUTAM Symposium on Laminar-Turbulent Transition*
(Stockholm, Sweden, 2009).
The Proceedings of the Symposium edited by Schlatter, Philipp and Henningson, Dan S. have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2010. ISBN: 978-90-481-3722-0
- 09-5 *IUTAM Symposium on the Vibration Analysis of Structures with Uncertainties*
(St. Petersburg, Russia, July 5–9, 2009)
The Proceedings of the Symposium edited by Belyaev, Alexander K. and Langley, Robin S. have been published by Springer, 2011
ISBN 978-94-007-0288-2

- 09-6 *IUTAM Symposium on The Physics of Wall-Bounded Turbulent Flows on Rough Walls* (Cambridge, UK, July 7-9, 2009).
The Proceedings of the Symposium edited by Nickels, T. B. have been published by Springer Academic Publishers, Dordrecht, The Netherlands, 2010 ISBN: 978-90-481-9630-2
- 09-7 *IUTAM Symposium on Multiscale Modelling of Fatigue, Damage and Fracture in Smart Materials* (Freiberg, Germany, September 1-4, 2009)
The Proceedings of the Symposium edited by Kuna, Meinhard and Ricoeur, Andreas have been published by Springer, 2011. ISBN 978-90-481-9886-3
- 09-8 *IUTAM Symposium on Mathematical Modeling and Physical Instances of Granular Flows* (Reggio Calabria, Italy, September 14-18, 2009).
The Proceedings of the Symposium edited by Joe Goddard, J.T. Jenkins and P. Giovine have been published as AIP Conference Proceedings 1227, April 2010 ISBN 978-0-7354-0772-5

2010

- 10-1 *IUTAM Symposium on Computational Aero-Acoustics for Aircraft Noise Prediction* (Southampton, UK, March 29 – 31, 2010)
The Proceedings of the Symposium edited by Astley, Jeremy and Gabard, Gwenael have been published by Elsevier, 2011, as the first issue of the IUTAM e-Procedia series. **Procedia IUTAM Volume 1**
- 10-2 *IUTAM Symposium on Nonlinear Stochastic Dynamics and Control* (Hangzhou, China, May 10-14, 2010)
The Proceedings of the Symposium edited by Zhu, W.Q., Lin, Y.K. and Cai, G. Q. have been published by Springer, 2011. ISBN 978-94-007-0731-3
- 10-3 *IUTAM Symposium on Dynamics Modeling and Interaction Control in Virtual and Real Environments* (Budapest, Hungary, June 7-11, 2010)
The Proceedings of the Symposium edited by Stépán, Gábor, Kovács, László L. and Tóth, András have been published by Springer, 2010 ISBN 978-94-007-1642-1
- 10-4 *IUTAM Symposium on Bluff Body Wakes and Vortex-Induced Vibrations* (Capri, Italy, June 22-25, 2010)
The Proceedings of the Symposium edited by Leweke, Thomas and Williamson, Charles, have been published by Elsevier, as a special issue of the Journal of Fluids and Structures, Volume 27, Issues 5-6, Pages 637-884, July-August 2011.
- 10-5 *IUTAM Symposium on Nonlinear Dynamics for Advanced Technologies and Engineering Design (NDATED)* (Aberdeen, UK, July 27-30, 2010)

The Proceedings of the Symposium edited by Marian Wiercigroch and Giuseppe Rega have been published by Springer, 2013
ISBN 978-94-007-5742-4

- 10-6 *IUTAM Symposium on Surface Effects in the Mechanics of Nanomaterials and Heterostructures* (Beijing, China, August 8-12, 2010)
The Proceedings of the Symposium edited by Cocks, Alan and Wang, Jianxiang, have been published by Springer, 2012. ISBN 978-94-007-4910-8
- 10-7 *IUTAM Symposium on Human Movement Analysis and Simulation* (Leuven, Belgium, September 13-15, 2010)
The Proceedings of the Symposium edited by Jonkers, Ilse and Vander Sloten, Jos, have been published online, 2010
www.mech.kuleuven.be/iutam2010/IUTAM_proceedings/index.html
ISBN 978-94-6018-247-1

2011

- 11-1 *IUTAM Symposium on Mechanics of Liquid and Solid Foams* (Austin, USA, May 8-13, 2011)
The Proceedings of the Symposium edited by Kyriakides, Stelios and Kraynik, Andrew, have been published by Elsevier, as a special issue of the International Journal of Solids and Structures, 2012, and of the Journal of Rheology, Volume 56, Issue 3, Pages i-665, May 2012.
- 11-2 *IUTAM Symposium on Linking Scales in Computations: From Microstructure to Macro-scale Properties* (Pensacola, USA, May 17-19, 2011)
The Proceedings of the Symposium edited by Cazacu, Oana, have been published by Elsevier, 2012, as the third issue of the IUTAM e-Procedia series. **Procedia IUTAM Volume 3**
- 11-3 *IUTAM Symposium on Human Body Dynamics* (Waterloo, Canada, June 5-8, 2011)
The Proceedings of the Symposium edited by McPhee, John and Kovacs, Jozsef, have been published by Elsevier, 2011, as the second issue of the IUTAM e-Procedia series. **Procedia IUTAM Volume 2**
- 11-4 *IUTAM Symposium on Full-field Measurements and Identification in Solid Mechanics* (Cachan, France, July 4-8, 2011)
The Proceedings of the Symposium edited by Hild, F. and Espinosa, H.D., have been published by Elsevier, 2011, as the fourth issue of the IUTAM e-Procedia series. **Procedia IUTAM Volume 4**
- 11-5 *IUTAM Symposium on Impact Biomechanics in Sport* (Dublin, Ireland, July 7-9, 2011)

- The Proceedings of the Symposium edited by Michael Gilchrist and Manuel Forero Rueda have been published as a special issue of the Proceedings of the Institution of Mechanical Engineers, Part P: Journal of Sports Engineering and Technology, Volume 226, No 3-4, 2012.
- 11-6 *IUTAM Symposium on Computer Models in Biomechanics*
(Stanford University, USA, August 29 – September 02, 2011)
The Proceedings of the Symposium edited by Holzapfel, Gerhard A. and Kuhl, Ellen have been published by Springer, 2013. ISBN 978-94-007-5464-5
- 11-7 *IUTAM Symposium on 50 Years of Chaos: Applied and Theoretical*
(Kyoto, Japan, November 28 – December 2, 2011)
The Proceedings of the Symposium edited by Hikiyama, Takashi have been published by Elsevier, 2012, as the fifth issue of the IUTAM e-Procedia series.
Procedia IUTAM Volume 5
- 11-8 *IUTAM Symposium on Bluff Body Flows*
(Kanpur, India, December 12-16, 2011)
The Proceedings of the Symposium edited by Mittal, Sanjay and Biswas, Gautam have been published as a special issue of the Journal of Fluids and Structures, Volume 41, Pages 1-186, August 2013.
- 2012**
- 12-1 *IUTAM Symposium on Mobile Particulate Systems: Kinematics, Rheology and Complex Phenomena*
(Bangalore, India, January 23-27, 2012)
The Proceedings of the Symposium edited by P.R. Nott, R.H. Davis, M. Reeks, D. Saintillan and S. Sundaresan have been published as a special issue of Physics of Fluids, Volume 25, Issue 7, July 2013.
- 12-2 *IUTAM Symposium on Advanced Materials Modelling for Structures*
(Paris, France, April 23-27, 2012)
The Proceedings of the Symposium edited by Altenbach, Holm and Kruch, Serge have been published by Springer, 2013. ISBN 978-3-642-35167-9
- 12-3 *IUTAM Symposium on From Mechanical to Biological Systems: an Integrated Approach*
(Izhvesk, Russia, June 5-10, 2012)
The Proceedings of the Symposium edited by V.V. Kozlov and A.V. Borisov have been published as a special issue of Regular and Chaotic Dynamics, Volume 18, No. 1-2, 2013.
- 12-4 *IUTAM Symposium on Waves in Fluids: Effects of Nonlinearity, Rotation, Stratification and Dissipation* (Moscow, Russia, June 18-22, 2012)

- The Proceedings of the Symposium edited by Y. Chashechkin and D. Dritschel have been published by Elsevier, 2013, as the eighth issue of the IUTAM e-Procedia series. **Procedia IUTAM Volume 8**
- 12-5 *IUTAM Symposium on Multiscale Problems in Stochastic Mechanics* (Karlsruhe, Germany, June 25-28, 2012)
The Proceedings of the Symposium edited by C. Proppe and J.-M. Bourinet have been published by Elsevier, 2013, as the sixth issue of the IUTAM e-Procedia series. **Procedia IUTAM Volume 6**
- 12-6 *IUTAM Symposium on Fracture Phenomena in Nature and Technology* (Brescia, Italy, July 1-5, 2012)
The Proceedings of the Symposium edited by D. Bigoni, A. Carini, M. Gei and A. Salvadori have been published as a Special Issue of the International Journal of Fracture, Volume 184, Issues 1-2, November 2013, and by Springer, 2014. ISBN 978-3-319-04396-8.
- 12-7 *IUTAM Symposium on Understanding Common Aspects of Extreme Events in Fluids* (Dublin, Ireland, July 2-6, 2012)
The Proceedings of the Symposium edited by M. Bustamante, A.C. Newell, R.M. Kerr and M. Tsubota have been published by Elsevier, 2013, as the ninth issue of the IUTAM e-Procedia series. **Procedia IUTAM Volume 9**
- 12-8 *IUTAM Symposium on Topological Fluid Dynamics: Theory and Applications* (Cambridge, UK, July 23-27, 2012)
The Proceedings of the Symposium edited by H.K. Moffatt, K. Bajer and Y. Kimura have been published by Elsevier, 2013, as the seventh issue of the IUTAM e-Procedia series. **Procedia IUTAM Volume 7**
- 12-10 *IUTAM Symposium on Particle Methods in Fluid Mechanics* (Lyngby, Denmark, October 15-17, 2012)
The Proceedings of the Symposium edited by J.H. Walther have been published by Elsevier, 2016, in the IUTAM e-Procedia series. **Procedia IUTAM Volume 18**
- 2013**
- 13-1 *IUTAM Symposium on Vortex Dynamics: Formation, Structure and Function* (Fukuoka, Japan, March 10-14, 2013)
The Proceedings of the Symposium edited by Y. Fukumoto have been published as a special issue of Fluid Dynamics Research, Volume 46, No. 3, 2014.

- 13-2 *IUTAM Symposium on Nonlinear Interfacial Wave Phenomena from the micro- to the macro-scale*
(Limassol, Cyprus, April 14-18, 2013)
The Proceedings of the Symposium edited by Papageorgiou D.T., Smyrlis, Y.S., Vanden-Broeck J.-M. and Christodoulides, P. have been published by Elsevier, 2014, as the eleventh issue of the IUTAM e-Procedia series. **Procedia IUTAM Volume 11**
- 13-3 *IUTAM Symposium on Recent Development of Experimental Techniques under Impact Loading*
(Xi'an, China, May 6-10, 2013)
The Proceedings of the Symposium edited by Yulong Li and Han Zhao have been published as a special issue of the International Journal of Impact Engineering, Volume 79, 2015.
- 13-4 *IUTAM Symposium on Materials and Interfaces under High Strain Rate and Large Deformation*
(Metz, France, June 17-21, 2013)
The Proceedings of the Symposium edited by S. Mercier, J.F. Molinari and D. Rittel have been published as a special issue of Mechanics of Materials, Volume 80, Part B, pp 163-374, 2015.
- 13-5 *IUTAM Symposium on Multiscale Modeling and Uncertainty Quantification of Materials and Structures*
(Santorini Island, Greece, September 9-11, 2013)
The Proceedings of the Symposium edited by M. Papadrakakis and G. Stefanou have been published by Springer, 2014. ISBN 978-3-319-06330-0
- 13-6 *IUTAM Symposium on the Dynamics of Extreme Events Influenced by Climate Change*
(Lanzhou, China, September 23-25, 2013)
The Proceedings of the Symposium edited by N. Huang have been published by Elsevier, 2016, as the seventeenth issue of the IUTAM e-Procedia series.
Procedia IUTAM Volume 17
- 2014**
- 14-1 *IUTAM Symposium on Transition and Turbulence in the Flow through Deformable Tubes and Channels*
(Bangalore, India, January 20-24, 2014)
The Proceedings of the Symposium edited by Shankar, V. and Kumaran, V. have been published as a special issue of Sadhana, Volume 40, Issue 3, May 2015.

- 14-2 *IUTAM Symposium on Mechanics of Soft Active Materials*
(Haifa, Israel, May 12-15, 2014)
The Proceedings of the Symposium edited by Volokh, K. and Jabareen, M. have been published by Elsevier, 2015, as the 12th issue of the IUTAM e-Procedia series. **Procedia IUTAM Volume 12**
- 14-3 *IUTAM Symposium on Connecting Multiscale Mechanics to Complex Material Design*
(Evanston, USA, May 13-16, 2014)
The Proceedings of the Symposium edited by Liu, W.K., Fish, J., Chen, J.S. and Camanho, P.P. have been published as a special issue of Computational Mechanics, Volume 57, Issue 3, March 2016.
- 14-4 *IUTAM Symposium on Micromechanics of Defects in Solids*
(Seville, Spain, June 9-13, 2014)
The Proceedings of the Symposium edited by Ariza, P., Ortiz, M. and Tvergaard, V. have been published as a special issue of Mechanics of Materials, Volume 90, Pages 1-268, November 2015.
- 14-5 *IUTAM Symposium on Dynamical Analysis of Multibody Systems with Design Uncertainties*
(Stuttgart, Germany, June 9-13, 2014)
The Proceedings of the Symposium edited by Hanss, M. have been published by Elsevier, 2015, as the 13th issue of the IUTAM e-Procedia series. **Procedia IUTAM Volume 13**
- 14-7 *IUTAM Symposium on Dynamics of Capsules, Vesicles and Cells in Flow*
(Compiègne, France, July 15-18, 2014)
The Proceedings of the Symposium edited by Barthès-Biesel, D., Blyth, M.G. and Salsac, A.-V. have been published by Elsevier, 2015, as the 16th issue of the IUTAM e-Procedia series. **Procedia IUTAM Volume 16**
- 14-8 *IUTAM Symposium on Innovative Numerical Approaches for Multi-Field and Multi-Scale Problems*
(Burg Schnellenberg, Germany, September 1-4, 2014)
The Proceedings of the Symposium edited by Weinberg, K. and Pandolfi, A. have been published in the Lecture Notes in Applied and Computational Mechanics series by Springer, 2016. ISBN 978-3-319-39021-5
- 14-9 *IUTAM Symposium on Complexity of Nonlinear Waves*
(Tallinn, Estonia, September 8-12, 2014)
The Proceedings of the Symposium edited by Salupere, A. and Maugin, G.A. have been published as a special issue of the Proceedings of the Estonian Academy of Sciences, Volume 64, Issue 3S, 2015.

- 14-10 *IUTAM Symposium on Multiphase Flows with Phase Change: Challenges and Opportunities*

(Hyderabad, India, December 8-11, 2014)

The Proceedings of the Symposium edited by Sahu, K.C. have been published by Elsevier, 2015, as the 15th issue of the IUTAM e-Procedia series. **Procedia IUTAM Volume 15**

- 14-11 *IUTAM Symposium on Advances in Computation, Modeling and Control of Transitional and Turbulent Flows*

(Goa, India, December 15-18, 2014)

The Proceedings of the Symposium edited by Sengupta, T.K., Lele, S.K., Sreenivasan, K.R. and Davidson, P.A. have been published by World Scientific, 2016. ISBN 978-981-4635-15-8

IUTAM-ABCM Symposium on Laminar Turbulent Transition

(Rio de Janeiro, Brazil, September 8-12, 2014)

The Proceedings of the Symposium edited by Medeiros, M.A.F. and Meneghini, J.R. have been published by Elsevier, 2015, as the 14th issue of the IUTAM e-Procedia series. **Procedia IUTAM Volume 14**

2015

- 15-4 *IUTAM Symposium on Analytical Methods in Nonlinear Dynamics*
(Frankfurt, Germany, June 6-9, 2015)

The Proceedings of the Symposium edited by Hagedorn, P. and Clerkin, E. have been published by Elsevier, 2016, as the 19th issue of the IUTAM e-Procedia series. **Procedia IUTAM Volume 19**

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 (were 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.

21th International Congress on Theoretical and Applied Mechanics (ICTAM),

Warsaw (Poland), 15-21 August 2004.

The Proceedings, entitled "Mechanics of the 21st Century" and edited by W. Gutkowski and T.A. Kowaleski, have been published by Springer, Dordrecht, The Netherlands, 2005. ISBN 1-4020-3456-3.

22nd International Congress on Theoretical and Applied Mechanics (ICTAM),

Adelaide (Australia), 24-29 August 2008.

The Proceedings, entitled "Mechanics Down Under" and edited by J. Denier and M. Finn, have been published by Springer, Dordrecht, The Netherlands, 2013, both as an eBook (ISBN 978-94-007-5968-8) and as a Hardcover (ISBN 978-94-007-5967-1).

23rd International Congress on Theoretical and Applied Mechanics (ICTAM),

Beijing (China), 19-24 August 2012.

The Proceedings, entitled "Mechanics for the World" and edited by Y. Bai, J. Wang and D. Fang, have been published by Elsevier, 2014, as the tenth issue of the IUTAM e-Procedia series. **Procedia IUTAM Volume 10.**

Publications on the history of IUTAM*IUTAM - A Short History,*

edited by S. Juhasz, has been published by Springer-Verlag, Berlin, Germany, 1988. ISBN 978-3-540-50043-8 (Print), 978-3-642-45649-7 (Online).

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 Proceedings of IUTAM Symposia published under **Procedia IUTAM** are open access. The other publications listed above, with the exception of the Annual Reports 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

<http://www.iutam.net>

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