REPORT 2014

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

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Professor T.J. Pedley (UK)	Vice-President
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Professor F. Dias (Ireland)	Secretary-General

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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,
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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. (Joris) Degrieck
Contact: Prof. Y. (Yvan) Baudoin
Representatives in IUTAM: Prof. P. (Philippe) Boulanger, Prof. E. (Erik) Dick, Prof. D. (Dirk) Vandepitte

Brazil (1982)
Associação Brasileira de Engenharia e Ciências Mecânicas – ABCM
Avenida Rio Branco 124/18° andar, 20040-001 Rio de Janeiro
President/Chair: Prof. V. (Valder) Steffen Jr.
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 OR6
National Committee for IUTAM
President/Chair: Prof. S. (Suresh) Shrivastava
Contact: Prof. J.M. (Maciej) Floryan
Representatives in IUTAM: Prof. J.M. (Maciej) Floryan, Prof. S.. (Sadik) Dost, 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
Institute of Applied Mechanics, National Taiwan University
No. 1, Sec. 4, Roosevelt Road, Taipei, 10617, Taiwan (R.O.C.)
President/Chair: Prof. K.-C. (Kuang-Chong) Wu
Secretary: S.-D. (Sheng-Der) Chao
Contact: Prof. C.-C. (Chien-Cheng) Chang
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. I. (Ivica) Kozar
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. (Djimedo) 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. P. (Peter) Eberhard
Contact: Prof. P. (Peter) Eberhard
Representatives in IUTAM: Prof. R. (Reinhold) Kienzler, Prof. M. (Martin) Oberlack, Prof. R. (Robert) Seifried, Prof. A. (André) Thess

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, Müegyetem rkp. 3, H-1521 Budapest
President/Chair: Prof. S. (Sandor) Kaliszky
Secretary: Prof. G. (Gábor) Stépán
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
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. M.B. (Miles) Rubin
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. A. (Angelo) Morro, 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. J. (James) Denier
Representative in IUTAM: Prof. J. (James) Denier

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. Pawinskiego 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. D. (Dragan) Spasic
Secretary: Prof. M. (Mihailo) Lazarevic
Representative in IUTAM: Prof. D. (Dragan) Spasic

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: Prof. L. (Laszlo) Fuchs
Secretary: Prof. M. (Mathias) Wallin
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. B.L. (Bhushan) Karihaloo
Secretary: Prof. N. (Nigel) Peake
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. S. (Stelios) Kyriakides
Secretary: Prof. L. (Linda) Franzoni
Representatives in IUTAM: Prof. N. (Nadine) Aubry, Prof. L. P. (Linda) Franzoni, Prof. C.T. (Carl) Herakovich, Prof. S. (Stelios) Kyriakides, Prof. Z. (Zhigang) Suo

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: G. (Graham) de Vahl Davis
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) Dvorák

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. G. (Genki) Yagawa
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. O. (Ole) Sigmund
Secretary: Prof. H.C. (Helder) Rodrigues
Contact: Prof. N. (Niels) Olhoff
Representative of ISSMO in IUTAM: Prof. H.C. (Helder) Rodrigues
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
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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. F. Malpica
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

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Prof. G. (Gal) DeBotton	Israel	
Prof. J. (James) Denier	New Zealand	
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Prof. H. (Horia) Ene	Romania	
Prof. N.A. (Norman) Fleck	UK	Chair SP Solids
Prof. M. (Maciej) Floryan	Canada	
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Prof. J. (John) Grue	Norway	

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Prof. D. (Djimedo) Kondo	France	
Prof. R. (Reijo) Kouhia	Finland	
Prof. S. (Stelios) Kyriakides	USA	
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Prof. V. (Vladimir) Levin	Russia	
Prof. J. (Jiachun) Li	China	
Prof. F. (Fernando) Lund	Chile	
Prof. S. (Staffan) Lundstrom	Sweden	
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Prof. Y. (Youichirou) Matsumoto	Japan	
Prof. R.M. (Robert) McMeeking		Secretary CC Representative of ICF
Prof. S. (Sanjay) Mittal	India	
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Prof. M. (Miloslav) Okrouhlík	Czech Republic	
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Prof. N. (Nigel) Peake	UK	

Member	***Representative of***	***Remarks***
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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
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Prof. R. (Robert) Seifried	Germany	
Prof. V.D. Sharma	India	
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Prof. L. (Leopold) Skerget	Slovenia	
Prof. S. (Scott) Sloan	Australia	
Prof. Y.S. (Yorgos-Socrates) Smyrlis	Cyprus	*Observer*
Prof. D. (Dragan) Spasic	Serbia	
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. Z. (Zhigang) Suo	USA	
Prof. J.N. (Jens Nørkær) Sørensen	Denmark	
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Prof. N. (Nguyen) Tien Khiem	Viet Nam	
Prof. G. (Goran) Turkalj	Croatia	
Prof. V. (Viggo) Tvergaard		Bureau member
Prof. D. (Dirk) Vandepitte	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	

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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. F. (Freddy) Malpica	Venezuela	LACCOTAM
Prof. S. (Sami) Masri	USA	IASCM
Prof. R. (René) Moreau	France	HYDROMAG
Prof. S.W. (Soo Woo) Nam	Korea	ICM
Prof. H. (Helder) Rodrigues	Portugal	ISSMO

Members of the Congress Committee

*Year indicates end of term

Member	***Country***	***Year****	***Remarks***
Prof. K. (Konrad) Bajer	Poland	2018	*Died on 29/08/2014*
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. (Djimedo) 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:			
Member	***Country***	***Year****	***Remarks***
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			
Member	***Country***	***Year****	***Remarks***
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 2014

Donations given to IUTAM Symposia are recorded under the heading “Financial Support” of the Reports of Symposia and Summer Schools held in 2014.

IUTAM Representation in ICSU and its Scientific Committees

Acronym	*Organization/Scientific Committee*	*Representative of IUTAM*
ICSU	International Council for Science	Prof. V. Tvergaard
COSPAR	Committee on Space Research	*To be nominated*
SCOR	Scientific Committee on Oceanic Research	*To be nominated*

Report of IUTAM Symposia held in 2014

14-1 IUTAM Symposium on Transition and Turbulence in the Flow through Deformable Tubes and Channels

Bangalore, India, January 20 – January 24, 2014

The IUTAM Symposium Transition and Turbulence in the Flow through Deformable Tubes and Channels was held in Bangalore, India, during the week of January 20–24, 2014.

a) Scientific and Organising Committee

Prof. T. J. Pedley (UK), Prof. G. Holzapfel (Austria), Prof. O. Jensen (UK), Prof. S. Kumar (USA), Prof. G. Fuller (USA), Prof. V. Kumaran (India), Prof. V. Shankar (India), Prof. S. Ansumali (India).

b) Short summary of scientific progress achieved

The flow past deformable surfaces, and surface deformation to generate flow, is a highly inter-disciplinary field at the intersection of fluid mechanics, engineering, applied mathematics and biology. These flows are ubiquitous in biological systems, and are increasingly of importance in microfluidic technologies. The symposium brought together an inter-disciplinary group of researchers, including mathematicians, physicists and engineers, to discuss the latest advances in the field and the open questions in the following broad areas:

1) Effect of a dynamical coupling between fluid flow and soft surfaces on flow instability and the transition to turbulence.
2) Tissue mechanics, and the rheology of soft solids.
3) Flow-structure interactions in the cardio-vascular system.
4) Respiratory flows, and collapsible-tube models of the respiratory system.
5) Use of soft and active materials for mixing and pumping in microfluidics.

The symposium featured quite a comprehensive series of talks on dynamical instabilities in the flow past soft surfaces, both theoretical and experimental. There has now emerged a comprehensive understanding of the stability characteristics in soft tubes and channels theoretically and experiementally both at low and high Reynolds number. However, the nature of the turbulent flow after transition is still very poorly understood, and this constitutes one of the promising areas for further research. The dynamics of collapsible tubes, a model for pulmonary flows, has also been extensively studied using lower order models, though recent experiments do reveal some surprising complexity in flows in the lungs. The fabrication and characterisation of soft solids as well as the use of elasticity models for the description of soft solids were examined in the symposium. There was one session in

the symposium for discussion on lift generated by flapping wings. Different experimental and theoretical models for flapping wings were discussed, both in the context of insect flight as well as in the construction of artificial flying vehicles based on flapping wings. Other topics included the actuation of soft solids, as well as the use of high frequency vibrations, for transporting fluids.

The symposium served as a forum for bringing together experts working on various aspects of solid-fluid interactions with diverse applications. This is likely to engender new collaborations and lead to further advances in the field.

c) Countries represented and number of participants There were 45 registered participants of which 22 were students or postdoctoral researchers. The participants were from USA, UK, Australia and India.

d) Publication of Proceedings The Proceedings will be published as a special section in the journal Sadhana, published by the Indian Academy of Sciences.

e) Financial and other support Financial support has been received from IUTAM (USD 5000/-) and the Jawaharlal Nehru Center for Advanced Scientific Research (INR 2,000,000/-). Conference hall and accommodation were also provided by the Jawaharlal Nehru Center for Advanced Scientific Research.

f) Scientific Program:

Day 1: January 20, 2014		
09:45	T.J. Pedley	Flow and oscillations in collapsible tubes: physiological applications and low-dimensional models
11:15	N.M. Bujurke	Stability of high Reynolds-number flow through collapsible channels
12:15	G.G. Fuller	Rheotaxis: the sensing and migratory response of microvascular endothelial cells to wall shear stress profiles
14:00	A. Ghatak	Application of microfluidic channels in designing solid-liquid composite materials
14:45	N. Gundiah	The advancing edge: role of geometric constraints in cell migrations
15:30	L. Yeo	Spreading films, fingering instabilities and soliton-like wave propagation triggered by high frequency surface vibration
16:30	N. Tiwari	Contact line instability in a thermocapillary-driven thin film and the effect of gravitational couterflow
17:15	A. Samanta	Falling film over a slippery inclined plane

	Day 2: January 21, 2014	
09:30	S. Sane	How flexible wings influence flows over flapping wings
10:30	K.R. Sreenivas	Experimental and numerical simulation of flapping flight
11:30	D. Das	Role of passive flexibility of wing in flapping flight
12:15	S. Ansumali	Mesoscale simulations of complex flows.
16:00	G.G. Fuller	Academy lecture
	Day 3: January 22, 2014	
09:30	V. Shankar	Stability of fluid flow through deformable channels and tubes: an overview
10:30	J.S.B. Gajjar	High Reynolds number liquid layer flow with flexible walls
11:30	A. Lucey	Local, global and transient analysis of disturbances in Blasius boundary layer flow over a compliant panel
12:15	R. Thaokar	Stability of oscillatory and electrohydrodynamic flows over flexible surfaces
14:00	P. Chokshi	Role of viscoelasticity in wall mode instability in plane shear flow over deformable solid
14:45	Gaurav	Manipulation of interfacial instabilities by using a soft, deformable solid layer
15:30	P.K. Sen	Stability of disturbance waves in developing shear flows, with application to boundary-layer flow over a flat-plate, and other examples
16:30	M.K.S. Verma	Transition and ultra-fast mixing in micro-channel due to a dynamical instability induced by a soft wall
17:15	V. Kumaran	A dynamical instability due to fluid-wall coupling lowers the transition Reynolds number in the flow through a flexible tube

Report composed by Prof. V. Kumaran

14-2 IUTAM Symposium on Mechanics of Soft Active Materials

Haifa, Israel, May 12 – May 15, 2014

The IUTAM Symposium on Mechanics of Soft Active Materials was held at the Technion – Israel Institute of Technology in Haifa Israel, during the week of May 12-15, 2014.

a) Scientific and Organizing Committee

Eduard Arzt (Germany); Yoseph Bar-Cohen (USA); Trajan Lu (China); Robert McMeeking (USA); Raymond Ogden (UK); Zhigang Suo (USA, IUTAM representative); Konstantin Volokh (Israel, Chairman)
Gal DeBotton (Israel, Local Organizing Committee); David Durban (Israel, Local Organizing Committee); Mahmood Jabareen (Israel, Local Organizing Committee Chair); Daniel Rittel (Israel, Local Organizing Committee); Konstantin Volokh (Israel, Local Organizing Committee)

b) Short summary of scientific progress achieved

Soft active materials (SAM) are man-made polymers or nature-built living tissues where mechanical deformation and failure are coupled with thermal, chemical, and electromagnetic responses. Examples include dielectric elastomers; shape-memory polymers; stimuli-responsive gels; heart; remodeling blood vessels; growing aneurysms; muscles etc. Applications of soft active materials vary from soft actuators and sensors to controlled drug delivery and functional self-assembly. The prospective applications include artificial muscles, tissues, engineering-based medical treatments during cardiovascular and brain surgery etc. Understanding the thermo-electro-chemo-mechanical behavior of soft biological tissues is a great challenge on its own. Soft active materials are the main building blocks of life. Learning from nature it will possible to improve technologies and health care. Using engineering approach it will be possible to correct nature's failures.

Diverse multidisciplinary studies of soft active materials are spread over the large number of journals, conferences, workshops targeting specific and, usually, narrow fields of applications. Such studies are sometimes recurring and missing new ideas because of the relative isolation of the scholars oriented towards different applications. The aim of our symposium was to gather people from various backgrounds and experience working on soft active materials in order to shape the discipline by exchanging and discussing the available experimental data and crystallizing the theoretical formulations. It was an attempt to equally present experimental and theoretical results as well as various applications.

The Symposium served as a catalyst to bring people working with different applications of SAM to collaborate. Several such synergies were explored and are currently being pursued.

c) Countries represented and number of participants

There were 43 oral presentations from participants who came from Italy, Germany, France, USA, Israel, Sweden, Turkey, Japan, Singapore, the Netherlands, Switzerland, and Spain.

d) Publication of Proceedings

A contract to publish Proceedings in the online Procedia IUTAM series was signed with Elsevier, with the actual date of publication being December 2014.

e) Financial and other support

The following institutions have provided financial and other support for the Symposium: IUTAM ($5500 travel grants for junior participants), Technion – Israel Institute of Technology ($6000 + full organization support).

f) Scientific program

May 12, 2014

09:40 Soft Materials and Soft Machines, Z. Suo
10:20 Thermo-Mechanics of Amorphous Shape Memory Polymers, T.D. Nguyen
10:40 Electroelastic Stability, L. Dorfmann, R. Ogden
11:00 Active Composites by 4D Printing, Q. Ge, M.L. Dunn, H.J. Qi
11:40 Gel Mechanics: A Thermo-Mechanically Coupled Theory for Fluid Permeation in Elastomeric Materials, L. Anand, S. Chester
12:00 Polyconvex Free Energy Terms For Electro- and Magneto- Active Materials, M. Itskov
12:20 Ionic Control of Crack Propagation in Biopolymer Hydrogels, T. Baumberger, O. Ronsin
12:40 Three-Dimensional Muscle Modeling – Experiment and Simulation, M. Bol, M. Sturmat, M. Ernst, T. Siebert
14:00 Fluidization by Stretch in the Jammed Epithelial Monolayer, B. Gweon, C-Y. Park, J. Shin, J. Butler, J. Fredberg
14:20 Neuronal Cells: Tension Induced Growth and Membrane Mechanics, P. Purohit
14:40 Cell Stiffness as a Biomarker for the Retrieval of Circulating Tumor Cells From Patient Blood, C.T. Lim
15:00 Cancer Cells Tenaciously Indent Impenetrable, Soft Gels, R. Kristal-Muscal, L. Dvir, R. Nissim, D. Weihs
15:40 Optimization of Load-Driven Soft Dielectric Elastomer Generators, E. Bortot, G. deBotton, M. Gei

16:00 Phase-Field Model for Solid Dielectric Breakdown, W. Hong

May 13, 2014
09:30 Biomimetic Micropatterned Surfaces for Interaction With Soft Matter, N. Guimard, J. Kaiser, E. Kroner, E. Arzt
09:50 Tough Hydrogels: Play With Sacrificial Bonds, J.P. Gong
10:10 An Internal Variable Based Interface Model for Charging and Piezoelectricity in Ferroelectrics, D. Gross, B-X Xu, S. Zhukov, H. Von Seggern
10:30 Dynamics of a Discrete Chain of Bi-Stable Elements: A Biomimetic Shock Absorption Mechanism, T. Cohen, S. Givli
11:10 Mechanisms of Deformation of Human Amnion, A. Mauri, A.E. Ehret, E. Mazza
11:30 Finite Element Modeling of the Electromechanical Coupling in Electroactive Polymers, M. Jabareen
11:50 The Coupling Between Electrostatics and Mechanics in Polymer Networks, G. Debotton, N. Cohen
12:10 Dynamics of Bistable Chains Subjected to Thermal Fluctuations, S. Givli, I. Benichou
13:30 Surface Tension of Compliant Solids, D. Paretkar, N. Nadermann, X. Xu, C-Y. Hui, A. Jagota
13:50 Shape-Memory Effect in Polymeric Materials: Mechanisms and Optimization, W.M. Huang
14:10 Fully Coupled Cardiac Electromechanics with Orthotropic Viscoelastic Effects, M. Kaliske, F.B. Can Cansiz, H. Dal
14:30 Cell Reorientation under Cyclic Stretching, A. Livne, E. Bouchbinder, B. Geiger
15:10 Gels For Cells: Soft Active Hydrogels for Tissue Regeneration and Biotechnology, D. Seliktar, A. Berdichevski
15:30 Modeling of Viscous Electrostrictive Polymers, A. Ask, A. Menzel, M. Ristinmaa
15:50 Modeling and Experiments in Gels, J. Huyghe

May 14, 2014
09:30 Elastic Dielectric Composites: Theory and Application to Particle-Filled Ideal Dielectrics, O. Lopez-Pamies
09:50 Thermo-Visco-Hyperelasticity of Electro-Active Soft Tissues, A. Gizzi, C. Cherubini, S. Fillipi, A. Pandolfi
10:10 Modeling the Mechanobiology of Aneurysm Evolution, E. Dickinson, H. Chen, K. Mandaltsi, P. Aparicio, J. Hornsby, P. Watton
10:30 Solid Flow Fields and Growth of Soft Solid Mass, D. Durban, Y. Dafalias, T. Cohen

11:10 A Model for the Interactions of Cytoskeleton Remodeling, Contractile Stresses and Signaling for A Cell on a Grooved Substrate,
R.M. McMeeking, A. Vigliotti, V.S. Deshpande, N. Gadegaard
11:30 Magnetoelastic Elastomers: Periodic Versus Random Microstructures,
E. Galipeau, S. Rudykh, G. Debotton, P. Ponte Castaneda
11:50 Passive and Active Mechanical Response of Human Arteries, Z. Yosibash
12:10 Active Stress as a Local Regulator of Global Size in Morphogenesis,
D. Ambrosi, V. Pettinati, P. Ciarletta
13:30 Swelling-Driven Shaping of Responsive Polymer Sheets and Multilayers,
R.C. Hayward
13:50 Computational Modeling of Cardiac Dysfunctions, S. Goktepe, E. Berberoglu
14:10 Mechanics of Bio-Hybrid Systems,
A. Lucantonio, P. Nardinocchi, M. Pezzulla, L. Teresi
14:30 Fibrotic Cardiomyopathy Reconstituted in Hydrogel Scaffolds,
G.M. Genin, T.M. Abney, B. Babaei, A. Davarian, D. Guo, W.B. Mcconnaughey, N. Pittore, K.M. Pryse, F. Xu, T. Wakatsuki, E.L. Elson
15:10 Dynamic Inflation of Hyperelastic Spherical Membranes: Remarks on the Role of Constitutive Relation, J.A. Rodriguez-Martinez, J. Fernandez-Saez, R. Zaera
15:30 Modeling Aneurysm Growth and Rupture, K.Y. Volokh

Report composed by K. Volokh

14-3 IUTAM Symposium on Connecting Multiscale Mechanics to Complex Material Design

Evanston, Illinois, May 13 – May 16, 2014

The IUTAM Symposium on Connecting Multiscale Mechanics to Complex Material Design was held at the Hilton Garden Inn in Evanston, during the week of May 13–16, 2014.

a) Scientific and Organizing Committee

Jacob Fish, Columbia University; Marc G. D. Geers, Eindhoven University of Technology; Javier Llorca, Universidad Politécnica de Madrid; Wing Kam Liu, Northwestern University; Pierre Suquet, CNRS; and Peter Wriggers, Institut fuer Kontinuumsmechanik Leibniz Universitaet Hannover.

b) Short summary of scientific progress achieved

The three-day single-session symposium on “Connecting Multiscale Mechanics to Complex Material Design”, an International Union of Theoretical and Applied Mechanics (IUTAM) symposium organized in cooperation with the United States Association for Computational Mechanics (USACM) was held at the Hilton Garden Inn, Evanston, Illinois, USA, on May 14-16, 2014. The IUTAM Representative was Carl T. Herakovich, unfortunately he was unable to attend. Each daily program of the IUTAM symposium consisted of six 40-minute invited lectures, six 20-minute invited lectures, and a one hour of panel discussion. To strengthen the impact of the symposium, a one-day USACM co-sponsored Workshop on Computational Aspects of Multiscale Materials Modeling was also held on May 13, 2014. It was co-organized by the late Ted Belytschko, JS Chen, Jacob Fish and Wing Kam Liu.

Materials are modular. That is, heterogeneous materials are aggregates of individual components, which we collectively refer to hereafter as multi-component materials. These individual components act as material building blocks, which by different synthesis and processing techniques self-assemble to form a complex mesostructured or conformation that determines macroscale performance. Design and analysis of such material complexes to resist extreme operating conditions requires modular descriptor-based methodologies that enable modelers to trace and designers to control multiscale "process-structure-property" metrics. Continuum mechanics concerns the material behavior at macroscopic scales, and quantum mechanics concerns the behavior of electrons and atoms at the Angstrom scale; however, the material behavior at nanoscale or mesoscale often crucially depends on the bridging of these scales through the integration of multiscale components and multiphysical science. Key physical/chemical/biological phenomena take place in the multiresolution scale, and they cannot be properly described by a single scale theory alone. Due to the multitude of physics, complex multiresolution-structures, and difficulty in matching experiments and simulations, multiresolution scale

mechanics of complex materials exhibits a great deal of complexity and stochasticity whose understanding and prediction are still beyond the capacity of current state-of-the-art knowledge base. This Symposium served as a catalyst to bring people working in mechanics, materials science, and computational methods to collaborate. This involved 46 participants and each of the three daily programs consisted of six 40-minute invited lectures, six 20-minute invited lectures, and a one hour of panel discussion.

In recent years, there has been particular focus on the multiscale nature of materials research: how computational methods and mathematical models for describing materials vary from the atomistic to the continuum scale. This workshop will seek to integrate mathematical, computational, and physics based approaches to the multiscale modeling of materials. While many new multiscale methods have been recently proposed, new theory is needed to validate and optimize multiscale computational methods. Further, most multiscale methods are not applicable to problems considering defects or other nonuniform microstructural features, and these challenging problems call for new homogenization theory. This workshop aims to promote collaboration among the diverse groups to assess the current status of multiscale materials modeling, promote the development of new computational techniques, and stimulate new applications. To strengthen the impact of the symposium, a one-day USACM co-sponsored Workshop on Computational Aspects of Multiscale Materials Modeling was also held on May 13, 2014. It was co-organized by the late Ted Belytschko, JS Chen, Jacob Fish and Wing Kam Liu.

c) Countries represented and number of participants

The number of registered participants reached 46 from 10 countries, namely China, Egypt, France, the Netherlands, Portugal, and United States of America.

d) Publication of Proceedings

A book of abstracts has been compiled and distributed by USACM. The Proceedings will be published as a special issue in Computational Mechanics.

e) Financial and other support

The support of the Symposium is mainly from IUTAM ($6,000).

f) Scientific program
Tuesday, May 13, 2014

Computational Aspects of Multiscale Materials Modeling

MULTISCALE FRACTURE (Chair: J.S. Chen)

8:30-9:00 Nasr Ghoniem, UCLA, “Is Dislocation Dynamics a Suitable Modeling Tool for Complex Fracture Problems?"
9:00-9:30 Stewart Silling, Sandia National Lab, "The Role of Peridynamics in Multiscale Analysis"
9:30-10:00 Florin Bobaru, University of Nebraska, “Length-scales and nonlocality in modeling of material dynamic failure with peridynamics"

MULTISCALE MATERIALS (Chair: D. Sulsky)
10:30-11:00 Wing K. Liu, Northwestern U., "Multiscale modeling: and Simulation Using a Heterogeneous Continuum Theory"
11:00-11:30 Somnath Ghosh, Johns Hopkins U., "Hierarchical Crystal Plasticity FE Model for Polycrystalline Nickel-based Superalloys"
11:30-12:00 Arif Masud, U. Illinois - Urbana-Champaign, "A Hierarchical Multiscale Method for Coupled Mechano-Electronic Modeling of Semiconducting Nanomaterials"

MULTISCALE METHODS (Chair: S. Ghosh)
1:30-2:00 Mitchell Luskin, U. Minnesota, "Theory-Based Developments and Benchmarking of Atomistic-to-Continuum Coupling Methods"
2:00-2:30 Shaoqiang Tang, Peking U., "Toward Faithful Atomic
and Multiscale Computations at Finite Temperature"
2:30-3:00 Frederic Legoll, Ecole Nationale Des Ponts et Chaussees (LAM), "Variance Reduction Approaches for Random Materials Homogenization"

MULTISCALE MECHANICS AND DESIGN (Chair: N. Ghoniem)
3:30 - 4:00 Jacob Fish, Columbia U., "Multiscale Design Systems"
4:00 - 4:30 Deborah Sulsky, U. New Mexico, “A Multiscale, Anisotropic, Elastic Decohesive Constitutive Relation for Modeling Sea Ice"
4:30-5:00 Mikko Haataja, Princeton U., "Connecting Microstructural Coarsening Processes to Electrochemical Performance in Solid Oxide Fuel Cells: An Integrated Multiscale Modeling Approach"

Wednesday, May 14, 2014

FRACTURE (Chair: William Curtin)
8:30-9:10 J.S. Chen, UC-San Diego, "Fracture to Damage Multiscale Mechanics and Modeling"
9:10-9:50 Matt Begley, U. California, Santa Barbara, "GPU-Based Simulations of Fracture in Idealized Brick and Mortar Microstructures"

9:50-10:30 Wing Kam Liu, Northwestern University, "Multiscale Analysis and Materials Design of LENS Manufactured Components"

HOMOGENIZATION (Chair: P. Suquet)
11:00-11:40 Jacob Fish, Columbia University, "Practical Multiscaling"
11:40-12:20 Pedro Ponte Castaneda, U. Pennsylvania, "Design of Microstructures for Enhanced Magnetostriction in Active Composites"
12:20-1:00 Varvara Kouznetsova, Eindhoven U. Technology, "Computational Homogenization for Transient Phenomena in Locally Resonant Metamaterials"

CONTRIBUTED TALKS (Chair: P. Wriggers)
2:00-2:20 Stefan Loehnert, U. Hannover, "3D Error Controlled Adaptive Multiscale Simulation of Ductile Fracture"
2:20-2:40 Martin Idiart, Universidad Nacional de la Plata, "Modeling Two-Phase Ferroelectric Composites by Sequential Laminates"
2:40-3:00 Kostas Danas, LMS-Polytechnique, "Recent Advances in the Modelling of Electro- and Magneto-Active Materials"
3:00-3:20 Daniel Balzani, U. Duisberg-Essen, "On The Construction of Three-Dimensional Statistically Similar Rves for Direct Micro-Macro Transitions of Improved Efficiency"
3:20-3:40 Shan Tang, Chongqing University, China "Instability of Layered Soft Materials: Theory and Computation"
3:40-4:00 Julien Yvonnet, U. Paris-Est Marne-la-Vallée, "Coarse-Graining/Nonlocal Homogenization of Heterogeneous Materials with Arbitrary Scale Separation: A Consistent Scheme Based on Filters"

CONTRIBUTED TALKS (Chair: M. Begley)
4:30-4:50 Karel Matous, U. Notre Dame, "High-Performance Multiscale Computations: Path Towards Virtual Materials Testing"
4:50-5:10 Caglar Oskay, Vanderbilt U, “Multiscale Modeling of the Transient Dynamic Response of Heterogeneous Materials: Dispersion, Dissipation and Phononic Band Gaps"
5:10-5:30 John Foster, U. Texas, San Antonio, "A Model For Nonlocal
Diffusion and Fluid Driven Fracture"

5:30-5:50 Katherine Acton, University of St. Thomas, “Matrix Norm Based Error Approximation of the Material Behavior of Statistical Volume Elements”
5:50-6:30 Chairs: W. Liu, P. Suquet, P. Wriggers Panel discussion

Thursday, May 15, 2014

METALLIC MATERIALS (Chair: J. Llorca)
8:30-9:10 William Curtin, EPFL, "Predicting New Al-Mg Alloys with Enhanced Ductility Starting from First-Principles"
9:10-9:50 Dierk Raabe, MPIE, "Integrated experimental and simulation analysis of stress and strain partitioning in dual phase steel"
9:50-10:30 Amit Acharya, Carnegie Mellon U., "PDE dynamics of dislocations"

STRUCTURAL COMPOSITES (Chair: D. Raabe)
11:00-11:40 Pedro P. Camanho, U. Porto, "Analysis models for polymer composite materials at different length scales"
11:40-12:20 Javier LLorca, Polytechnic U. of Madrid, "Multiscale modeling of impact in composites: a success story"
12:20-1:00 Cate Brinson, Northwestern U., "Polymers at Interfaces - Characterization, Modeling and Applications

CONTRIBUTED TALKS (Chair: W. Curtin)
2:00-2:20 Dennis Kochmann, California Institute of Technology,
"Predictive models for the mesoscale by extreme-scale coarse-grained atomistics"
2:20-2:40 Javier Segurado, U. Polytecnica de Madrid,
"Computational homogenization and multiscale simulation of the mechanical behavior of Ti and Mg polycrystals"
2:40-3:00 Markus Huetter, Technical University Eindhoven, "Constitutive relations for mechanics: Microstructure-inspired versus microstructure-based"
3:00-3:20 Khalil Elkhodary, American U. Cairo, "Higher Order and Higher Grade Extensions of Crystalline Plasticity"
3:20 - 3:40 Brett A. Bednaryck, NASA, "Synergistic Multiscale Modeling of Ceramic Matrix Composites"
3:40 - 4:00 Felix Fritzen, Karlsruher Institute fur Technologie, "Towards realistic multiscale simulations: Reduced Basis FE2 with GPU acceleration"

CONTRIBUTED TALKS (Chair: M. Begley)
4:30-4:50 Elisa Budyn, U. Illinois, Chicago, "Multiscale predictive capability of evolutionary Monte-Carlo synthetic bone microstructures"
4:50-5:10 Dong Qian, UT-Dallas, "Computational Mechanics of Material based on Multitemporal Scale Method”

5:10-5:30 Waiching Sun, Columbia U, "Modeling the multiscale deformation-diffusion process of fluid-infiltrating solids via the Arlequin method"
5:30-6:30 Chairs: J. Llorca, D. Raabe, W. Curtin Panel discussion

Friday, May 16, 2014

MULTIPHYSICS/PROCESSING (Chair: W. K Liu)
8:30-9:10 Tarek Zohdi, U. California-Berkeley, "Modeling and Simulation of Multiphysical Processes for the Manufacturing of New Multifunctional Particulate Materials"
9:10-9:50 Olivier Allix, LMT-Cachan, "The compressive behavior of composites including fragmentation: modeling across the scales"
9:50-10:30 Roderic Lakes, U. Wisconsin, "Ultra-sensitive piezoelectric heterogeneous materials and their relation to other complex materials"

UNCERTAINTIES/STOCHASTIC MODELS (Chair: A. Acharya)
11:00-11:40 Horacio Espinosa, Northwestern U., "De Novo Multiscale Analysis of CNT Yarns"
11:40 - 12:20 Pierre Ladeveze, LMT-Cachan, "Multiscale Modelling and Design of Laminated Composites: State-of-the-Art and Challenges"
12:20 -1:00 Xu Guo, Dalian University of Technology, "Multi-scale Concurrent Material and Structure Optimization Considering Load Uncertainties"
1:00 - 3:00 Chairs: W. Curtin, A. Acharya, M. Begley Lunch and Panel Discussion

Report composed by Wing Kam Liu

14-4 IUTAM Symposium on Micromechanics of Defects in Solids
Sevilla, June 09 – June 13, 2014

The IUTAM Symposium on Micromechanics of Defects in Solids was held at the Engineering School of the University of Sevilla, during the week of June 9–13, 2014.

a) Scientific and Organizing Committee
Vikram Deshpande (UK), Richard James (USA), Jean Baptiste Leblond (France), Michael Ortiz (USA), Nick Schryvers (Belgium), Viggo Tvergaard (IUTAM Representative) , Pilar Ariza (Spain, Chair).

Hector Cifuentes (Spain, Organizing Committee), Juan Mendez (Spain, Organizing Committee), Carlos Sanchez (Spain, Organizing Committee), Irene G. Vila (Spain, Organizing Committee), Pilar Ariza (Spain – Chair of the Organizing Committee).

b) Short summary of scientific progress achieved
Recent developments in experimental science that enable the examination of defects at the atomic scale provide an unprecedented connection between the structure and properties of materials. Techniques ranging from high-resolution electron microscopy to atomic-force microscopy reveal new insights into the micromechanical foundations of material behavior, but also pose deep challenges as regards theory, modeling and simulation.

However, the link between the defects themselves and the observed macroscopic behavior is often a difficult one to forge theoretically or computationally and remains an active area of research. Many of the fundamental mechanisms underlying the inelastic behavior of materials are mediated by crystal-lattice defects and are, therefore, accessible to direct atomistic simulation, either by means of empirical potentials or through ab initio quantum-mechanical calculations. Notable examples are furnished by first-principles calculations of the EoS and elastic moduli of metals up to high pressures and temperatures, and the characterization of the structure of point defects, such as vacancies and interstitials, and extended defects, such as dislocations and grain boundaries. However, in general atomic-scale mechanisms are separated from macroscopic behavior by a vast array of intervening continuum scales. These mesoscopic scales both average and set the boundary conditions or driving forces for the atomic-scale phenomena and are an essential part of the structure of materials.

While effective at describing macroscopic material behavior, continuum theories tend to break down on the scale of the lattice, e.g., in the vicinity of lattice defects. Therefore, a complete understanding of material behavior, as well as the predictive computation of the material properties, requires both atomistic and continuum modeling, with the atomistic/continuum handshake most effectively achieved within the framework of multiscale modeling.

c) Countries represented and number of participants

The number of registered participants reached 50, 13 of which were graduate students or postdoctoral researchers, from 11 countries, namely Belgium, Denmark, France, Germany, India, Spain, Switzerland, the Netherlands, Turkey, Ukraine, United Kingdom and United States of America.

d) Publication of Proceedings of the Symposium

The Proceedings of the Symposium will be published as a Special Issue of Mechanics of Materials entitled "Proceedings of the IUTAM Symposium on Micromechanics of Defects in Solids". This volume will include 21 manuscripts, the review process is expected to be completed before May, 2015.

e) Financial support

The following institutions have provided financial and other support for the Symposium: IUTAM (€1647.14), University of Seville (€1786, printed material for dissemination and advertising), Engineering School (equipment and stationery), Andalusia Tourism Office (information material).

f) Scientific program

Monday, 9 June 2014

09h35 Alan Needleman (University of North Texas, USA), Void growth and collapse in creeping single crystals.

10h10 Michael Ortiz (California Institute of Technology, USA), A micromechanical damage and fracture model for polymers based on fractional strain-gradient elasticity.

11h10 John Bassani (University of Pennsylvania, USA), Non-associative plastic flow.

11h45 Xanthippi Markenscoff (University of California, San Diego, USA), Dynamic Eshelby micromechanics.

14h00 Claude Stolz (Ecole Centrale de Nantes, France), Equilibrium solution for the finite anti-plane shear field for a class of hyperelastic incompressible brittle solids.

14h35 Lucia Nicola (Delft University of Technology, the Netherlands), Plastic deformation of rough surfaces in contact.

15h10 Dennis Kochmann (California Institute of Technology, USA), Taming force artifacts in coarse-grained atomistics to understanding nanoscale plasticity.

16h10 Jean-Baptiste Leblond (Institut Jean le Rond d'Alembert - University Pierre and Marie, France), Planar cracks with slightly curved fronts: theoretical and experimental approaches.

16h45 Pilar Ariza (University of Seville, Spain), Atomistic simulation of coupled problems.

Tuesday, 10 June 2014

09h00 Viggo Tvergaard (Technical University of Denmark, Denmark), Effect of initial void shape on ductile failure in a shear field.

09h35 Erik Van der Giessen (University of Groningen, the Netherlands), How do continuum crystal plasticity time scales emerge from dislocation dynamics?.

10h10 Pedro Ponte Castañeda (University of Pennsylvania, USA), The effect of porosity and its anisotropic evolution on the macroscopic response of plastically deforming metals.
11h10 Andres Jaramillo (California Institute of Technology, USA), Large-scale non-adiabatic dynamics simulation of materials in extreme conditions.
11h45 Nicolas Moës (Ecole Centrale de Nantes, France), Coupling local and non-local damage evolutions with the thick level set damage model.

Wednesday, 11 June 2014
09h35 William Curtin (Swiss Federal Institute of Technology in Lausanne, Switzerland), Quantitative prediction of macroscopic ductility in Al-Mg starting from quantum mechanics.
10h10 Kaushik Bhattacharya (California Institute of Technology, USA), Effective toughness of heterogeneous media.
11h10 Robert M. McMeeking (University of California, Santa Barbara, USA), Defect mediated recrystallization during large plastic strain.
11h45 Dominique Leguillon (Institut Jean le Rond d'Alembert - University Pierre and Marie, France), Detection of micro-defects in the vicinity of a stress concentration point.
14h00 Bob Svendsen (RWTH Aachen University, Germany). Combined atomistic-continuum modelling of dislocation dissociation, glide and twinning in fcc materials.
14h35 Varvara Kouznetsova (Eindhoven University of Technology, the Netherlands), Grain boundary plasticity model with incorporation of internal structure and energy.
15h10 Daniel Balzani (University of Duisburg-Essen, Germany), Approach for the incorporation of microscopically distributed properties in DP steels.
16h10 Christian Niordson (Technical University of Denmark, Denmark), Size-effects in void growth and coalescence.
16h45 Denis Davydov (Friedrich-Alexander-University Erlangen-Nuremberg, Germany), Atomistic to continuum coupling: the promise of studying defects at the sub-micron scale.

Thursday, 12 June 2014
09h00 Javier Llorca (IMDEA Materials, Spain), Size effects in micropillar compression: the effect of temperature.
09h35 Amine Benzerga (Texas A&M University, USA), A porous material plasticity model for anisotropic solids with non spherical voids.
10h10 Laurent Stainier (Ecole Centrale de Nantes, France), Damage in thermoviscoelastic materials: variational formulation and regularization.
11h10 Vikram Gavini (University of Michigan, USA), Electronic structure studies on defects in materials.
11h45 Celia Reina (University of Pennsylvania, USA), F=FeFp? A micromechanical analysis of finite crystal elastoplasticity.
14h00 POSTERS PRESENTATIONS:

- Anup Basak (Indian Institute of Technology Kanpur, India), Shape evolution of an embedded grain under coupled grain boundary motion.

- Peter Gladbach (Bonn University, Germany), Multiple relaxation in a peierls-nabarro model for parallel slip planes.
- Stefanie Heyden (California Institute of Technology, USA), Material modeling of cardiac valve tissue.
- Nataliia Krupko (Donetsk National University, Ukraine), Stress-deformable state of isotropic shell for arbitrarily gaussian curvature with non-through thickness cracks and circular hole.
- Enrique Martínez-Pañeda (University of Oviedo, Spain), Crack-tip fields in strain gradient plasticity.
- Juan Mendez (University of Seville, Spain), Study of defects in graphene using a tight binding model.
- Francisco Montero-Chacón (Abengoa Research, Spain) Modeling failure of pcm systems in heat storage applications.
- Andres Parrilla (Ecole Centrale de Nantes, France), TLS approach for damage mechanics under antiplane shear.
- J. A. Rodríguez-Martínez (University Carlos III of Madrid, Spain), Dynamic spherical cavity expansion in transformation hardening elastoplastic solids: theoretical and finite element.
- Manish Vasoya (Institut Jean Le Rond d'Alembert, CNRS, France), Fingering instability during tensile planar-crack propagation in strongly heterogeneous toughness fields.

16h10 Hosni Idrissi (University of Antwerp, Belgium), Study of nanoscale deformation mechanisms in nanocrystalline materials using advanced.
16h45 Brian Nyvang Legarth (Technical University of Denmark, Denmark), Effect of geometrical anisotropy on kinking of a debonding fiber/matrix crack using AFEM.

Friday, 13 June 2014
09h00 Amit Acharya (Carnegie Mellon University, USA), PDE dynamics of line defects in solids.
09h35 Ercan Gürses (Middle East Technical University, Turkey), Microstructural modeling of semicrystalline polymers.
10h10 Liping Liu (Rutgers the State University of New Jersey, USA), Fluctuations of biological membrane.

Report composed by Pilar Ariza

14-5 IUTAM Symposium on Dynamical Analysis of Multibody Systems with Design Uncertainties

Stuttgart, Germany, June 9 – June 13, 2014

a) Scientific Committee

Michael Hanss (Germany – Chairman), Alexander Belyaev (Russia), Harry Dankowicz (USA), Wim Desmet (Belgium), Haiyan Hu (China), Robin Langley (United Kingdom), Christian Soize (France), Peter Eberhard (Germany – IUTAM Representative)

b) Short summary of the scientific progress achieved

From the abstracts submitted for the Symposium, 24 papers had been selected for oral presentation. Due to uncontrollable circumstances, 4 scientists could not give their talks, i.e. 20 presentations were finally given at the Symposium.

Various approaches to the inclusion of uncertainties in the numerical analysis of dynamical systems and structures have been introduced in the past decades, involving probabilistic as well as non-probabilistic techniques. Supported by the increasing capabilities of modern high-performance computing, these advanced, non-deterministic approaches to the dynamical analysis of mechanical systems can strengthen the trustworthiness of numerical predictions and provide new possibilities in the processes of product development, such as engineering design and virtual prototyping, beyond the means of conventional, deterministic concepts.

Against this background, the scientific achievement and progress of this IUTAM Symposium was significant and substantial. Along with the demonstration of the state of the art of the potentials, challenges and limitations of different approaches to the analysis of mechanical systems in the presence of design uncertainties, the Symposium was able to highlight a variety of promising and well-developable prospects, ranging from probabilistic methods to approaches based on interval descriptions or fuzzy sets, from linear to nonlinear problems, from forward analyses to inverse problems, and from the analysis of structures to multibody systems dynamics. Moreover, the Symposium managed to present both new theoretical developments and significant practical applications.

c) Countries represented and number of participants

The Symposium had 23 participants from the following 14 countries: Belgium, Austria, SAR Macau, Germany, Thailand, Australia, United Kingdom, Netherlands, France, China, Denmark, Poland, Russia, Italy

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 March 6, 2014, and signed by the Symposium chairman Michael Hanss 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 two industrial sponsors, namely the companies FunctionBay and Simpack.

Furthermore, the financial support by an IUTAM Grant is gratefully acknowledged.

f) Scientific program

Tuesday, June 10, 2014

9:50 - 10:20 Opening Session

Chair: Fabio Casciati

10:20 - 11:00 Frank Naets, Wim Desmet: An estimation approach for uncertain parameters in multibody systems

11:30 - 12:10 Mathias Jesussek, Katrin Ellermann: Fault detection and isolation for a railway vehicle by evaluating estimation residuals

12:10 - 12:50 Guo-Kang Er, Vai Pan Iu: The probalistic solution of the plate with simple-supported and stretched boundary and uniform load being Gaussian white noise

Chair: Sondipon Adhikari

14:00 - 14:40 Igor Iroz, Sergio Carvajal, Michael Hanss, Peter Eberhard: Inverse fuzzy arithmetic for the quality assessment of substructured models

14:40 - 15:20 Tommaso Tamarozzi, Frank Naets, Wim Desmet: Parameterized nonlinear model reduction for multibody simulation with uncertain parameters

15:50 - 16:30 Thanapat Wanichanon, Hancheol Cho, Firdaus E. Udwadia: An approach to the dynamics and control of uncertain multi-body systems

18:30 - 22:00 Symposium Reception in the Marmorsaal ("Marble Hall"), Weissenburg Park, Stuttgart

Wednesday, June 11, 2014

Chair: Wim Desmet

9:00 - 9:40 Kheirollah Sepahvand, Khaled Nabih, Steffen Marburg: Collocation-based stochastic modeling of uncertain geometric mistuning in bladed rotor

9:40 - 10:20 Peter Hagedorn, Manuel Eckstein, Eduard Heffel: A note on design uncertainties in self-excited vibrations

10:20 - 11:00 Ji Yang, Beatrice Faverjon, Herwig Peters, Nicole Kessissoglou: Application of polynomial chaos expansion and model order reduction for dynamic analysis of structures with uncertainties

11:30 - 12:10 Kheirollah Sepahvand, Sandip Kumar Saha, Vasant A. Matsagar, Steffen Marburg: Stochastic analysis of base-isolated liquid storage tanks using lumped-model

12:10 - 12:50 Sondipon Adhikari, Hamed H. Khodaparast: Spectral methods for fuzzy structural dynamics: Modal vs direct approach

Chair: Carsten Proppe

14:00 - 14:40 Robert Seifried, Ali Moghadasi: Analysis of design uncertainties in structurally optimized lightweight machines

14:40 - 15:20 Jaap P. Meijaard: The importance of imperfections in leaf-spring flexures for the support stiffness
15:50 - 16:30 Anas Batou, Christian Soize, C. K. Choi, H. H. Yoo: Robust design in multibody dynamics - application to vehicle ride-comfort optimization

Thursday, June 12, 2014
Chair: Werner Schiehlen
9:00 - 9:40 Carsten Proppe, Xiaoyu Zhang: Influence of uncertainties on crosswind stability of vehicles
9:40 - 10:20 Shuxin Wang, Baiyan He, Zhiliang Wu: Dynamical analysis of autonomous underwater vehicles with design uncertainties: A multibody system approach
10:20 - 11:00 Alberto Gallina, Andreas Gibbesch, Rainer Krenn, Tadeusz Uhl, Bernd Schäfer: Multibody simulation of planetary rover mobility in condition of uncertain soft terrain
11:30 - 12:10 Nico-Philipp Walz, Markus Burkhardt, Michael Hanss, Peter Eberhard: Sensitivity computation for uncertain dynamical systems using high-dimensional model representation
12:10 - 12:50 Alexander K. Belyaev, Vladimir A. Polyanskiy, Yuri A. Yakovlev: Hydrogen as an indicator of high-cycle fatigue
14:00 - 23:00 Excursion to the Porsche Museum and the Maulbronn Monastery (UNESCO World Heritage Site) followed by the Conference Dinner in Markgröningen

Friday, June 13, 2014
Chair: Peter Eberhard
10:20 - 11:00 Werner Schiehlen: Uncertainties in road vehicle suspensions
11:00 - 11:40 Closing Session

Report prepared by M. Hanss

14-6 IUTAM Symposium on Thermomechanical-electromagnetic coupling in solids : microstructural and stability aspects
Paris, France, June 16 – June 18, 2014

The IUTAM Symposium on Thermomechanical – Electromagnetic Coupling in Solids: Microstructural and Stability Aspects was held on June 16th -18th, 2014 at the Institut Henri Poincare in Paris, FRANCE

a) Scientific and Organizing Committee
K. Bhattacharya (Pasadena, USA), O. Hubert, (Cachan, France), R. James, (Minneapolis, USA), C. Miehe, (Stuttgart, Germany – IUTAM representative) and N. Triantafyllidis, (Palaiseau, France – Chair of organizing committee)

b) Short summary of scientific progress achieved
This symposium brought together researchers working in a class of solids broadly defined as active materials because they can respond to changes in their environment and which are utilized in devices with an ever-increasing number of applications in modern automotive, aerospace, biomedical and electronics industries. Talks pertained to solids with multi-physics (i.e. thermo-mechanical and electro-magnetic) coupling, which is often due to their microstructure and can lead to remarkable properties resulting from micromechanical instabilities triggered by macroscopic loads. Topics covered various types of piezo- and magneto-elastic materials, piezo-ceramics, dielectric elastomeric composites, metamaterials and nematic crystals.

Participants addressed many open issues in this field, that straddle physics, mechanics, materials science and applied mathematics, such as the proper formulation for these multi-physics problems and related homogenization techniques. Numerical methods were also discussed and experimental work has also been presented. The Symposium served as a catalyst to bring people working in this area; several synergies have been identified that can lead to joint research work.

c) Countries represented and number of participants
There were 30 registered participants and 15 speakers; 7 speakers were from the US and 8 from different European countries (France, Germany and Italy).

d) Financial and other support
Financial support has been provided by the Solid Mechanics Laboratory (LMS), the Andre Citroen Chair and the Ecole Polytechnique.

e) Scientific program
Monday 16 June
Chair: Bhattacharya

09:00 JAMES Richard, Phase transformations in magnetic materials
09:45 MIEHE Christian, Variational Principles for Evolution Problems in Thermo-Electro-Magneto-Mechanics. Construction and Computational Exploitation
11:00 DANIEL Laurent, Revisiting the blocking force experiment on piezoelectric ceramics using synchrotron x-ray diffraction
11:45 GODDARD Joe, Piezo-thermoelectricity - Some Afterthoughts

Chair: Jabbour
14:00 BHATTACHARYA Kaushik, Dielectric elastomers
14:45 LOPEZ-PAMIES Oscar, Dielectric elastomer composites: A general closed-form solution in the small-deformation limit
15:30 PONTE-CASTANEDA Pedro, Dielectric Elastomer Composites: Macroscopic Response and Instabilities

Tuesday 17 June
Chair: Hubert
09:00 JABBOUR Michel, A sharp-interface theory for spherulitic crystallization under solvent-vapor annealing
09:45 MARKENSCOFF Xanthippi, Instabilities in Coupled Thermo-chemo-mechanical Systems.
11:00 PAMPOLINI Gianpiero, Electromechanical theory for nematic continua with an application to 2D Freedericksz instabilities in liquid crystals
11:45 SFYRIS Georges, Freedericksz instabilities for the twisted nematic device; a bifurcation theory approach in 3D

Chair: Daniel
14:00 DANAS Kostas, Magnetorheological elastomers: from micro-deformation mechanisms to macroscopic instabilities and applications
14:45 SAXENA Prashant, Rate dependent deformations in magneto-rheological elastomers: Modelling and Experiments

Wednesday 18 June
Chair: James
09:00 HUBERT Olivier, Chemo-magneto-elastic couplings - experiments, modeling and structural instabilities
09:45 KOCHMANN Dennis, Controlling the viscoelastic performance of ferroelectrics: experiments and simulations
11:00 BRENNER Renald, Multifield coupling behaviour of composite materials: effective properties and local fields
11:45 PETZOLD Thomas, Finite Element Simulations and Experiments for Multifrequency Induction Hardening

Report prepared by Nick Triantafyllidis

14-7 IUTAM Symposium on Dynamics of Capsules, Vesicles and Cells in Flow

Compiègne, France, July 15 – July 18, 2014

The IUTAM Symposium on Dynamics of Capsules, Vesicles and Cells in Flow has taken place at the University of Technology of Compiègne (UTC) in Compiègne (France) on July 15-18, 2014. It has received the additional support of the European Mechanics Society, Association Française de Mécanique and the Région Picardie.

a) Scientific and Organizing Committee

Dominique Barthès-Biesel (France, Organizing Committee), Mark Blyth (UK, Organizing Committee), Takuji Ishikawa (Japan), Chwee Teck Lim (Singapore), Anne-Virginie Salsac (France, Chair of the Organizing Committee), Timothy Secomb (USA), Victor Steinberg (Israel), Petia Vlahovska (USA)

b) Short summary of scientific progress achieved

Encapsulated soft particles are commonly encountered in nature (seeds, cells, phospholipid vesicles) and in different industrial applications (biotechnology, pharmacology, cosmetics, food industry). The role of encapsulation is to protect a substance with a solid envelope. It avoids its dispersion in the ambient environment or its degradation in contact with it. The membrane may be a lipid bilayer (vesicles), a reticulated membrane with elastic properties (artificial capsules) or a lipid bilayer connected to a cytoskeleton (cells).

Various aspects of the mechanics of capsules/vesicles/cells have been covered during the meeting:

• Characterization of their mechanical properties, which is difficult owing to their small size and fragility

• Role of the fabrication process on the physical and mechanical properties of artificial capsules or vesicles (shape, size, degree of reticulation, membrane mechanical properties). Controlling the membrane properties is essential to optimize the design and production of specific particles for each application.

• Deformation of the capsules/vesicles/cells when suspended in an external flowing fluid

The Symposium has brought bring together theoreticians and experimentalists who work on the mechanics, physics and biology of capsules/vesicles/cells.

It has provided the opportunity to confront the various approaches used to study the flow and deformation of such deformable particles. Relatively few experimental studies of these phenomena exist, but recent progress in microtechnology has opened new perspectives. Correlatively, the theoretical study of the motion and deformation of these particles is a complex fluid-structure interaction problem. The present

numerical models all include simplifying assumptions, the relevance of which has yet to be established. The Symposium has given a chance to have strong discussions on current results and the needs of future research.

c) Countries represented and number of participants

The number of registered participants was 60, 28 of which were graduate students or postdoctoral researchers. Participants came from Canada, China, France, Germany, Greece, India, Israel, Italy, Japan, Sweden, Switzerland, United Kingdom and United States of America.

d) Publication of Proceedings

A contract to publish Proceedings in the online Procedia IUTAM series was signed with Elsevier, with the actual date of publication being in the first term of 2015.

e) Financial and other support

The following institutions have provided financial and other support for the Symposium: IUTAM (€3600), European Mechanics Society (€1650), Association Française de Mécanique (€1000) and the Région Picardie (€2500).

f) Scientific program

Tuesday, 15 July 2014

9:50 Michael Graham. Collide and conquer: flow-induced segregation phenomena in blood and other multicomponent suspensions

10:30 Yohsuke Imai, Naoki Takeishi, Takami Yamaguchi and Takuji Ishikawa. Margination of large cells in microchannels

10:55 Mark Blyth and Hugh Woolfenden. Numerical computation of capsule motion in a branching flow

11:20 Kausik Sarkar, Swarnajay Mukherjee and Rajesh Singh. Wall induced migration of drops and capsules: effects of inclination and viscoelasticity

11:45 Alexander Farutin and Chaouqi Misbah. Cross-streamline migration and symmetry breaking for vesicles in Poiseuille flow

12:10 Wei-Xi Huang, Cheong Bong Chang and Hyung Jin Sung. Migration of elastic capsules by optical force in a uniform flow

14:00 Heinz Rehage, Ivanka Koleva and Anja Unverfehrt. Deformation, orientation and bursting of microcapsules in simple
shear flow: Wrinkling processes, tumbling and swinging motions

14:40 Claire Dupont, Patrick Le Tallec, Dominique Barthès-Biesel, Marina Vidrascu and Anne-Virginie Salsac. Dynamics of a spherical capsule in a planar hyperbolic flow: influence of bending resistance.

15:05 Yi Sui, Zhen Wang and Wen Wang. Dynamics of Oblate and Prolate Capsules in Shear Flow

15:30 Florence Edwards-Lévy, Erika Bourguet, Emilie Charpentier and Fanny

Deshayes. Determination of the cross-linking degree of serum albumin microcapsules by quantitative NMR analysis
16:25 Clement de Loubens, Julien Deschamps, Marc Georgelin, Anne Charrier, Florence Edwards-Lévy and Marc Leonetti. Mechanical characterisation of microcapsules in elongational flow
16:50 Pierre-Yves Gires, Jonathan Gubspun, Dominique Barthès-Biesel, Julien Deschamps, Marc Georgelin, Marc Léonetti, Eric Leclerc, Florence Edwards-Lévy and Anne-Virginie Salsac. Influence of size on the membrane mechanical properties of crosslinked serumalbumin microcapsules
17 :15 Francois Coulouvrat, Ksenia Astafyeva, Matthieu Guedra, Jean-Louis Thomas, Laurent Belliard, Tony Valier-Brasier, Jean-Marc Conoir, Wladimir Urbach and Nicolas Taulier. Ultrasonic spectroscopy of mechanical properties of polymer shells encapsulating nanodroplets in suspension

Wednesday, 16 July 2014
9:00 Eric Shaqfeh, Vivek Narsimhan and Andrew Spann. An Extensional Flow Instability in Vesicle Shape: Non-Axisymmetric Rayleigh-Plateau, Burst, and Pearling
9:40 Victor Steinberg and Michael Levant. Role of thermal noise and wrinkling in vesicle dynamics in linear flow
10:05 Maurice Blount, Michael Miksis and Stephen Davis. The thin-film flow beneath a vesicle during adhesion processes
11:00 Marine Thiebaud and Chaouqi Misbah. A rheological numerical study of vesicle suspensions
11:25 Christophe Minetti, Thomas Podgorski, Gwennou Coupier and Frank Dubois. Dynamics of a vesicle suspension under shear flow with fully automated digital holographic microscopy processing
11:50 Antonio Lamura and Gerhard Gompper. Dynamics and Rheology of Vesicle Suspensions in Shear Flow
12:15 Tobias Güttler, Anne Bornschlegel and Stephan Förster. Block Copolymer Vesicles with Bioadhesion
14:00 Three-Minute Poster Presentations
15:00 Poster session
16:30 Alessio Alexiadis. A SPH-CGMD model for the simulation of deformable and breakable capsules, vesicles and cells under various flow conditions
16:55 Martin Keh and Gary Leal. Hydrodynamic interaction between a capsule and a solid boundary in unbouded Stokes flow
17:20 Cecilia Rorai, Lailai Zhu, Francesca Nason, Antoine Touchard, Dhrubaditya Mitra, Luca Brandt and Gabriele Dubini. Focusing and sorting of deformable

Thursday, 17 July 2014
9:00 George Biros. Toward black-box simulation of transport phenomena for

particulate flows
9:40 Takuji Ishikawa, Kohei Kyoya, Daiki Matsunaga, Yohsuke Imai and Toshihiro Omori. Collective swimming of ellipsoidal squimers
10:05 Jayant Pande. Dynamics of rigid body and vesicular bead-spring swimmers under imposed driving forces
11:00 Lailai Zhu, Dhrubaditya Mitra and Luca Brandt. The motion of a deformable capsule in peristaltic flow
11 :25 Antoine Blin, Anne Le Goff, Justine Pujos, Aurélie Magniez, Dominique Baruch and Mathilde Reyssat. Platelets transport in microchannels
11:50 Ingmar Polenz, Quentin Brosseau and Jean-Christophe Baret. In situ encapsulation kinetics monitored by microfluidics
12:15 Eric Leclerc, Audrey Legendre and Regis Baudoin. Effect of flow rates on MRNa levels of drugs metabolism genes of rat hepatocytes in a microfluidic bioreactor
14:00 Paul Salipante and Petia Vlahovska. Electric field induced squaring and collapse of lipid bilayer membranes
14:25 Mansi Seth, Arun Ramachandran, Bruch Murch and Gary Leal. Origins of microstructural transformations in charged vesicle suspensions: the crowding hypothesis
14:50 Alkmini Lytra, Nikos Pelekasis, Vassilis Sboros, Emmanouil Glynos and Vasileios Koutsos. Static respone of coated microbubbles: modelling simulations and parameter estimation
15:15 Kausik Sarkar, Shireshendu Paul and Amit Katiyar. Modelling encapsulated microbubbles: from echocardiography to noninvasive blood pressure monitoring to drug delivery

Friday, 18 July 2014
9:00 Annie Viallat, Jules Dupire and Manouk Abkarian. Dynamics of red and white blood cells in microflows
9:40 Christian Wagner, Mathias Brust, Othmane Aouane, Marine Thiebaud, Hassib Selmi, Daniel Flormann, Claude Verdier, Thomas Podgorski, Gwennou Coupier and Chaouqi Misbah. The plasma protein fibrinogen causes pertinent clusters of red blood cells in the microcirculation
10:05 Michael Levant and Victor Steinberg. Dynamics of red blood cells in linear flow. Phase diagram and strong shape deformations.
11:00 Sigüenza Julien, Mendez Simon, Nicoud Franck, Mozul Rémy, Dubois Frédéric and Ambard Dominique. Numerical methods for modeling the mechanics of flowing red blood cells using a front tracking immersed boundary method.
11:25 Dong Xu and John Williams. Numerical simulation of deformation and aggregation of red blood cells based on fluid-solid interactions

Report composed by A.V. Salsac

14-8 IUTAM Symposium on Innovative numerical approaches for materials and structures in multi-field and multi-scale problems

Burg Schnellenberg, Germany, September 1 – September 4, 2014

The IUTAM symposium "Innovative numerical approaches for materials and structures in multi-field and multi-scale problems" was held at the Burg Schnellenberg, Attendorn, Germany, during the week of September 1st-4th, 2014.

a) Scientific and organizing committee

Kerstin Weinberg, Universität Siegen, Germany, Anna Pandolfi, Politecnico di Milano, Italy, Marino Arroyo, Universitat Politècnica de Catalunya, Spain, Kaushik Bhattacharya, Caltech Pasadena CA, USA, Michael Ortiz, Caltech Pasadena CA, USA, Laurent Stainier, École Centrale de Nantes, France, Christian Wieners, KIT, Germany

b) Short summary of scientific progress achieved

This symposium brought together a remarkable group of 50 scientists working on novel numerical ap-proaches for materials and structures with an aim to exchange ideas and knowledge of their respective fields.

During the past two decades research in the field of computational mechanics has progressed remarkably, mainly because of the development of a sound mathematical background and efficient computational strategies. Beyond the classical finite element method, several innovative techniques and novel approaches for the analysis of microstructural evolution, growth, damage, and structural failure in multi-field and multi-scale problems have emerged.

By gathering the most innovative —non necessarily the nowadays most popular— techniques through oral presentations a comparative overview of different computational strategies for multi-field and multi-scale problems was presented and discussed.

This IUTAM symposium especially celebrated the 60th birthday of Professor Michael Ortiz. Along his exceptional career, Professor Ortiz has been at the forefront of computational mechanics, his work being a constant source of inspiration for many. All participants of this symposium are grateful to Professor Ortiz for being an inspiring collaborator, a reliable colleague, an illuminating scientist, and a valuable friend. We all wish to convey him our brightest wishes for many enjoyable and productive further years!

The venue of this IUTAM symposium was the castle Burg Schnellenberg, a mighty fortress located north of Siegen, Germany, in the green heart of Westphalia. With its massive gateways, stone bridges, high vaulted ceilings, and tower rooms, the castle takes you back to medieval times. In thi sense, it was the perfect location for a symposium full of interesting presentations, fruitful conversations and inspiring discussions.

c) Countries represented and number of participants
The number of registered participants reached 52. The participants came from 9 countries, namely the United States of America, Argentina, Germany, Great Britain, Italy, Spain, Switzerland, Turkey and France.

d) Publication of Proceedings
The Proceedings of the IUTAM symposium at Burg Schnellenberg will be published in a volume of "Lecture Notes in Applied and Computational Mechanics", published by Springe. Series Editors are F. Pfeiffer and P. Wriggers. The advised date of publication is the mid of 2015.

e) Financial and other support
The following institutions have provided financial and other support for the Symposium: University of Siegen (equipment and stationery), Burg Schnellenberg (information material).

f) Scientific program
Monday, Sept. 1
Richard James: "How to find a better shape memory alloy than NiTi"
Alain Molinari: "A micro-mechanical approach for the dynamic fracture of ductile materials"
Adriana Garroni: "Metastability and dynamics of screw discrete dislocations"
Sigrid Leyendecker: "Structure preserving multirate integration of constrained systems"
Matteo Negri: "Quasi-static evolutions for a phase field model in fracture"

Tuesday, Sept. 2
Alan Needleman: "The Competition between Failure and Localization of Deformation in Progressively Softening Solids"
Jean-Francois Molinari: "A micro-mechanical approach for the dynamic fracture of ductile materials"
Fehmi Cirak: "Multiresolution subdivision surfaces in variational shape optimization"
Rena Yu: "Meshfree numerical schemes applied to unconfined seepage problems through earth dams"
Bo Li: "Dynamic inelasticity and failure in cryogenic ice under extreme loading conditions"
Malena Espanol: "A Gamma-Convergence Analysis of the Quasicontinuum Method"
Christopher Larsen: "Threshold formulations for material defects"
Houman Owhadi: "Bayesian Numerical Homogenization"
Marino Arroyo: "Mechanics of confined solid and fluid thin films: graphene and lipid bilayers"
Ignacio Romero: "A fully Lagrangian method for fluid/solid interaction"
Arash Yavari: "Differential Complexes in Continuum Mechanics"
Bernd Schmidt: "An analysis of crystal cleavage in the passage from atomistic models to continuum theory"

Wednesday, Sept. 3

Sanjay Govindjee: “Variational upscaling in plasticity and viscoelasticity”
Adrian Lew: “The simulation of brittle fracture problems with universal meshes”
Sergio Conti: “Folding patterns in partially delaminated thin films”
Irene Arias: “Modeling and simulation of fracture in ferroelectric Polycrystals”
Dennis Kochmann:” The Quasicontinuum Method Revisited: Recent Advances and Open Challenges”
Julian Rimoli: “A Concurrent Multi-Scale Model for the Thermo-Mechanical Response of Materials”
Alexander Mielke: “Gradient structures and homogenization for thermomechanical systems”
Deborah Sulsky: “Convergence and Accuracy of the Material-Point Method”
Alberto Cuitino: “Non-local particle simulations reveal post-jamming response of highly confined granu-lar solids”
Antonio DeSimone: “Bio-inspired crawling motility across length scales: opportunities and challenges”
Vikram Gavini: “Large-scale real-space Kohn-Sham density functional theory calculations”
Ercan Gürses: “Modeling of Spherulite Microstructure in Semicrystalline Polymers”

Thursday, Sept. 4

Xanthippi Markenscoff: “Hadamard Instability Analysis for coupled thermo-mechanochemical Systems”
Ellen Kuhl: “A mechanical model explains brain development”
Pilar Ariza: “Engineered grapgene based devices”
Jaime Marian: “Atomistically-informed kinetic Monte Carlo simulations of Screw Dislocation Motion in Tungsten”
Thomas Blesgen: “A Tucker Tensor approach for Kohn-Sham density functional theory”
Fernando Fraternali: “On the constitutive response and the wave dynamics of tensegrity lattices”

For more details see timetable and book of abstract:
http://www.mb.uni-siegen.de/fkm/iutam_symposium_2014/abstract.html?lang=en

Report composed by Kerstin Weinberg

14-9 IUTAM Symposium on Complexity of Nonlinear Waves
Tallinn, Estonia, September 8 – September 12, 2014

The IUTAM Symposium on Complexity of Nonlinear Waves was held at the Nordic Hotel Forum, Tallinn, Estonia, during 8-12 September, 2014.

a) International Scientific Committee
Andrus Salupere, Chairman, Institute of Cybernetics at Tallinn University of Technology, Estonia, Gérard A. Maugin, Co-Chairman, Université Pierre et Marie Curie, Paris, France
Members: Nobumasa Sugimoto, Osaka University, Japan, Hui-Hui Dai, City University of Hong Kong, China, Enrique Zuazua, The Basque Center for Applied Mathematics, Bilbao, Spain , Jerry L. Bona, The University of Illinois at Chicago, USA, John Grue, University of Oslo, Norway, Frédéric Dias, IUTAM Representative

b) Short summary of scientific progress achieved
The IUTAM Symposium on Complexity of Nonlinear Waves was a logical continuation of a series of international conferences dedicated to nonlinear wave phenomena and organised by the Institute of Cybernetics at Tallinn University of Technology. The series started in 1973 and previous three conferences were held in 2002, 2006 and 2009.

The focus of the Symposium was on nonlinear problems of wave propagation which are characterised by complicated original mathematical models, innovative ideas for computing, and novel applications in different areas. Interaction of nonlinearity with accompanying effects such as changing properties of the medium sheds further light on the understanding and forecast of physical phenomena. The Symposium provided a forum for presentation and discussion of innovative complex models and methods including computer based simulation of dynamical processes in mechanics.

During the symposium 47 oral and 12 seminar presentations were given in 16 sessions:

Session 1	Nonlinear waves in solids and fluids
Session 2	Modelling (i), breathers
Session 3	Numerical simulations (i)
Session 4	Modelling (ii), general
Session 5	Modelling (iii), turbulence
Session 6	Numerical simulations (ii)
Session 7	Modelling (iv), microstructure
Session 8	Modelling (v), rogue waves
Sessions 9 & 10	Experiments (i) & (ii)

Session 11	Modelling (vi), waves in rods and nonlocal elasticity
Session 12	Modelling (vii), coastal and environmental engineering
Session 13	Student session, short presentations and posters
Session 14	Modelling (viii), various problems
Session 15	Numerical simulations (iii)
Session 16	Modelling and foresight

Wave motion is the key mechanism of interest to many fields of science, such as solid mechanics, acoustics, seismology, oceanography, coastal and offshore engineering, electromagnetism, etc. Despite an extreme variety of physical appearances of wave phenomena, different disciplines share many mathematical models and numerical methods. The conceptual similarity of mathematical models for wave motion in solids and fluids leads to similar formalism in analysis. Our purpose was to foster research into different aspects of nonlinear wave phenomena – the theoretical, the computational and the applied – through promoting the transfer of competence over the existing borders of classical research disciplines. The list of Session titles and the Scientific Programme gives full understanding about the interdisciplinary character of the Symposium. The synergy of many fields and directions was the main goal of the Symposium. Due to the high quality presentations and fruitful discussions which took place in friendly and inspiring atmosphere, one can conclude that the goals of the Symposium are achieved. Excellent feedback has reached from the participants who also considered that the Symposium had achieved a good balance between generations of scientists.

c) Countries represented and number of participants

A preliminary list of potential participants was nominated by the members of the International Scientific Committee members. From this list, 54 papers were accepted for oral presentation. In addition, 12 presentations from PhD students were accepted for seminar session, where posters and short oral presentations were combined. Authors of accepted papers were from 25 countries (Australia, Austria, Bulgaria, China, Czech Republic, Estonia, France, Germany, Hong Kong, Hungary, India, Ireland, Israel, Italy, Japan, Norway, Republic of Korea, Russia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, USA). The Book of Abstract includes abstracts of all accepted papers. The number of registered participants was 66. Because of different reasons (mainly related to health problems) some authors of accepted papers were not able to attend the symposium and the final number of presentations was 59 (including 12 seminar presentations). Presenting authors were from 18 countries (Bulgaria, Czech Republic, Estonia, France, Germany, Hungary, Ireland, Israel, Italy, Japan, Norway, Russia, Spain, Sweden, Switzerland, Turkey, United Kingdom, and USA).

d) Publication of Proceedings

The Proceedings will be published as a special issue of the Proceedings of the Estonian Academy of Sciences. 32 papers are submitted for publication and the prospective

publication date will be August 2015. The journal is an open access international scientific journal issued by the Estonian Academy of Sciences. It is indexed in Web of Science (Thomson Reuters), Cambridge Scientific Abstracts, Mathematical Reviews, Zentralblatt MATH, Scopus, etc.

e) Financial and other support

The following institutions have provided financial and other support for the Symposium: IUTAM (USD 5962), Institute of Cybernetics and Tallinn University of Technology (equipment and stationery), Estonian Academy of Sciences (rooms for social event), Tallinn City Tourist Office & Convention Bureau (information material).

f) Scientific program

Monday, 8th of September

SESSION 1 NONLINEAR WAVES IN SOLIDS AND FLUIDS

Chair: Gérard A. Maugin

9:30	Hyperbolicity, dispersion, inertia, and wave motion in complex media, **Gérard A. Maugin**
10:00	Soliton turbulence in frameworks of long-wave integrable systems, **Efim Pelinovsky**, and Ekaterina Shurgalina

SESSION 2 MODELLING (I) breathers

Chair: Manuel G. Velarde

11:00	Wave motions along lattices with nonlinear on-site and inter-site potentials. Cooperation and/or competition leading to lattice solitons and/or discrete breathers, **Manuel G. Velarde**, A. P. Chetverikov, W. Ebeling, and V. Lakhno
12:00	Stability of discrete breather on atomic scale in deformed carbon structures, **Yusuke Doi**, and Akihiro Nakatani
12:30	The advantages and limitations of the nonlinear Schrödinger equation in description of evolution of nonlinear water-wave groups, **Lev Shemer**

SESSION 3 NUMERICAL SIMULATIONS (I)

Chair: Karima Khusnutdinova

14:30	Multisoliton interactions for the Manakov system under composite external potentials, **Michail D. Todorov**, V. S. Gerdjikov, and A. V. Kyuldjiev

15:00 Numerical simulation of capillary gravity waves excited by an obstacle in shallow water, **Hideshi Hanazaki**, Motonori Hirata, and Shinya Okino

15:30 Nonlinear ring waves in a stratified fluid over a shear flow, **Karima Khusnutdinova**, and Xizheng Zhang

16:00 Stability of surface gravity waves on a linear shear current, **Marc Francius**, and Christian Kharif

SESSION 4 MODELLING (II) general

Chair: Jerry Bona

17:00 Ill-posedness of Some Water Wave Models, **Jerry Bona**

17:30 On compactons induced by a non-convex convection, **Alexander Oron**, and Philip Rosenau

Tuesday, 9th of September

SESSION 5 MODELLING (III) turbulence

Chair: Jaan Kalda

9:30 Implications of the theory of turbulent mixing for wave propagation in media with fluctuating coefficient of refraction, **Jaan Kalda**

10:00 Nonlinear energy in wave turbulence systems, **Naoto Yokoyama**, and Masanori Takaoka

SESSION 6 NUMERICAL SIMULATIONS (II)

Chair: Nobumasa Sugimoto

11:00 Breathers of the internal waves, **Tatiana Talipova**, Katherina Terletska, and Oxana Kurkina

11:30 Excitation of intrinsic localized modes in finite Fermi-Pasta-Ulam chains driven sinusoidally at end, **Yosuke Watanabe**, Takunobu Nishida, and Nobumasa Sugimoto

12:00 Transition of breakup modes for a liquid jet in a static electric field, **Takao Yoshinaga**, and Takasumi Iwai

12:30 Nonlinear Bloch waves in the periodic Gross-Pitaevskii equation, **Tomáš**

Dohnal, and Hannes Uecker

SESSION 7 MODELLING (IV) microstructure

Chair: Francesco dell'Isola

14:30	The formation of Riemann waves and solitons in nonlinear micropolar medium, **Alexey O. Malkhanov**, and Vladimir I. Erofeev
15:00	Propagation of waves in the relaxed micromorphic continuum: modelling metamaterials exhibiting frequency band gaps, **Angela Madeo**, Patrizio Neff, Ionel-Dumitrel Ghiba, Luca Placidi, and Giuseppe Rosi
15:30	Variational methods for modelling non-linear effects in waves propagation in generalized continua, **Francesco dell'Isola**
16:00	Shock wave propagation in nonlinear microstructured wool felt, **Anatoli Stulov**, and Vladimir I. Erofeev

SESSION 8 MODELLING (V) rogue waves

Chair: Frédéric Dias

17:00	Rogue events for trapped waves on jet currents, **Alexey Slunyaev**, and Victor Shrira
17:30	Local analysis of wave fields from hindcasted sea states for rogue wave risk evaluations, **Frédéric Dias**, Joseph Brennan, and Claudio Viotti

Wednesday, 10th of September

SESSION 9 EXPERIMENTS (I)

Chair: John Grue

9:00	Nonlinear evaluation of the kinematics of directional field waves, **John Grue**
9:30	Acoustic solitons: theory, numerics and experiments, **Bruno Lombard**, J.F. Mercier, and O. Richoux
10:00	Generation and propagation of solitary waves in shallow water and soliton resonance, **Hidekazu Tsuji**

SESSION 10 EXPERIMENTS (II)

Chair: Alexander M. Samsonov

11:00	Wave propagation in post-buckled structures, **Alessandro Spadoni**, and Florian Maurin
11:30	Longitudinal strain solitons in thin-walled shells, **Alexander M. Samsonov**, Dreiden G.V., Semenova I.V., and Shvartz A.G.
12:00	Wave nature in deformation of solids and comprehensive description of deformation dynamics, **Sanichiro Yoshida**
12:30	Nonlinear time reversal coded signal processing for acoustic wave focusing in complex media, **Serge Dos Santos**

Thursday, 11th of September

SESSION 11 MODELLING (VI) waves in rods and nonlocal elasticity

Chair: Jüri Engelbrecht

9:30	On the stability and instability of solitary waves for the double dispersion equation, **Saadet Erbay**, H. A. Erbay, and A. Erkip
10:00	Camassa-Holm-type equations for wave motion in a nonlocally and nonlinearly elastic medium, **Hüsnü Ata Erbay**, S. Erbay, and A. Erkip

SESSION 12 MODELLING (VII) coastal and environmental engineering

Chair: Tarmo Soomere

11:00	Change in waves and winds that may lead to an ecological deadzone in the deep Baltic, **Tarmo Soomere**
11:30	Ship wake deformation in the surf zone analyzed by use of a time-frequency method, **Tomas Torsvik**, Ira Didenkulova, Artem Rodin, Heiko Herrmann, and Ewald Quak
12:00	Asymmetric Lagrange waves in a wave energy system, **Georg Lindgren**
12:30	Parameterization of run-up characteristics of bell-shaped tsunami waves in a bay of parabolic cross-section , Oleg Didenkulov, **Ira Didenkulova**, and Efim Pelinovsky

SESSION 13 STUDENT SESSION short presentations and posters

Chair: Tomas Torsvik

14:30 On simulation of wave propagation in layered solids, **Martin Lints**, Andrus Salupere, and Serge dos Santos

14:40 Solitary wave shoaling using approximate conservation laws, **Amutha Senthilkumar**, and Henrik Kalisch

14:50 A fresh look on old analytical solutions for water waves on a constant slope, **Shanshan Xu**, and Frédéric Dias

15:00 Modelling wave-driven impacts on the spatial pattern of current-driven hits to the nearshore, **Bert Viikmäe**, Tarmo Soomere, and Tomas Torsvik

15:10 Laser scanning reveals detailed spatial structure of sandy beaches, **Maris Eelsalu**, Kalev Julge, Erko Grünthal, Artu Ellmann, and Tarmo Soomere

15:20 Wave set-up climatology in the city of Tallinn, Estonia, **Katri Pindsoo**, and Tarmo Soomere

15:30 Structural stability of eastern Baltic Sea coast under simulated wave-driven alongshore sediment transport, **Maija Viška**, and Tarmo Soomere

15:40 Using current-driven patterns in the surface layer of the Gulf of Finland to predict the marine protected areas most at risk of pollution, **Nicole Delpeche-Ellmann**, and Tarmo Soomere

15:50 Finite-time compressibility as a measure of likelihood of spontaneous patch formation in the Gulf of Finland, **Andrea Giudici**, and Tarmo Soomere

16:00 Deformation of long large-amplitude waves in finite-depth fluid, **Artem Rodin**, and Efim Pelinovsky

16:20–17:30 **SESSION 13 (CONTINUING) coffee + poster**

Friday, 12th of September

SESSION 14 MODELLING (VIII) various problems

Chair: Alexey Porubov

9:00 Kinks and their statistical mechanics in higher-order scalar field theories, **Ivan C. Christov**, Avinash Khare, and Avadh Saxena

9:30 Regularisation of strain-softening with micro-inertia, **Harm Askes**, Terry

Bennett, and Antonio Rodríguez-Ferran

10:00 Nonlinear waves in hexagonal lattices, **Alexey Porubov**

SESSION 15 NUMERICAL SIMULATIONS (III)

Chair: Jiří Plešek

11:00 Influence of mass lumping techniques on contact pressure oscillations in explicit contact-impact algorithm based on isogeometric analysis, **Jiří Plešek**, Ján Kopačka, Dušan Gabriel, and Radek Kolman

11:30 An accurate explicit finite element method in elasto-plastic wave propagation problems, **Radek Kolman**, Sang-Soon Cho, and K.C. Park

12:00 On formation and propagation of solitonic structures, **Andrus Salupere**

12:30 On mechanical aspects of nerve pulse propagation and Boussinesq paradigm, **Tanel Peets**, Kert Tamm, and Mervi Sepp

SESSION 16 MODELLING AND FORESIGHT

Chair: Andrus Salupere

14:30 A thermodynamical approach to nonlinear wave phenomena, **Péter Ván**, R. Kovács and T. Fülöp

15:00 Nonlinear dispersive wave equations for microstructured solids, **Arkadi Berezovski**

15:30 Reconstruction of parameters of nonlinear dispersive media by means of travelling waves, **Jaan Janno**, Ivan Sertakov, and Anna Šeletski

16:00 Complexity in engineering and natural sciences, **Jüri Engelbrecht**

16:30–17:00 **CLOSING**

Report composed by Andrus Salupere

14-10 IUTAM Symposium on Multiphase flows with phase change: challenges and opportunities

Hyderabad, India, December 8 - December 11, 2014

The IUTAM Symposium on "Multiphase flows with phase change: challenges and opportunities" was held at Indian Institute of Technology Hyderabad, India during 8th Dec. 2014 – 11th Dec. 2014.

a) Scientific Committee:

Prof. Kirti Chandra Sahu, Indian Institute of Technology Hyderabad, India, Prof. Rama Govindarajan, TIFR Centre for Interdisciplinary Sciences, Hyderabad, India, Prof. Andrea Prosperetti, Johns Hopkins University, USA, Prof. Eckart Meiburg, University of California at Santa Barbara, USA, Prof. George Homsy, University of British Columbia, Canada, Prof. Omar K. Matar, Imperial College London, UK, Prof. Stéphane Zaleski, UPMC Sorbonne Universites, France

b) Short summary of scientific progress achieved:

This symposium brought together researchers working on multiphase flows with phase change from ten different countries. Around 140 researchers participated in this meeting. There were 45 oral presentations and 39 poster presentations. Multiphase flows with phase change observed in many geological, biological and industrial applications are discussed. The symposium as expected succeeded to advance the field by nurturing and supporting interdisciplinary research in the area of multiphase flows with phase change.

Multiphase flows with phase change are difficult to handle theoretically, experimentally and numerically, as they involve a combination of fluid flow, heat and mass transfer, and interfacial physics. In the last past few decades, these problems have been modeled extensively using lubrication theory, valid for situations involving large disparities in scales (e.g. in thin films). There are a few other studies that have done some fairly sophisticated modeling and simulation of multiphase flows with boiling for nuclear reactors. This conference gave a platform to assemble world experts in theory, computation and experiment in multiphase flows to define the scope of the work that must be carried out in multiphase flows with phase change over the next few years, going well beyond the current-state-of-the-art; there by achieving the goal of the symposium. The satisfaction increases a lot after receiving so many positive comments from the participants from different parts of the world after the symposium.

c) Countries represented and number of participants:

The number of registered participants reached 140, fifty percent of which were graduate students or postdoctoral researchers, from 10 countries, namely UK, USA, France, China, Brussels, India, Japan, Australia, Spain and Italy.

d) Publication of Proceedings:
A contract to publish Proceedings in the online Procedia IUTAM series was signed with Elsevier. The proceeding should appear within two months.

e) Financial and other support:
We have received financial support from IUTAM, Department of Science and Technology India, National Science Foundation USA, Intel, Ansys, Fujitsu and TSI India.

f) Scientific program:

Oral Presentations

Day 1: 8th December (Monday) Session 1: Phase Change 1 (Chair: S. Zaleski)		
Time	Speaker	Title of the talk
8.30 am – 9.00 am	Chief Guest and Guest of Honour	Opening remarks
9.00 am – 9.35 am	G. Tryggvason (invited talk) U. Notre dame	Direct numerical simulations of flows with phase change
9.35 am – 9.55 am	J. C. Wells Ritsumeikan University, Japan	A front-tracking method for three-phase computations of solidification with volume change
9.55 am – 10.15 am	S. Prakash IISC Bangalore	Breakup of volatile liquid jet in hot cross flow
Tea and poster session (see the list below): 10.15 am – 11.00 am Session 2: Climate and Geo Physics 1 (Chair: V. Eswaran)		
11.00 am – 11.20 am	E. Meiburg UC Santa Barbara	Sediment wave formation caused by erosional and depositional turbidity currents: A numerical investigation
11.20 am – 11.40 am	S. Toppaladoddi University of Oxford	Turbulent transport processes at rough surfaces with geophysical applications
11.40 am – 12 noon	C. S. Pant IIT Bombay	The effect of initial droplet size spectra on its evolution during turbulent condensational growth
12 noon – 12.20 pm	A. Lankadasu Fluidyn Consultancy (p) Ltd	Numerical modeling of supercritical co_2 leaks and its subsequent dispersion in the ambient air

Lunch: 12.35 pm – 2.00 pm **Session 3: Drying and Solidification 1 (Chair: R. W. Griffiths)**		
2.00 pm – 2.35 pm	M. S Tirumkudulu (invited) IIT Bombay	Drying and consolidation in drying colloidal dispersions
2.35 pm – 2.55 pm	A. Wray Imperial College	Electrostatic suppression of the "coffee-stain effect"
2.55 pm – 3.15 pm	D. Pavlidis Imperial College	Numerical modelling of melt behaviour in the lower vessel head of a nuclear reactor
3.15 pm – 3.35 pm	J. Yang Imperial College	Crude oil fouling: fluid dynamics, reactions and phase change
Tea and poster session (see the list below): 3.35 pm – 4.20 pm **Session 4: General Multiphase Flows 1 (Chair: G. Tryggvason)**		
4.20 pm – 4.55 pm	J. S. Wettlaufer (invited) U. Oxford	Interfacial phase transitions: from fundamental interactions to climate dynamics and protoplanets
4.55 pm – 5.15 pm	G. Biswas IIT Guwahati	Bubble formation in film boiling including electrohydrodynamic forces
5.15 pm – 5.35 pm	C. A. Middleton Université Libre de Bruxelles	Imaging the evolution of brine transport in experimentally grown quasi-two-dimensional sea ice
5.35 pm – 5.55 pm	M. M. Omand Woods Hole Oceanographic Institution	An analytic model of sinking particulate organic matter in the ocean
Day 2: 9th December (Tuesday) **Session 6: Phase Change 2 (Chair: G. Biswas)**		
9.00 am – 9.20 am	J. H. Arakeri IISC Bangalore	Buoyancy driven turbulence of moist air
9.20 am – 9.40 am	N. Kumar IISC Bangalore	Natural convection driven evaporation from a water surface
9.40 am – 10.00 am	P. J. Sáenz U. Edinburgh	Stability and two-phase dynamics of evaporating marangoni-driven flows in laterally-heated liquid layers and sessile droplets

10.00 am – 10.20 am	J. Shaikh IIT Bombay	A ghost fluid method based sharp interface level set method for evaporating droplet
Tea and poster session (see the list below): 10.20 am – 11.00 am **Session 5: Climate and Geo Physics 2 (Chair: M. Francois)**		
11.00 am – 11.35 am	V. Ajaev (invited) U. Southern Methodist, Texas	Models of drainage and rupture of thin electrolyte films on flat and structured solid substrates
11.35 am – 11.55 am	K. Mayank IIT Hyderabad	Coupled dem-cfd model to predict the tumbling mill dynamics
11.55 am – 12.15 pm	P. Shui U. Edinburgh	Direct numerical simulation study of hydrodynamic interactions between immersed solids and wall during flow
12.15 pm – 12.35 pm	R. K. Shukla IISC Bangalore	Numerical investigation of shock-induced bubble collapse near a rigid wall
Session 7: Drying and Solidification 2 (Chair: J. C. Wells)		
2.00 pm – 2.35 pm	R. W. Griffiths (invited talk) Australian National University	Coupling of cooling, solidification and gravity-driven flow
2.35 pm – 2.55 pm	D. Pavlidis Imperial College	Numerical modelling of debris bed water quenching
2.55 pm – 3.15 pm	R. G. Tripathi IIT Delhi	Numerical simulations of gas-liquid boiling flows using OpenFOAM
3.15 pm – 3.35 pm	B. Gayen Australian National University	Melting driven convection at the ice-seawater interface
Tea and poster session (see the list below): 3.35 pm – 4.20 pm **Session 8: Bubbles and Drops (Chair: M. S Tirumkudulu)**		

4.20 pm – 4.55 pm	E. K. Longmire(invited) U. Minnesota, USA	Drop penetration through a constriction: effect of surrounding fluid
4.55 pm – 5.15 pm	M. K. Tripathi IIT Hyderabad	Evaporating falling drop
5.15 pm – 5.35 pm	S. Krishnan IIT Madras	Dynamics of collapse of free surface bubbles
5.35 pm – 5.55 pm	A. Gupta U. "Tor Vergata", Italy	Deformation and break-up of viscoelastic droplets using lattice Boltzmann models
Day 4: 11th December (Thursday) Session 9: Interfacial Flows (Chair: R. Banerjee)		
9.15 am – 9.35 am	S. Zaleski UPMC Sorbonne Universites, France	Using extrapolation techniques in vof methodology to model expanding bubbles
9.35 am – 9.55 am	S. Ravichandran TCIS Hyderabad	Inertial particles and vortices: implications for cloud flows
9.55 am – 10.15 am	P. S. Mahapatra IIT Madras	Dispersion of polydisperse droplets in a pulsating flow field
Tea and poster session (see the list below): 10.15 am – 11.35 am Session 10: General Multiphase Flows 2 (Chair: P. Valluri)		
11.35 am – 11.55 am	Chinar Rana IIT Ropar	Effect of strong sample solvent on the solute dynamics for more or less viscous sample: a comparative study
11.55 am – 12.15 pm	B. M. Ningegowda IIT Delhi	Numerical simulation of two-dimensional forced convective film boiling flow over a horizontal flat surface
12.15 pm – 12.35 pm	S. Ghosh IIT Madras	Stability analysis of a gravity driven miscible two-fluid flow: role of wall slip

Session 11: Numerical Simulation of Multiphase Flows (Chair: E. K. Longmire)		
2.00 pm – 2.35 pm	M. Francois (invited) Los Alamos National Laboratory	Recent numerical and algorithmic advances within the volume tracking framework for modeling interfacial flows
2.35 pm – 2.55 pm	S. Tripathi IIT Bombay	Lubricated transport of highly viscous non-Newtonian fluid as core-annular flow: a CFD study
2.55 pm – 3.15 pm	K. Nandi BARC Mumbai	High resolution TVD schemes for interface tracking problems in two fluid flows
3.15 pm – 3.35 pm	R. Ingle ANSYS, India	Modelling of flashing in capillary tubes using homogeneous equilibrium approach
Tea and poster session (see the list below): 3.35 pm – 4.20 pm **Session 12: Applications (Chair: V. Ajaev)**		
4.20 pm – 4.40 pm	A. Nair K. IIT Madras	Experimental study of slip flow at the fluid-porous interface in a boundary layer flow
4.40 pm – 5.00 pm	R. Dasgupta IIT Bombay	Viscous undular hydraulic jumps of moderate Reynolds number flows
5.00 pm – 5.20 pm	R. Reddy IIT Hyderabad	Study of disintegration of a high speed liquid jet using vof method
5.20 pm – 5.40 pm	M. V. Sardeshpande NCL Pune	Two phase flow boiling pressure drop in small channels
5.40 pm – 6.00 pm	All	Concluding remarks

Poster Presentations:

Author(s)	Title of the poster
Day 1	
B. Vadlakonda, C. Vudikala and Narasimha M.	Hydrodynamics study of two phase flow using electrical resistance tomography in column flotation
N. Majumdar and M. S. Tirumkudulu	Stability of moving liquid sheet with acoustic forcing
K. R. Prathyusha, S. Sengupta and P. B. Sunil kumar	Evaporation induced self-assembly of colloidal particles
A. Nagilla, S. Jadhav and P. Ranganathan	Mechanobiology of interstitial networks of motile micro-organisms
R. Ramadugu and P. Perlekar	Comparison of weakly compressible finite difference and lattice Boltzmann algorithm for multiphase flows
P. R. Ashok R., M. Thomas and S. Varughese	Viscous fingering instabilities during drying of PEDOT:PSS dispersion
Deepak Kumar Kanungo and Sachin Shrivastava	Flow and Temperature distribution of flue gas in a typical fossil fuel fired boiler: A CFD study
P. Shukla and A. De wit	Fingering instability driven by a simple precipitation reaction
M. Ancellin	Issues of phase change for wave impacts due to sloshing
A. Iqbal and M. Pandey	Two-phase slip flow pressure drop modeling in microchannels with variable physical properties
S. Mathew, M. V. Panchagnula and S. Vedantam	Mixing of wet polydisperse granular material in a belt-driven enclosure
N. K. Jha and R. N. Govardhan	Vorticity and bubble dynamics of a vortex ring interacting with a bubble
Day 2	
Md Q. Raza	Pool boiling heat transfer with aqueous surfactant solutions: importance of time scales
M. Tripathi and Premlata	Similarity of bubbles and drops

Vishnudas. R. and A. Chaudhuri	Influence of dispersivity of porous medium on the miscible and immiscible viscous fingering during polymer flooding
T. K. Hota and M. Mishra	Linear stability of a rectilinear miscible displacement: a nonmodal approach
A. Anurag, V.S. Vaisakhan and R. Banerjee	In-cylinder fuel spray and mixing of ethanol/iso-octane blends in a gdi engine
S. Sunder and G. Tomar	Numerical simulation of the interaction of a drop with a curved interface under external electric field for dielectric-dielectric and conducting-dielectric fluid pairs
K. S. Patel and R. K. Shukla	Numerical investigation of liquid bridge dynamics with a phase field model
B. K. Singh, A. Quiyoom, S. Roy and V. V. Buwa	Instantaneous and time-averaged gas volume fraction measurements in a cylindrical bubble column: comparison of electrical resistance tomography and voidage probe measurements
V. Teja reddy and M. Narasimha	Modelling turbulent flow of cyclone separation: prediction of turbulence effect on particle classification
A. Sinha, S. Balasubramanian and S. Gopalakrishnan	Numerical and experimental study of a flashing jet
R. Naik and R. Narasimha K.	Thermal performance characterization of a multi loop pulsating heat pipe
D. Dubey and J. Sarkar	Single cluster aggregate under shear flow in Couette geometry
S. Palleri, S. Mohanan and B. A . Puthenveettil	Sedimentation of Low Stokes number particles in Turbulent convection
Day 4	
G. Saritha and R. Banerjee	Numerical study of flow boiling in a micro channel using lattice Boltzmann method
H.V.R. Mittal and Rajendra K. Ray	A new direction to higher order compact (hoc) scheme for solving immersed interface problems
N Nanda Kumar and A. Mohan	Blood flow in stenosed artery: a computational study
Navaneeth K. M. and G. Subramanian	The orientation dynamics of anisotropic particles in shearing flows
S. Roy and M. S. Tirumkudulu	A theory for the compression of two dimensional strongly aggregated colloidal networks

S. Agarwal and J. S. Wettlaufer	Geophysical scale multiphase dynamics: the mixing of the arctic sea ice pack
S. Dalal, G. Tomar and P. Dutta	Deformation of viscoelastic drops in channel flows
R. Gupta	CFD modelling of vertical oil-water core-annular flow
S. Ghosh	Destabilizing role of wall slip on the absolute instability of double-diffusive two-fluid channel flow
B. A. Puthenveettil†, V. K. Senthilkumar and E. J. Hopfinger	Motion of drops on inclined surfaces in the inertial regime
V. Mathai, V. Prakash, Jon Brons, C. Suna, D. Lohsea	Dynamics of light particles in turbulence
A. Pavithran and B. A. Puthenveettil	Sedimenting drop along an inclined plane in viscous fluid
B. Karri, Siew-Wan Ohl, E. Klaseboer and B. C. Khoo	Bubble dynamics near a perforated boundary

Report composed by Prof. Kirti Chandra Sahu

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

Goa, India, December 15 – December 18, 2014

The IUTAM symposium on Advances in Computation, Modeling and Control of Transitional and Turbulent Flows was held at Goa Marriott Resort, Goa, India during 15-18th December, 2014.

a) Scientific Committee:

Prof. Haecheon Choi (South Korea), Prof. Peter Davidson (UK), Prof. Bruno Eckhardt (IUTAM representative), Prof. Sanjiva Lele (USA – co-chair of the organizing committee), Prof. Bernd Noack (France), Prof. Tapan Sengupta (India – Chair of the organizing committee), Prof. Katepalli Sreenivasan (USA), Prof. Anatoly Tumin (USA).

b) Short summary of scientific progress achieved

The IUTAM symposium on "Advances in Computation, Modeling and Control of Transitional and Turbulent Flows" was held during December 15-18, 2014 in Goa, India with finance and logistic support coming from government and non-government agencies. This symposium was also supported by IUTAM and ICTP, Trieste, Italy.

The symposium was successful in bringing some of the most eminent experts on the symposium themes from all areas of engineering, environmental/ atmospheric sciences, dynamical systems and control to share the latest developments in the field. The focus of the symposium included high performance computing in performing benchmark direct numerical simulation of transitional/ turbulent flows with the ultimate aim to enhance our understanding of problems of transition and turbulence. Eight eminent experts in the field drawn from all over the world agreed to give keynote speeches. A list of names of these experts is attached with this report, along with other lists of various organizing committees. These keynote speeches were complimented by fifty six oral presentations and eleven poster presentations. Three experts from the industry also made brief technical presentations.

In this symposium, major highlight were reporting the solution of a central problem of fluid mechanics, namely, transition to turbulence and some canonical turbulence problems of engineering and geophysical flows. The presentations were from the following major areas:

1. Flow instabilities and transition to turbulence
2. Turbulence physics
3. Flow control
4. Acoustics and noise

5. Turbulence models and reduced order modeling
6. Geophysical flows
7. DNS methodologies and numerical methods

The symposium was inaugurated by Prof. A. K. Chaturvedi, Deputy Director (IIT Kanpur) as the host of the symposium. There were also welcome addresses by Dr. A. R. Upadhya (Chairman of the Advisory Committee), Mr. Shyam Chetty (Director, NAL Bangalore), Prof. Sanjiva Lele (co-chair) and Prof. Tapan K. Sengupta, the organizing chairman of the meeting. Prof. Michel Deville was the chief guest. One of the salient aspects was the homage paid to Prof. D. D. Kosambi (a native born in Goa) for his seminal work on proper orthogonal decomposition, a topic related to symposium theme and which is finding significant applications in various fields of data compression and data mining etc. After the brief inaugural session, technical program started with an invited talk by Prof. A. Leonard (Caltech, USA). Every morning and afternoon sessions began with an invited talk, followed by oral presentations chaired by eminent scientists and academicians. These sessions were held on Monday to Thursday with an afternoon break on Wednesday for a city tour. The poster presenters were also given podium time to highlight their work on the very first day of the symposium.

After a hectic schedule of three days and half, the symposium concluded with a panel discussion which was chaired by Prof. Tapan K. Sengupta (IIT Kanpur) and participated by Prof. Michel Deville (EPFL Switzerland), Prof. Tony Sheu (National Taiwan Univ., Taipei), Prof. Datta Gaitonde (The Ohio State University, USA), Prof. J. Jimenez (Univ. of Madrid, Spain), Prof. Sanjiva K Lele (Stanford Univ., USA), Prof. P. A. Davidson (Univ. Of Cambridge, UK) and Dr. Philippe Spalart (Boeing Aircraft Co., Seattle, USA). One of highlights of the discussion was the observation that now practical problems can be solved, as the hardware platforms are now available along with very well researched computing methods for direct numerical simulation (DNS) and large eddy simulation (LES). It was also emphasized that wrong computing methods cannot yield correct physical picture for flows in engineering to geophysical scales. Some of the presentations brought home this aspect of the state of art very clearly.

The organizers are very pleased to announce the following papers were presented which are major breakthroughs in transition and turbulence research, which originated in the host country:

1) Different routes of transition by spatio-temporal wave front (S. Bhaumik, T. K. Sengupta, V. Mudkavi and Akhil M.)

2) Energy spectrum of buoyancy driven turbulence (M.K. Verma, Abhishek Kumar and Anando G. Chatterjee)

The presented results in (1) relate to earlier works on finding of spatio-temporal wave front, which is seen in genesis of tsunami to causing fluid turbulence. This work is being pursued at High Performance Computing Lab, IIT Kanpur for decades to explain turbulence generation in fluid flows. Verma et al. showed that for thermal convection in the presence of buoyancy, as in Earth's atmosphere, kinetic energy flux increases and not decrease.

Thus, high performance computing is playing a lead role in solving "the most important unsolved problem of classical physics", as stated in Feynman Lecture on Physics. We are now at a stage where flows can be solved from first principle and with exponential developments, complex flows will be solved soon. This symposium showcased many other activities, in addition to the galaxy of invited talks by lead exponents in the subject. We have received very positive feedbacks from participants on the conduct of the symposium. This would not have been possible, without the tireless efforts put up by the organizing committee members and strong supports received from various agencies like DeitY.

c) Countries represented and number of participants

The symposium received an overwhelming response from all over the world. 137 participants represented 18 countries (India, USA, U.K, Russia, S. Korea, Israel, Canada, Switzerland, France, Japan, Singapore, Australia, Spain, Sweden, Taiwan, Italy, Saudi Arabia, Germany) including keynote speakers, academicians, young researchers, students and sponsors.

d) Publication of Proceedings of the symposium

The Proceedings will be published by World Scientific Publishing Company. The manuscript will be sent to the publisher in April, 2015. The following editors have agreed to finish the review work by March, 2015. Editors: Prof. T. K. Sengupta (IIT Kanpur, India), Prof. S. K. Lele (Stanford Univ., USA), Prof. P. A. Davidson (Univ. of Cambridge, UK), Prof. K. R. Sreenivasan (NYU, USA)

e) Financial support

The organizing committee has received financial support from various agencies for the successful conduct of the symposium:

IUTAM (5800 USD), INR 354401.00, ARDB- INR 500000.00, BRNS- INR 100000.00, DeitY- INR 250000.00, ER&IPR (DRDO) –INR 200000.00, SERB (DST) –INR 300000.00, ICTP, Italy (2900 Euro)- INR 218573.00, IIT Kanpur –INR 500000.00, INSA – INR 100000.00, ISRO – INR 100000.00, DRDO - INR 200000.00, TAAI – INR 100000.00, TSI - INR 105000.00, HP – INR 500000.00, DDN – INR 186830.00.

f) Scientific program

During four days of the symposium eight keynote speeches along with fifty six oral presentations and eleven poster presentation were made. A brief program schedule is as follows:

Monday 15 December

10:00: Prof. A. Leonard (Caltech, USA), Approximate solutions to the Navier-Stokes equations: From low order model to LES.
10:45 am – 1:00 pm: Session-I, Nine papers presented on transitional flows
2:00: Prof. J. Jimenez (Univ. of Spain, Madrid), A numerical guide to turbulence theory.
2:45 – 4:15 pm: Session-II, Six papers presented on DNS of transitional flows.
4:30 – 5:15 pm: Poster session, 11 posters
5:15 – 6:30 pm: Session-III, Five papers on flow control

Tuesday 16 December

08:15: Prof. K.R. Sreenivasan (NYU, USA), Convection at extremely high Rayleigh numbers.
09:00 – 10:30am: Session-IV, six papers on physics of turbulence.
11:00am- 1:00pm: Session-V, eight papers on simulation of boundary layer and geophysical flows
2:00 pm: Prof. Haecheon Choi (Seoul National Univ. S. Korea), Biomimetic flow control based on morphological features of living creatures.
2:45 – 4:00pm: Session-VI, five papers on DNS of incompressible/compressible flows.
4:15 – 6:30pm: Session-VII, five papers on RANS/LES/DNS

Wednesday 17 December

8:15: Dr. Philippe Spalart (Boeing Company, USA), Philosophies and fallacies of turbulence modeling.
9:00 – 10:30am: Session-VIII, six papers on noise and control of flows
11:00: Prof. Clancy Rowley (Princeton Univ., USA), Low order models for control of fluids: Balanced models and the Koopman operator.
11:45am – 12:30pm: Session-IX, three papers on reduced order modeling.

Thursday 18 December

8:15: Prof. Paul Linden (Univ. of Cambridge, UK), Turbulence and mixing in stratified shear flow.
9:00 – 10:00 am: Session-X, four papers on DNS of flow instabilities.
10:30: Prof. Peter Davidson (Univ. of Cambridge, UK), Rapidly rotating turbulence and its role for planetary dynamos.

11:15am – 1:00pm: Panel discussion. (Panelist: Prof. Michelle Deville (EPFL, Switzerland), Prof. Tony Sheu (NTU, Taiwan), Prof. D. Gaitonde (OSU, USA), Prof. J. Jimenez (Univ. of Spain, Madrid), Dr. Philippe Spalart (Boeing Company, USA), Prof. Sanjiva Lele (Stanford Univ., USA), Prof. Tapan Sengupta (IIT Kanpur, India)

Report composed by Tapan K. Sengupta and Sanjiva K. Lele.

Report of the IUTAM Summer School held in 2014

IUTAM-CISM Summer School on Multiscale mechanobiology of bone remodelling and adaptation

The Summer School took place at CISM, Udine, Italy, from 23 to 27 June 2014. The coordinator was P. Pivonka.

1. Summary

The goal of this workshop was to present state-of-the-art developments in multiscale modeling and latest experimental data on multiscale mechanobiology of bone remodeling and adaptation. The course gathered experts from the fields of applied mechanics, bone biology, and material science, and gave in an unprecedented interdisciplinary fashion, the cutting-edge view on bone mechanobiology.

Part I: General Background of Bone Mechanobiology and Interactions of Bone with other Tissues. The first part of the course was dedicated to introduce essential biological background to the participants. In particular showing that bone is a dynamic living tissue that has the ability to change its mass and structure in response to changes of the biomechanical and biochemical environment in which it operates. Different types of bone cells were discussed together with their functional role in bone remodeling. Then the very fundamental "mechanostat theory" proposed by H. Frost and its equivalence with Wolff's law were introduced. These laws essentially state that bone adapts to its mechanical environment which is achieved via bone remodeling and modeling responses. Also the fundamental unit process that regulates bone mass and structure, i.e. the Bone Multicellular Unit (BMU) which is a highly coordinated system of several cell types actively "turning over" or remodeling the bone matrix were discussed. Finally, bone diseases such as osteoporosis which develop due to unbalanced regulation of bone resorption and bone formation were highlighted.

Part II: Multiscale Musculoskeletal Modeling Approaches. This part was dedicated to development of mathematical models for description of bone disease progression and therapeutic interventions with emphasis on bone remodeling and adaptation. This provided the interface from the more descriptive biological part of the course and demonstrated how biological findings can be integrated into comprehensive computational models of bone remodeling. In order to address this challenging problem a variety of different types of computational models at different scales were introduced ranging from organ scale musculoskeletal models estimating muscle activation patterns and muscle forces acting on bone, to hierarchical micromechanical models estimating orthotropic bone material properties based on volume fractions of different bone constituents and their interaction, also micro

finite element models of trabecular bone adaptation were presented. Finally, disease systems models were introduced with the emphasis to integrate biochemical and biomechanical information into comprehensive models bone remodeling and adaptation. The various models were analyzed in detail and compared with prevailing experimental data. Also model limitations were highlighted.

2. The audience

The course was addressed to graduate students, PhD candidates and early career researchers in the field of applied mathematics, biomedical engineering, physics, bone biology, bone tissue engineering and orthopaedics interested in a novel multidisciplinary approach to the mechanobiology of bone remodeling and adaptation with special emphasis on multiscale aspects. The total number of participants was 25 coming from different countries of European and non European origin: Australia (1), Austria (2), Belgium (1), France (3), Germany (3), UK (4), Italy (2), The Netherlands (1), Poland (2), Serbia (1), Sweden (4), Hungary (1). The major parts of them were doctoral students or early career postdoctoral researchers. The evaluation enquiries are very positive, many people have particularly appreciated the content and the problem-based learning approach of the course together with the plentiful discussion sessions which actively engaged the participants and lectures.

3. The lectures

Peter Pivonka (The University of Melbourne, Australia)
6 lectures on:
Mathematical description of bone cell interactions including biochemical and mechanobiological regulatory pathways; Micro/meso- to macroscale models using both continuous and discrete model formulations; links to Frost's mechanostat theory.

Tim Skerry (University of Sheffield, UK)
5 lectures on:
Bone cell biology including morphological features and function. Frost's mechanostat theory; animal models of bone mechanobiology; osteocytes and their role as mechano-sensing cells, biology of bone fracture healing.

David Findlay (University of Adelaide, Australia)
5 lectures on:
Interaction of bone tissue with other tissues including muscle, cartilage, vascularisation, and central nervous system (CNS). Clinical aspects of bone together with therapeutic interventions will be discussed.

Taiji Adachi (Kyoto University, Japan)
5 lectures on:
Mechanobiology of osteocytes; Image-based 3D micro-FE models and their biomedical application; Mechanical regulation of actin cytoskeletal dynamics in silico and in vitro.

Justin Fernandez (Auckland Bioengineering Institute, New Zealand)
5 lectures on:
Modelling of human muscle and bone interactions during physical activity; musculoskeletal modelling using OpenSim combined with FE modelling using CMISS developed by ABI, CellML bone models.

Christian Hellmich (Vienna University of Technology, Austria)
5 lectures on:
Bone quality assessment at different scales using experimental and computational approaches; basics of continuum micromechanics with application to bone; multiscale mechanics of tissue engineering scaffolds; merging Computer Tomography with micromechanics as a new clinical tool.

Report prepared by Peter Pivonka

Summary Record of the General Assembly Meeting 2014

Summary Record of the General Assembly of IUTAM in Lyngby, Denmark, on 18 and 19 August 2014

The General Assembly of IUTAM convened at DTU, Copenhagen/Kgs. Lyngby, Denmark. The schedule of sessions was as follows:

Monday 18 August 2014

11:00 – 12:00	*Jens Honore Walther – Multiscale Fluid Dynamics: From Molecules to Vortices*
14:00 – 17:30	*General Assembly: 1st session*

Tuesday 19 August 2014

11:00 – 12:00	*Ole Sigmund – Recent Developments in Topology Optimization*
14:00 – 17:30	*General Assembly: 2nd session*

Attendance:

Members with voting rights:

J. Achenbach (USA, Member-at-Large), P. Ariza (Spain), N. Aubry (USA), D. Bigoni (Italy), A. Bottaro (Italy), T. Burczynski (Poland), D. van Campen (Netherlands, Member-at-Large), C.C. Chang (China-Taipei), F. Charru (France), F. Chernousko (Russia), J. Denier (New Zealand), F. Dias (France), J. Dual (Switzerland), P. Eberhard (Germany), N. Fleck (UK), J.M. Floryan (Canada), L. Franzoni (USA), A. Freire (Brazil), H. Gao (USA), I. Goryacheva (Russia), J. Grue (Norway), B.L. Karihaloo (UK), R. Kienzler (Germany), A. Kluwick (Austria), S. Kok (South Africa), D. Kondo (France), R. Kouhia (Finland), S. Kyriakides (USA), V. Levin (Russia), S. Lundstrom (Sweden), S. Mittal (India), K. Moffatt (UK, Member-at-Large), M. Morozov (Russia), C. Niordson (Denmark), N. Olhoff (Denmark, Member-at-Large), J. Paavola (Finland), T. Pedley (UK), H. Petryk (Poland), S. Radev (Bulgaria), K. Ravi-Chandar (USA), G. Rega (Italy), M. Rubin (Israel), A. Salupere (Estonia), O. Sano (Japan), W. Schiehlen (Germany, Member-at-Large), B. Schrefler (Italy), R. Seifried (Germany), S. Shrivastava (Canada), P. Stahle (Sweden), G. Stepan (Hungary), T. Tatsumi (Japan, Member-at-Large), G. Turkalj (Croatia), V. Tveergard (Denmark), D.V.H. Vandepitte (Belgium), W.C. Wang (China-Taipei), L. Wijngaarden (Netherlands)

Non-voting observers:

P. Huerre (France; repres. of EUROMECH), T. Lu (China), J. Magnaudet (France), R. McMeeking (USA; repres. of ICF)

Members with voting rights represented by proxies:
A. Acrivos (USA, Member-at-Large), represented by N. Aubry
S. Candel (France), represented by F. Charru
G. DeBotton (Israel), represented by M. Rubin
E. Dick (Belgium), represented by D.V.H. Vandepitte
S. Dost (Canada), represented by S. Shrivastava
B. Freund (USA, Member-at-Large), represented by J. Achenbach
M. Geers (Netherlands), represented by D. van Campen
M. Gilchrist (Ireland), represented by F. Dias
C. Herakovich (USA), represented by J. Achenbach
H. Hu (China), represented by G. Stepan
G. Jaiani (Georgia), represented by R. Kienzler
K. Kishimoto (Japan), represented by O. Sano
F. Lund (Chile), represented by F. Dias
G. Maier (Italy), represented by G. Rega
I. Marusic (Australia), represented by J. Denier
A. Molinari (France), represented by D. Kondo
N. Nishimura (Japan), represented by O. Sano
M. Oberlack (Germany), represented by R. Seifried
N. Peake (UK), represented by N. Fleck
A. Prata (Brazil), represented by A. Freire
S. Sloan (Australia), represented by J. Denier
J. Sorensen (Denmark), represented by C. Niordson
A. Thess (Germany), represented by P. Eberhard
J. Zu (Canada), represented by S. Shrivastava

Agenda

1. Opening of the meeting by the President
   Minutes of the General Assembly in Beijing, China, on 21-22 August 2012 (IUTAM Report 2012, pp. 96-114)
2. Report by the Secretary-General
3. Report by the Treasurer on financial matters
4. Preliminary discussion on annual dues
5. Report by the Secretary of the Congress Committee
6. Matters concerning Adhering Organizations
7. Matters concerning Affiliated and Associate Organizations
8. Recommendation to terminate the Working Parties
9. Proposals for election of members of Symposia Panels
10. Proposal for Electoral Committee
11. Preliminary discussion on future IUTAM Symposia. Reports from Symposia Panels

12. Preliminary discussion on future International Summer Schools on Mechanics
13. Preliminary discussion on a resolution for the eligibility for election as Bureau Officer and as Bureau member
14. Preliminary discussion on a change of statutes concerning the Congress Committee
15. Matters concerning Symposia: Grants, Publication of IUTAM Proceedings
16. Preliminary discussion on IUTAM Graduate Student Prizes
17. IUTAM Prizes for Fluid Mechanics and for Solid Mechanics
18. Matters concerning Inter-Union Committees
19. Matters concerning non-ICSU Organizations
20. Future IUTAM co-sponsored events
21. Continued discussion and final decision regarding future IUTAM Symposia
22. Continued discussion and final decision regarding future International Summer Schools on Mechanics
23. Continued discussion and final decision regarding annual dues
24. Continued discussion and final decision regarding Working Parties
25. Continued discussion and final decision regarding Symposia Grants and Publication of IUTAM Proceedings
26. Continued discussion and final decision regarding IUTAM Graduate Student Prizes
27. Election of members of the Electoral Committee
28. Election of members of the Congress Committee of IUTAM
29. Final decision on re-appointment of one member of Symposia Panels and the election of two new members for the Fluid Panel and one new member for the Solid Panel
30. Continued discussion and final decision regarding the resolution for the eligibility for election as Bureau Officer and as Bureau member
31. Continued discussion and final decision regarding the change of statutes concerning the Congress Committee
32. Date and venue of the next General Assembly
33. Any other business

Proceedings of the General Assembly

Item 1 – Opening of the meeting by the President

The President, Professor V. Tvergaard, welcomed all members and observers. Then the President formally opened the meeting. The minutes of the General Assembly held in Beijing, China, in 2012 were adopted. The President paid a tribute to Professor Jan Hult, who passed away on 20 February 2013, 85 years old. Jan Hult was Secretary-General of IUTAM during the period 1976-1984 and thereafter Member-at-Large.

Item 2 – Report by the Secretary-General

The Secretary-General, Professor F. Dias, submitted the following report to the General Assembly on the activities of IUTAM since the last General Assembly in Beijing, China, on 21 and 22 August 2012:

Adhering Organizations

There are 50 Adhering Organizations. IUTAM is pursuing contacts with several countries, which might result in the establishment of new Adhering Organizations in the future. The new adhering organization for Spain in IUTAM is the Spanish Group of Fracture (AEIE-GEF). It replaces the Instituto Nacional de Tecnica Aeroespacial.

Associate Organizations

There is one Associate Organization: Cyprus. IUTAM is pursuing contacts with several countries, which might result in the establishment of new Associate Organizations in the future.

Affiliated Organizations

The reports presented by the Affiliated Organizations in the past two years are included in the IUTAM Reports 2012 and 2013. Two new affiliated organizations have applied for membership (see item 7 below).

Symposia and Summer Schools

There were eleven IUTAM Symposia in 2012, which were all well attended. The average attendance was 67. In 2013 there were six IUTAM Symposia, which were all well attended. The average attendance was 58. Eleven IUTAM Symposia are being organized in 2014 (seven already took place), whereas five Symposia are scheduled for 2015. In the period 2012 – 2014, there were three Summer Schools, one at Purdue University, USA, and two at CISM, Udine, Italy.

Sponsorship

IUTAM co-sponsored without financial support the ECCOMAS Multibody dynamics conference in Zagreb, Croatia, from July 1 to July 4, 2013, the International Conference on Nonlinear Mechanics (ICNM) in Shanghai, China, from August 12 to August 15, 2013, the International Conference on Multibody System Dynamics in Pusan, Korea, from June 30 to July 3, 2014. IUTAM is also co-sponsoring the IUTAM-ABCM Symposium on Laminar-Turbulent Transition in Rio de Janeiro, Brazil, from September 08 to September 12, 2014. For these events the procedure for co-sponsoring by IUTAM of non-IUTAM events as set by the Bureau has been applied.

IUTAM website

The new IUTAM website, designed by TxtNet, was launched at the end of 2009. The 2014 call for proposals for IUTAM Symposia and Summer Schools was completely handled through the website. All IUTAM Annual Reports have been scanned and are now available on the IUTAM website. The Secretary-General thanked Peter Eberhard for the tedious scan of all Annual Reports and his extremely valuable service to IUTAM.

IUTAM Newsletter
The IUTAM Newsletter is published twice a year.

Publications
Since January 2011, the preferred publication route for IUTAM Symposia Proceedings is Procedia IUTAM, which is open access. Eleven Proceedings have now been published. Statistics show that the usage of Procedia IUTAM is increasing exponentially. However, the Secretary-General indicated that two Symposia came without Proceedings in the last two years, which is clearly unacceptable and against the IUTAM rules.

The report by the Secretary-General was adopted.

Item 3 – Report by the Treasurer on financial matters
The Treasurer, Professor P. Eberhard, submitted the following report to the General Assembly.

Mr. President and colleagues in the General Assembly,

The financial audit procedure for the year 2013 was performed without problems and the auditing company UNITreu GmbH in Eschborn / Germany verified all the numbers and transactions on IUTAM's accounts. As of Dec. 31, 2013 IUTAM had 472.491 USD on its accounts, 176.480 USD were collected in 2013, 81.744 USD were spent in 2013.

Compared to the balance of Dec. 31, 2012, which was 372.354 USD, this gives an increase of 100.137 USD for the year 2013 (including a gain of 5401 USD from changes in the exchange rates).

The money is distributed to three checking accounts (in USD, EURO, DKK) at Spar Nord Bank, a savings account at Spar Nord Bank and a savings account at Nordea Bank. Unfortunately the current interest rates are extremely low.

The audit report with detailed numbers is available from the treasurer.

There are many special effects for 2013, e.g.

- The ICTAM seed money (15 TUSD) is on IUTAM's account. This money is not used for the Montreal ICTAM but will be provided to the 2020 ICTAM organizers in two years.
- The ICTAM levy for IUTAM arrived.
- ICTAM Beijing contributed 5 TUSD for the Lyngby GA.
- Office costs of the Secretary-General for 2013 are partially invoiced in 2014.
- Some 2013 dues arrived in 2014.
- Small expenses in 2013 (no ICTAM, GA).
- Few symposia were held in 2013 and the grant usage was carefully supervised.

Therefore, the highly positive balance for 2013 is a result of many positive coincidences of this specific year and will not be seen again in the next years.

The treasurer thus emphasizes that IUTAM has a structural deficit, this means that averaged over the years IUTAM spends more money compared to what it collects. However, the Bureau proposed to keep the membership dues constant at 810 USD per year and unit. In the future we will have to increase the dues again according to the rules decided by the GA in the past so that they follow again the UNESCO inflation numbers.

It is reported that IUTAM is now a registered organization and many thanks go to our Assistant Treasurer Niels Olhoff for his ongoing help dealing with Danish authorities.

However, it is still not possible to have IUTAM accounts in Germany or many other countries. This issue will maybe become critical in the future since bank rules are changing fast in Europe.

Respectfully submitted,
P. Eberhard, Treasurer

The report by the Treasurer was adopted.
The President thanked the Treasurer for his report.

Item 4 – Preliminary discussion on annual dues
Following his report the Treasurer led a brief discussion on the annual dues as follows:

Our dues in USD have developed as follows (see previous reports):

Year	2010	2011	2012	2013	2014	2015
Unit dues	752	778	794	810	810	810
Increase		3.5%	2%	2%	0%	0%

The Treasurer proposed not to increase the dues in USD for 2016 and 2017.

The dues of equal amounts for the years 2016 and 2017 will then be 810 USD.

It was noted that the final decision regarding annual dues would be made in the second session of the General Assembly, see item 23 below.

Item 5 – Report by the Secretary of the Congress Committee

The Secretary of the Congress Committee, Professor Robert McMeeking, submitted the following report:

Mr. President, Members of the Bureau, Ladies and Gentlemen of the General Assembly, after the last meeting of the General Assembly at ICTAM2012 in Beijing the Congress Committee (CC) met in the same location and selected Montréal as the venue for ICTAM2016. It will be held in the Palais des Congrès de Montréal 21st to 26th August 2016 under the leadership of ICTAM2016 President Maciej Floryan of the University of Western Ontario and ICTAM2016 Secretary-General Marius Paraschivoiu of Concordia University. The Executive Committee of the Congress Committee (XCCC) met thereafter in Beijing for wrap up discussions of ICTAM2012 and to make preliminary plans for the organization of ICTAM2016. ICTAM2012 Secretary-General Jianxiang Wang, ICTAM2016 President Floryan and ICTAM2016 Secretary-General Paraschivoiu were all present to enable the best possible transition and continuity from ICTAM2012 to ICTAM2016.

The XCCC next met in Montréal on the 24th & 25th August 2013. These meetings were held in the Palais des Congrès de Montréal, the venue for ICTAM2016, and a tour of it was provided to the Executive Committee on the 26th August. At these meetings the XCCC identified a priority ranked list of names for the International Papers Committee (IPC) for ICTAM2016. I am pleased to report that the 6 top choices for the IPC (3 in solids and 3 in fluids) all accepted the invitation to participate. As I am sure you know, the IPC selects the papers to be presented at ICTAM, and thus plays a crucial role in ensuring the high quality of papers presented at the Congress.

The XCCC also identified the 6 Minisymposia to be held at ICTAM2016. They will be (1) Bypass Transition, (2) Fluid Active Matter, (3) Multiphase Flow in the Processing Industry, (4) Nonlinear Dynamics of Engineering Systems, (5) Soft Solid Active Matter, and (6) Topology Optimization. Possible Co-Chairs for these Minisymposia were identified, and I have been working on securing agreement from the selected individuals. It was decided that at ICTAM2016 Minisymposia will consist of 4 invited lectures that the organizer of the Minisymposium can invite without reference to the IPC and without the possibility of being overruled by the IPC. One of these lectures can be given by one of the organizers of the Minisymposium. Thereafter the Minisymposium will continue with 20-minute lectures.

At the meeting in Montréal, the XCCC decided to drop the name “Pre-Nominated Sessions” and to rename them “Thematic Sessions” as a better descriptor. The full-length presentations in these sessions will consist only of 20-minute lectures. However, the organizers of a Thematic Session will be permitted to issue 4 invitations for lectures without reference to the IPC and without the possibility of being overruled by the IPC. The Thematic Sessions will also have poster presentations. The previous name for these, “Seminar Presentations,” will be dropped as it has proved to be confusing to those submitting abstracts. Instead the poster sessions will be described as “Short Talk and Poster” presentations.

Another important decision made by the XCCC is that in future Proceedings of ICTAM will be produced in the form of two pdfs archived on the IUTAM website and retained as permanent items there, accessible online. One pdf will contain papers from the authors of invited plenary (i.e. opening and closing) and sectional lecturers plus papers from invited lecturers for Minisymposia. The other pdf will be a list of papers presented session by session, in the form of a title, list of authors and authors’ affiliations. The list will be comprehensive and will include the opening and closing lectures, the sectional lectures, the prize lectures if any, and those presented at each Minisymposium and Thematic Session, including both "lectures" and "short talks with poster". It will be the responsibility of the organizers to produce such pdfs and to provide them in a timely manner to IUTAM.

Additionally, it was decided by the XCCC that submissions to ICTAMs in future will consist only of a single document in the form of a 2 page description of the material to be presented. This 2-page document should commence with an abstract of length 3 to 5 lines. This will mean that the previous requirement for a short abstract in addition to a 2-page document will be dispensed with.

At the meeting in Montréal the XCCC identified a Nominations Subcommittee whose responsibility is to assemble candidates for election to the CC, and to

recommend procedures for carrying out those elections. The elections are, of course, carried out by the General Assembly. The recommendations of this subcommittee will be presented to the General Assembly tomorrow, 19th August 2014, at which time the elections will be undertaken.

The XCCC also met yesterday, 17th August 2014, here at DTU. At this meeting, the organizers of ICTAM2016 nominated Professor Neil Balmforth of the University of British Columbia to give the Opening Lecture. Consistent with established precedent that the Opening or the Closing Lecture is given by a person associated with the host nation, the XCCC accepted this nomination. It was also decided at this meeting that there will be 16 Sectional Lectures at ICTAM2016. These will be in addition to the Prize presentations, namely the Batchelor and Hill Lectures.

The CC met this morning. It endorsed the selection of Neil Balmforth to give the Opening Lecture at ICTAM2016 and then held a vote to select the person to give the Closing Lecture. As Professor Balmforth will give his lecture in the area of fluids, the ballot for Closing Lecture was restricted to candidates in the solids area. The result of the vote is that Professor Norman Fleck of Cambridge University will be invited to give the Closing Lecture at ICTAM2016.

The CC also commenced its effort to select the 16 Sectional Lecturers for ICTAM2016. However, this process was not completed today and will continue at the CC meeting tomorrow, 19th August 2014.

This morning the CC also heard a summary of the report of the Nominations Subcommittee. Salient points of that report are that 5 individuals retire from the CC effective 31st October 2014 having completed 2 terms of office. These persons are Carl Herakovich, Jean-Baptiste Leblond, Nikita Morozov, Nigel Peake and Genki Yagawa. I wish to thank them for their service to the Committee. The report also notes that 6 persons complete their 1st term of office on 31st October 2014 and are therefore eligible for re-election for a 2nd term. The Nominations Subcommittee is recommending that these 6 persons should be re-elected to serve a 2nd term on the CC. If the General Assembly chooses to do so, there will then be 5 vacancies on the CC, to be filled by election from the 18 candidates who have been nominated for possible appointment to the Committee. The Nominations Subcommittee is recommending that the candidate from the UK should be elected unopposed to ensure continued representation of that country on the CC. If that occurs, the task of the General Assembly tomorrow will then be to elect 4 new members from the remaining 17 nominees, but, of course, with the imperative of retaining disciplinary balance on the Committee.

Finally, I wish to report on the preliminary expressions of interest that we have received concerning ICTAM2020. So far, four groups have informed us of their interest in organizing this Congress. These are the Scandinavian national committees, which wish to organize the Congress in Lund, chaired by Per Ståhle; the Italian national committee, which proposes Milan as the venue and Alberto Corigliano as the congress chair; the French national committee, with Paris as the location and Stéphane Zaleski as the chair; and finally the Russian national committee, which wishes to organize ICTAM2020 in St. Petersburg, chaired by Alexander Belyaev. It is expected that these four expressions of interest will lead to firm proposals to hold the congress. These proposals may be augmented by additional bids that could materialize between now and 2016 when final proposals will be due.

This completes my report. I wish to thank you for your attention.

The report by the Secretary of the Congress Committee was adopted.

The President thanked the Secretary for his report.

Item 6 – Matters concerning Adhering Organizations

6.1 *Slovakia*

Slovakia has not paid its dues for several years. In a letter to the Secretary-General, the Chair Committee of the Slovak Society for Mechanics indicated that Slovakia has decided to cancel the membership in IUTAM.

It was agreed to suspend the membership of Slovakia.

6.2 *Latvia*

Latvia has not paid its dues for several years. Several letters have been sent by either the Treasurer or the Secretary-General, without response.

It was agreed to suspend the membership of Latvia.

6.3 *Turkey*

Turkey has not paid its dues for several years. Several letters have been sent by either the Treasurer or the Secretary-General, without response.

It was agreed to delay the process of membership suspension for Turkey as Adhering Organization until the next General Assembly in the hope of receiving some positive news.

6.4 *Mexico*

Mexico has not paid its dues for several years. Several letters have been sent by either the Treasurer or the Secretary-General, without response.

It was agreed to delay the process of membership suspension for Mexico as Adhering Organization until the next General Assembly in the hope of receiving some positive news.

Item 7 – Matters concerning Affiliated and Associate Organizations

7.1 *IMSD* (International Association of Multibody System Dynamics)

Documents have been prepared on the affiliated status for IMSD. The treasurer made a presentation of IMSD.

The General Assembly agreed to support the application of IMSD for Affiliated Organization status within IUTAM.

7.2 *IASCM* (International Association for Structural Control and Monitoring)

Documents have been prepared on the affiliated status for IASCM. The Secretary-General made a presentation of IASCM.

The General Assembly agreed to support the application of IASCM for Affiliated Organization status within IUTAM.

Item 8 – Recommendation to terminate the Working Parties

IUTAM organised in 2012 a survey of Working Parties (WPs). One of the main conclusions of the committee in charge of the survey was that there was a general lack of enthusiasm for the WPs. Only two or three WPs are really active and in 2013 the Bureau had again a long discussion on WPs. Therefore a recommendation was made to terminate the WPs.

Item 9 – Proposals for election of members of Symposia Panels

The Secretary-General reported that two members of the Fluid Mechanics Panel and one member of the Solid Mechanics Panel have served for two consecutive terms and should be replaced.

The Bureau proposed to the General Assembly to appoint Prof. D. Lohse (Netherlands) and Prof. R. Govindarajan (India) as new members to the Fluid Mechanics Panel, and Prof. T. Lu (China) as new member to the Solid Mechanics Panel.

It was noted that the final decision regarding these proposals would be made in the second session of the General Assembly, see Item 29 below.

Item 10 – Proposal for Electoral Committee

The President presented a slate of names for the Electoral Committee which had the approval of the Bureau. Election is reported under item 27.

Item 11 – Preliminary discussion on future IUTAM Symposia. Reports from Symposia Panels

The call for proposals for IUTAM Symposia in 2016/2017 has resulted in 20 proposals, listed below (FL stands for Fluids, FS for Fluid/Structure and SO for Solids).

FL.01 *Storm surge modelling and forecasting* (Shanghai, China)
FL.02 *Wind waves* (London, UK)
FL.03 *Helicity, structures and singularity in fluid and plasma dynamics* (Venice, Italy)
FL.04 *Jet noise modelling and control* (Palaiseau, France)
FL.05 *Dynamics and topology of vorticity and vortices* (Lyngby, Denmark)
FS.01 *Co-simulation and solver coupling – Recent developments in theory and application* (Darmstadt, Germany)
FS.02 *Variational methods in mechanics of multiscale, fibrous and microstructured systems* (Cisterna di Latina, Italy)
FS.03 *Computational particle mechanics in fluid and solid systems* (Berkeley, USA)
SO.01 *Composite materials and structures* (Porto, Portugal)
SO.02 *Advanced beam theories* (Athens, Greece)
SO.03 *Dynamic instabilities in solids* (Madrid, Spain)
SO.04 *Computational solid mechanics* (Roorkee, India)
SO.05 *Nonlinear and delayed dynamics of mechatronic systems* (Nanjing, China)
SO.06 *Filling gaps in material property space* (Cambridge, UK)
SO.07 *Multiscale modelling of dislocations* (Oxford, UK)
SO.08 *Mechanics of stretchable electronics* (Hangzhou, China)
SO.09 *Multi-scale fatigue, fracture and damage of materials in harsh environments* (Galway, Ireland)
SO.10 *Nanoscale physical mechanics* (Nanjing, China)
SO.11 *Advances in biomechanics of hearing* (Stuttgart, Germany)

SO.12 *Integrated computational structure-material modeling of deformation and failure under extreme conditions* (Baltimore, USA)

These proposals have been reviewed by the two Symposia Panels. All proposals and the preliminary reports of the Panels have been enclosed in the material distributed to the members of the General Assembly. The recommendations of the two Panels were reported by Prof. F. Dias, representing the Chairman of the Fluids Symposia Panel, and Prof. N. Fleck, Chairman of the Solids Symposia Panel.

It was agreed to accept altogether no more than 16 Symposia for the years 2016 and 2017.

After preliminary discussion the nine proposals coded FL.01, FL.03, SO.06, SO.07, SO.08, SO.10, SO.11, FS.01, FS.03 were ranked "alpha", the seven coded FL.02, FL.04, FL.05, SO.03, SO.05, SO.09, SO.12 were ranked "alpha minus or beta", whilst the four remaining proposals, coded SO.01, SO.02, SO.04 and FS.02 were ranked "gamma".

It was agreed that the proposals ranked "alpha" would be accepted in the second session, whereas those ranked "gamma" would not be accepted. The proposals ranked "beta" would be further considered at the second session.

Item 12 – Preliminary discussion on future International Summer Schools on Mechanics

The call for proposals has resulted in 2 proposals for IUTAM Summer Schools:

SSFL.01 *Measurement, analysis and control of thermoacoustic oscillations* (Udine, Italy)
SSFL.02 *Biological and bio-inspired fluid mechanics* (Udine, Italy)

The proposals coded SSFL.01 and SSFL.02 were reviewed by the Fluids Symposia Panel and ranked "alpha".

It was agreed that the proposals ranked "alpha" would be accepted in the second session.

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

It was agreed that the final decision on future IUTAM Symposia and Summer Schools would be made in the second session under Items 22 and 23, respectively.

Item 13 – Preliminary discussion on a resolution for the eligibility for election as Bureau Officer and as Bureau member

The Article XII of the statutes as it stands:
The Bureau consists of the officers (President, the retiring President who serves as Vice-President, Secretary-General, and Treasurer) and four other persons who shall have been members of the General Assembly at some time within the four years preceding the time of election to the Bureau.

Amendment proposed by the IUTAM Bureau
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 Article VI of the statutes as it stands:
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. 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) Secretary of the Congress Committee (Article XIII);
iii) chairmen of the Symposia Panels;
iv) chairmen of the Working Parties;
v) representatives of adhering associated organisations (Article IX);
vi) representatives of countries applying for membership;
vii) representatives of committees and groups of scientists, if so decided by the General Assembly.

Amendment proposed by the IUTAM Bureau
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.

It was agreed that the final decision on this resolution would be made in the second session under Item 30.

Item 14 – Preliminary discussion on a change of statutes concerning the Congress Committee

The Congress Committee went through an exercise to address the procedures for nomination and election to the Congress Committee. Consequently a revision of the IUTAM statutes and rules of procedure regarding the Congress Committee has been prepared.

The Article XIII of the statutes as it stands:
The General Assembly establishes a standing Congress Committee 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 President of the Congress Committee.
b) The members of the Congress Committee are appointed by the General Assembly as scientists active in theoretical or applied mechanics and need not be members of the General Assembly.
c) The Congress Committee appoints a Secretary, without stated terms of office.

d) The rules of procedure of the Congress Committee shall be approved by the General Assembly.

Amendment proposed by the Congress Committee
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.

The rules of procedure for the Congress Committee of IUTAM as they stand
1. The Congress Committee meets at least once at every Congress.

2. The Congress Committee may appoint an Executive Committee to take all necessary actions on its behalf in the period between two successive Congresses, and to report to it at its next meeting. The Executive Committee will consist of the

president, the secretary and one or more members appointed by the Congress Committee.

3. The actual organization of a Congress is delegated to a local Organizing Committee, elected by the host-country or host-organization, which is also responsible for publication of its Proceedings. The Organizing Committee will report to the Congress Committee either during or, if it sees fit, before the Congress which it organizes.

4. The Organizing Committee will obtain the approval of the Congress Committee (normally through the Executive Committee) with regard to all matters affecting the general policy of the Congress Committee, in particular with regard to:

- *4.1. the scope of the Congress;*
- *4.2. the screening of papers of the Congress;*
- *4.3. the selection of general lectures for the Congress;*
- *4.4. the appointment of chairmen of sessions of the Congress;*
- *4.5. the broad principles regarding financial arrangements for the Congress.*

5. The Organizing Committee will levy a fee (the level to be recommended by the Congress Committee and approved by the Bureau) for administrative expenses of the Congress Committee, from all Congress members. This fee will be paid over to IUTAM after the Congress.

Amendment proposed by the Congress Committee

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:

- *5.1. the scope of the Congress;*
- *5.2. the screening of papers for the Congress;*
- *5.3. the selection of general lectures for the Congress;*
- *5.4. the appointment of chairs of sessions of the Congress;*
- *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.

It was agreed that the final decision on this resolution would be made in the second session under Item 31.

Item 15 – Matters concerning Symposia: Grants, Publication of IUTAM Proceedings
Cancelled.

Item 16 – Preliminary discussion on IUTAM Graduate Student Prizes
Cancelled.

Item 17 – IUTAM Prizes for Fluid Mechanics and for Solid Mechanics
The president explained the Batchelor Prize (Fluid Mechanics) and the Hill Prize and presented a slate of names for both prize committees.

The meeting then adjourned.

The meeting reconvened on 19 August 2014.

Item 18 – Matters concerning Inter-Union Committees
As part of the global program Mathematics of Planet Earth 2013, the three Unions IMU, IUTAM and IUGG organized an educational and capacity-building workshop "Mathematical Methods in Geosciences: Natural Hazards, Climate Change and Related Risks". The workshop took place in Guanajuato, Mexico during July 29 – August 2, 2013 and was a satellite of the 2013 Mathematical Congress of the Americas.

A replacement of Prof. Chernyi is being sought as IUTAM Representative for COSPAR, the Committee on Space Research.

A replacement of Prof. Stiassnie is being sought as IUTAM Representative for COSPAR, the Committee on Oceanic Research.

Item 19 – Matters concerning non-ICSU organizations
Nothing to report.

Item 20 – Future IUTAM co-sponsored events
Continuing the successful series of past conferences that have been organized in Lisbon (2003), Madrid (2005), Milano (2007), Warsaw (2009), Brussels (2011) and Zagreb (2013), the next edition of the ECCOMAS Thematic Conference on Multibody dynamics will be held in Barcelona from June 29 to July 2, 2015. The conference will be organized by the Department of Mechanical Engineering of the Universitat Politècnica de Catalunya (BarcelonaTech). *The General Assembly voted in favor of IUTAM co-sponsorship without financial support.*

The organisers of the International Conference on Fractional Differentiation and its Applications to be held in Novi Sad from July 11 to July 13, 2016 also asked for IUTAM co-sponsorship. The General Assembly felt that the link with mechanics had to be strengthened. The IUTAM Bureau will consider the request of the organisers again during the next meeting of the Bureau in 2015.

Item 21 – Continued discussion and final decision regarding future IUTAM Symposia
The General Assembly decided to accept the 9 symposia proposals, rated "alpha", and coded FL.01, FL.03, SO.06, SO.07, SO.08, SO.10, SO.11, FS.01 and FS.03. Furthermore, the General Assembly decided to reject the 4 symposia proposals, rated "gamma", and coded SO.01, SO.02, SO04 and FS.02.

After further discussion of the remaining 7 proposals, rated "alpha minus or beta", a vote was taken.

The following further 7 proposals were finally accepted: FL.02, FL.04, FL.05, SO.03, SO.05, SO.09 and SO.12.

Item 22 – Continued discussion and final decision regarding future International Summer Schools on Mechanics

The General Assembly decided to accept the two Summer Schools coded SSFL.01 and SSFL.02 and rated "alpha".

Item 23 – Continued discussion and final decision regarding annual dues

Following discussions, *the General Assembly voted in favor of the following amounts for the units of dues (no increase): US $ 810 in 2016, US $ 810 in 2017*

Item 24 – Continued discussion and final decision regarding Working Parties

Following discussions, *the General Assembly voted in favor of terminating the Working Parties.*

Item 25 – Continued discussion and final decision regarding Symposia Grants and Publication of IUTAM Proceedings

Cancelled.

Item 26 – Continued discussion and final decision IUTAM Graduate Student Prizes

Cancelled.

Item 27 – Election of members of the Electoral Committee

The General Assembly elected unanimously the following persons as members of the Electoral Committee:

Prof. V. Tvergaard (Denmark, chair), Prof. B. Freund (USA), Prof. A. Kluwick (Austria), Prof. K. Moffatt (UK), Prof. W. Schiehlen (Germany)

Item 28 – Election of members of the Congress Committee of IUTAM

The General Assembly decided to re-elect the following persons as members of the Congress Committee for the period 2014 through 2018:

Prof. R. Cotta, Brazil
Prof. P. Eberhard, Germany
Prof. G.J van Heijst, Netherlands
Prof. K. Ravi-Chandar, USA
Prof. H. Stone, USA
Prof. K. Tanishita, Japan

The General Assembly decided to elect the following persons as members of the Congress Committee for the period 2014 through 2018:

Prof. K. Bajer (Poland)
Prof. D. Bigoni (Italy)
Prof. M. Gilchrist (Ireland)
Prof. P. Linden (UK)
Prof. S. Mittal (India)
Prof. J. Wang (China)

The new membership of the Congress Committee is recorded in the following list:

Prof. K. (Konrad) Bajer, Poland, 2018
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, France, 2016
Prof. P. (Peter) Eberhard, Germany, 2018
Prof. B. (Bruno) Eckhardt, Germany, 2016, member of XCCC
Prof. H. (Horacio) Espinosa, USA, 2016
Prof. M. (Maciej) Floryan, Canada, 2016, member of XCCC (ex officio)
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) Karagozian, USA, 2016
Prof. D. (Djimedo) Kondo, France, 2016
Prof. P. (Paul) Linden, UK, 2018
Prof. T. (Tianjian) Lu, China, 2016
Prof. J. (Jacques) Magnaudet, France, 2016, member of XCCC
Prof. N. (Nichos) Makris, Greece, 2016

Prof. V. (Valery) Matveenko, Russia, 2016
Prof. R.M. (Robert) McMeeking, USA, 2016, Secretary, member 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, member of XCCC
Prof. J. (Jens) Walther, Denmark, 2016
Prof. J. (Jianxiang) Wang, China, 2018

Item 29 – Final decision on re-appointment of one member of Symposia Panels and the election of two new members for the Fluid Panel and one new member for the Solid Panel
With reference to the discussion under Item 9, it was agreed:

- To appoint Prof. D. Lohse (Netherlands) and Prof. R. Govindarajan (India) as new members to the Fluid Mechanics Panel
- To appoint Prof. T. Lu (China) as new member to the Solid Mechanics Panel.
- To re-appoint Prof. H. Choi

Item 30 – Continued discussion and final decision regarding the resolution for the eligibility for election as Bureau Officer and as Bureau member
The General Assembly approved the resolution.

Item 31 – Continued discussion and final decision regarding the change of statutes concerning the Congress Committee
The General Assembly approved the resolution.

Item 32 – Date and venue of the next General Assembly
The General Assembly agreed to hold its next meeting during the 24th ICTAM in Montreal, Canada, on Tuesday evening, August 23, and on Wednesday afternoon, August 24, 2016.

Item 33 – Any other business
Nothing to report.

Then, the President closed the meeting.

Frédéric Dias, Secretary-General

2014 Treasurer's Report

Statement of Change in Fund Balance	**USD**
Balance, 31 December 2013	472,491
Net revenues minus expenses for 2014	–37,985
Balance, 31 December 2014	**434,506**

Statement of Cash Revenues Collected over Expenses Paid

Revenues collected during 2014:	
Subscription dues	104,405
Interest income	5,658
Total	**110,063**
Expenses paid during 2014:	
Symposia	42,698
Summer school	12,000
Contribution to ICSU	7,527
GA Lyngby Support from ICTAM	5,000
Travel, Bureau	10,195
Travel, Congress Committee and Executive Committee	3,107
Travel, others	5,951
Website	13,121
Office expenses & Printing	28,013
Auditor's fee	3,293
Bank fees	333
Total	**131,238**
Revenues minus expenses for 2014	**–21,175**
Gain (loss) from exchange of currency	–16,810
Net revenues minus expenses for 2014	**–37,985**

Statement of IUTAM Bank Accounts
(1 January 2014 through 31 December 2014)

Bank (Running Accounts)	**Balance 31 Dec 13**	**Withdrawals 2014**	**Deposits 2014**	**Balance 31 Dec 14**	**Currency**
Spar Nord Bank Aalborg 9236 457 73 07097	248,844.59	133,362.25	109,066.07	224,548.41	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	755.80	0.00	0.95	756.75	DKK
Nordea Bank Horsholm 6887 390 760	0.00	0.00	0.00	0.00	DKK
Nordea Bank 0745 417 701	872.02	0.00	16,875.00	17,751.02	DKK

Bank (Savings Accounts)	**Balance 31 Dec 13**	**Withdrawals 2014**	**Deposits 2014**	**Balance 31 Dec 14**	**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:
Professor N. Olhoff, Department of Mechanical and Manufacturing Engineering, Aalborg University, Fibigerstraede 16, DK-9220 Aalborg East, Denmark

Subscription Dues Paid in Membership Units

Adhering Organization	*2010*	*2011*	*2012*	*2013*	*2014*
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	–
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***					
Czech Republic	1	1	1	1	1
Denmark	3	3	3	3	3
Egypt	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	–

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
Mexico****		–	–	–	–
Netherlands	5	5	5	5	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	–
Saudi Arabia	–	1	1	1	–
Serbia	1	1	1	1	1
Slovenia	1	1	1	1	1
South Africa	1	1	1	1	–
Spain*	–	1	–	–	1
Sweden	5	5	5	5	5
Switzerland	3	3	3	3	3
Turkey	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 2014. Dues are expressed in membership units of 1, 3, 5, 8 or 12, corresponding to the category of membership from I through V, respectively.

* Spain has renewed its membershipin 2014 with a different organization.

** According to the agreement with IUTAM, Bulgaria has resumed payment of dues from 2011 after accumulation of debt in preceding years. The annual payment is set as one unit due plus a percentage of the debt.

*** Cyprus' Mathematical Society entered IUTAM as an Associate Adhering Organization in 2011.

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

***** Russia has only partially paid the 2014 dues.

Latvia's and Slovakia's memberships were suspended in 2014, Argentina's and Morocco's memberships were already suspended.

Reports on Affiliated Organizations

AFMC (Asian Fluid Mechanics Committee)

The major activity of AFMC is organizing the Asian Congress of Fluid Mechanics (ACFM) every 2-3 years. A total of 14 congresses have 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. In the AFMC meeting held at Hanoi (Vietnam) in October 2013 during the 14th ACFM, two important decisions were taken. The first, to hold the 15th ACFM in Kuching, Sarawak in Malaysia in November 2016 under the leadership of Prof. C.S. Ow. Initial planning has started and a brochure announcing the 15th ACFM and call for papers is expected to be out by June 2015. The second decision is on restructuring the AFMC. Now AFMC has an Executive Committee. Prof. G.S. Bhat from India is the Chairman, with Prof. S. Fu from China and Prof. O. Mochizuki from Japan as vice-chairmen. Scientists leading the previous and next ACFM are other two members of this committee. At present AFMC has 26 members from 16 Asian countries and regions. Some members have retired from their service and wished to step down from AFMC. Therefore, AFMC membership is being revised and will be finalized before the 15th ACFM announcement is made.

Report composed by G. S. Bhat

BICTAM (Beijing International Center for Theoretical and Applied Mechanics)

As one of the affiliated organizations of IUTAM, the Beijing International Center for Theoretical and Applied Mechanics (BICTAM) is an international non-governmental scientific organization. The main objectives of the Center are to improve the advancement of education, research and applications of mechanics and to establish of a platform of relevant scientists and graduate students, especially in the areas of Asia and the Pacific, through the organizations of conferences, symposia, workshops and summer schools for subjects falling within the field of theoretical and applied mechanics and interdisciplinary branches. Detailed information on BICTAM can be accessed under the BICTAM homepage: http://www.bictam.org.cn/

BICTAM Symposium on Mechanical Behaviors and Experimental Methods of Advanced Materials

BICTAM Symposium on Mechanical Behaviors and Experimental Methods of Advanced Materials was successfully held in Tianjin during May 8 – 9, 2014. Jointly organized by BICTAM, Tianjin University of Commerce, Shanghai Jiao Tong University, and Tsinghua University, the symposium aims to bring together leading academic scientists, researchers and scholars to exchange and share their experience and research results on all aspects of mechanical problems and engineering applications of advanced materials, and to discuss the practical challenges encountered and the solutions adopted. The delegates were composed mainly of young researcher in mechanics fields and material fields from about more than 20 Universities in China, UK, Australia, Japan and USA, etc.

The 7th South China Sea Tsunami Workshop

The 7th South China Sea Tsunami Workshop (SCSTW7) was held on November 17-22, 2014 in Taiwan, China. This workshop was initiated by Professor Philip L.-F. Liu at Cornell University in 2007, to weave an international academic net, in which strong interactions and collaborations among coastal physical oceanographers, geophysicists, and engineers from the countries in South China Sea Region were combined together. Following the success of the 1st Workshop on Natural Hazards-Tsunami (SCSTW5) in Beijing in 2012, as one of the sponsors of SCSTW7, BICTAM provided funding support to assist three scholars from India and Singapore to attend this workshop.

International Visiting Scholars Program

During the year 2014, seven scientists from United States, United Kingdom, Japan, Australia, and Hong Kong, China, visited the Center as guest scholars. They worked at the Center for a period and closely contacted relevant scientists in China with common research interests and efficiently exchanged their most recent research achievements.

Other Events

- Complete the draft of the articles of the Asia-Pacific Mechanics Prize, which will be awarded to a researcher from the Asia-Pacific region for his/her outstanding and fundamental research accomplishments in Mechanics.
- Preparation for the BICTAM Workshop on Pattern Formation in Soft Materials, Tianjin, China, which will be held on June 1-4, 2015.

Report composed by Jie Chen

CISM (International Centre for Mechanical Sciences)

1. Courses and Seminars

The regular programme of courses and seminars, planned for the Centre for 2014 by the Scientific Council, took place in two Scientific Sessions, the J. Carlos Simo Session (May-August 2014) and the D. Howell Peregrine Session (September-October 2014). The topics, always at an advanced level, included different fields of mechanics and related sciences, both at a basic and applied level.

The J. Carlos Simo Session

Collective Dynamics of Particles: from Viscous to Turbulent Flows
Extremely Deformable Structures
Topology Optimization of Structures and Continua – Computational Aspects and Background
Mechanobiology of Cells and Tissues: Motility and Morphogenesis
Flowing Soft Matter: Bridging the Gap between Statistical Physics and Fluid Mechanics
Cavitation Instabilities and Rotordynamic Effects in Turbopumps and Hydroturbines
Advanced Professional Training School on Advances in Medium and High Temperature Solid Oxide Fuel Cells Technology
Structure and Multiscale Mechanics of Carbon Nanomaterials

The D. Howell Peregrine Session

Electrospinning: Exploiting Electrohydrodynamics and Rheology for the Control of Nanofiber Structural and Physical Properties
Ferroic Functional Materials: Experiment, Modeling and Simulation
Shell-like Structures: Advanced Theories and Applications
Singular Configurations of Mechanisms and Manipulators
Advanced Finite Element Technologies

20th CISM-IUTAM International Summer School on Multiscale Mechanobiology of Bone Remodeling and Adaptation

2. Other Events

Besides the above courses, the following other meetings were organized or hosted by CISM in 2014

- ROMANSY-2014 20th CISM-IFToMM Symposium on “Theory and Practice of Robots and Manipulators”, Moscow (June 23 – 26);
- Fundamentals and Applications of Cerium Dioxide in Catalysis (July 11 – 14);
- EMS School "New Perspectives on the classification of Fano Manifolds" (September 29 - October 3);
- “Play Energy 2014” – meetings organized by the Municipal Council of Udine (December 3 – 6).

3. 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.

4. 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 2014:

S. Chibbaro - J.P. Minier: "Stochastic Methods in Fluids Mechanics"
G.I.N. Rozvany - T. Lewinski: "Topology Optimization in Structural and Continuum Mechanics"
J. Schroeder - K. Hackl: "Plasticity and Beyond: Microstructures, Crystal-Plasticity and Phase Transitions"
M. Angelillo: "Mechanics of Masonry Structures"
T. Lodygowski - A. Rusinek: "Constitutive Relations under Impact Loadings Experiments, Theoretical and Numerical Aspects"
A. Muntean - F. Toschi: "Collective Dynamics from Bacteria to Crowds: An Excursion Through Modeling, Analysis and Simulation"
F. Chinesta - P. Ladeveze: "Separated Representations and PGD Based Model Reduction Fondamentals and Applications"
G. Kerscen: "Modal Analysis of Nonlinear Mechanical Systems"
T. Sadowski - P. Trovalusci: "Multiscale Modeling of Complex Materials Phenomenological, Theoretical and Computational Aspects"
H. Irschik - A.K. Belyaev: "Dynamics of Mechanical Systems with Variable Mass"
P. Hagedorn - G. Spelsberg-Korspeter: "Active and Passive Vibration Control of Structures"
L. Dorfmann - R.W. Ogden: "Nonlinear Mechanics of Soft Fibrous Materials"
H. Altenbach - T. Sadowski: "Failure and Damage Analysis of Advanced Materials"
G. Beer - S. Bordas: "Isogeometric Methods for Numerical Simulation"

The international journal for rapid communication "Mechanics Research Communications" created by CISM and Pergamon Press, Oxford-New York in 1973, in 2014 has issued 8 volumes (the last one is sixty two). It contains short communications on research related to a wide domain of both theoretical and applied mechanics.

5. Scholarships

A number of scholarships, including free lodging and board or exemption from registration fee, was offered during the courses to participants who were not supported by their home institutions, priority being given to young researchers coming from countries that contribute to CISM's operating resources.

6. International Participation

In 2014, 87 lecturers from 22 countries delivered lectures in the The J. Carlos Simo and D. Howell Peregrine Sessions. The courses were attended by 442 participants coming from 41 countries.

Report composed by Bernhard Schrefler

EUROMECH (European Mechanics Society)

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 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 2014

554. *Dynamics of capsules, vesicles and cells in flow*. 15-18 July 2014, Université de Technologie de Compiègne, France.

561. *Dimensionality in Turbulence.* 19-21 May 2014, Coventry, UK.

563. *Generalized Continua and their application to the design of composites and metamaterials.* 17-21 March 2014, Cisterna di Latina, Italy.

565. *Subcritical transition to turbulence.* 6-9 May 2014. Cargèse, France.

EUROMECH CONFERENCES in 2014

8th European Nonlinear Oscillations Conference, 6-11 July 2014, Wien, Austria.

14th European Mechanics of Materials Conference, 27-29 August 2014, Gothenburg, Sweden.

10th European Fluid Mechanics Conference, 14-18 September 2014, Copenhagen, Denmark.

OTHER EVENTS

7th European Postgraduate Fluid Dynamics Conference. 15-17 July 2014, Ilmenau, Germany.

For more details see www.euromech.org

Report composed by Pierre Suquet

HYDROMAG (International Association for Hydromagnetic Phenomena and Applications)

HYDROMAG is an international association of scientists and engineers active in those fields of research which involve the flow of fluids in the presence of a magnetic fields, namely magnetohydrodynamics (MHD), electromagnetic processing of materials (EPM) and dynamics of magnetic fluids (MF). HYDROMAG promotes growth and visibility of the field of hydromagnetics and

stimulates exchanges between its members throughout the world via conferences, workshops, summer schools and publications. Detailed information on HYDROMAG can be accessed under

http://www.hydromag.eu/wp/

This WWW-site contains information on membership, forthcoming conferences and the electronic HYDROMAG newsletter. During the year 2014 several workshops and scientific meetings have been conducted involving the active participation of HYDROMAG and its members.

Report composed by Andre Thess

IABEM (International Association for Boundary Element Methods)

The International Association for Boundary Element Methods (IABEM) is an open community, where everybody working on boundary element methods or boundary integral equations is welcome independent of her/his scientific field. Consequently, there is no official membership or any fees. Details on IABEM can be found on http://www.iabem.org.

The scientific activities of IABEM are shown in organising minisymposia on related conferences or holding workshops in the field of BEM. In 2014 this was:
- IABEM Symposium in Zhengzhou, China
- Söllerhaus Workshop on fast boundary element methods in industrial applications

In 2015 the following events are scheduled:
- Conference BeTeQ 2015 in Valencia, Spain
- Minisymposium at PANACM 2015 "Boundary Element Techniques"
- Minisymposium at USNCCM 13 "Advances in the Boundary Element Method"
- Söllerhaus workshop on "Fast Boundary Element Methods in Industrial Applications"

The organisation has decided to hold the IABEM symposia in a biannual fashion. In August 2014 the symposium has been held in Zhengzhou, China. Approximately 100 researchers from applied mathematics and engineering have attended this well organized symposium. To give an outlook, the next symposium will be held in Golden, Colorado, USA from 10th - 12th August, 2016. A web-page will be provided in due time to the conference.

Report composed by Martin Schanz

IACM (International Association for Computational Mechanics)

The 11th IACM World Congress

IACM organized in 2014 the 11th WORLD CONGRESS ON COMPUTATIONAL MECHANICS (WCCM 2014) in conjunction with the 5th European Conference on Computational Mechanics (ECCM V) and the 6th European Conference on Computational Fluid Dynamics (ECFD VI). It took place in Barcelona, Spain, on July 20 - 25, 2014.

The joint organization of the WCCM XI – ECCM V – ECFD VI aroused a big interest in the computational methods community. Sixty three countries were represented by over 3.800 participants. This has been, so far, the largest congress in the computational methods history.

As a response to the call for abstracts, 4142 contributions were received and went through the review process. In the end, the scientific program scheduled 3152 papers presented in 543 sessions (48 parallel rooms).

Moreover, the Congress included eight plenary lectures and twenty-four semi-plenary lectures, addressed by scientists of international reputation in the fields of the congress, complemented by 218 minisymposia and 26 Contributed sessions, as well as 115 poster presentations.

Further details are available at: www.wccm-eccm-ecfd2014.org.

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 2.000.

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

The following IACM supported events took place in 2014 and 2015:

- 1st International Conference on Computational Engineering and Science for Safety and Environmental Problems (COMPSAFE 2014), 13 - 16 April 2014, Sendai, Japan
- 4th International African Conference on Computational Mechanics - AfriComp'15, 7-9 January 2015 / Marrakech, Morocco

Upcoming IACM supported events:

- 1st Pan American Congresses on Computational Mechanics- PANACM 2015, 27-29 April 2015 / Buenos Aires, Argentina
- 6th International 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 International 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 September 2015 / Barcelona, Spain
- 7th International 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

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 2014 consisted of organizing the *Sixth World Conference on Structural Control and Monitoring* (6WCSCM), in Barcelona, Spain during the period 15-17 July 2014. The venue was at the Polytechnic University of Catalonia, (UPC) in Barcelona.

A summary of the highlights of the 6WCSCM:

- About 350 attendees registered at the conference with the following regional distribution: over 30 countries represented. Large number from China (70) and USA (70); Europe (120), Japan (40), Korea (18), Taiwan (11), Australasia (9);
- Six keynote presentations were made;
- Eight sessions in parallel were held each day, over three days

The Board of Directors of IASCM approved the application of a new Regional Panel of IASCM called "*Australasia Panel on Structural Control and Monitoring*" which includes Australia, New Zealand

Report composed by Sami F Masri

IAVSD (International Association for Vehicle Systems Dynamics)

http://www.iavsd.org

The main event organized by IAVSD in the year 2014 was IAVSD Workshop on Automated Driving and Autonomous Functions on Road Vehicles. This was held on August 27-29, 2014 in the Gothenburg, Sweden.

IAVSD participated in the year 2014 at the joint event 5th International Munich Chassis Symposium, Munich, Germany, 24-25 June 2014 and at the joint event 12th International Symposium on Advanced Vehicle Control AVEC'14 held in Tokyo September 22-26, 2014.

The next associated events of IAVSD will be the International 24th IAVSD Symposium 2015 in Graz, Austria in the time August 17 – 21, 2015.

Report composed by Hans True

ICA (International Commission for Acoustics)

Following elections at the 2013 ICA General Assembly in Montreal, ICA has President Marion Burgess, Vice President Jing Tian, Secretary-General Michael

Stinson, and Treasurer Antonio Perez-Lopez. The past President is Michael Vorländer.

The ICA welcomes a new member, the Iranian Society of Acoustics and Vibration.

The 2014 ICA Board meeting was held on12 September in Krakow, Poland. Several items are of note.

- All past Proceedings of the triennial International Congress on Acoustic have now been scanned and made available at: www.icacommission.org/proceedg.html.
- There was agreement to initiate a Newsletter, to replace the annual letter from the President, to be sent out periodically to ICA members –the first newsletter was transmitted in January 2015.
- The application procedures for ICA sponsorship of specialty symposia were revised and, specifically, a new option of endorsement with no funding was created whereby, following application, an organizer is able to include the ICA logo in their promotional material.
- The organization of the 22nd International Congress on Acoustics, to be held in September 2016 in Buenos Aires, Argentina is on track. A FIA (IberoAmerican Federation of Acoustics) congress will be incorporated into the technical program.
- The 2019 ICA congress will be held in Aachen, Germany.
- A decision was made that member societies in Asia/Pacific and Africa would be invited to host the 2022 ICA congress.
- Planning continues for the International Year of Sound to be held during 2019.

Annually the ICA provides financial support for specialist symposia which provide opportunities for those working in particular areas of acoustics to meet. The guidelines for selection require some 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 2014 were:

- 6th Congress of the Alps Adria Acoustics Association, September (Graz, Austria)
- XXV Encontro da Sociedade Brasileira de Acustica, October 20-22 (Campinas, Brazil)
- International Symposium on Musical Acoustics (ISMA 2014), July 7-12 (Le Mans, France)
- 11th International Congress on Noise as a Public Health Problem (ICBEN 2014), June 1-5 (Nara, Japan)

- 12th School on Acousto-Optics and Applications, June 29 - July 3 (Druskininkai, Lithuania)
  (funding provided by Acoustical Society of America)
- 2nd International Conference of the Acoustical Society of Nigeria (ASON 2014), October 13-16 (Nsukka, Nigeria)
- XXXI Symposium on Hydroacoustics, May 13-15 (Swinoujscie, Poland)
- European Symposium on Smart Cities and Environmental Acoustics, October 30 (Murcia, Spain)

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

Report composed by Marion Burgess and Michael Stinson

ICF (International Conference on Fracture)

The 14th International Conference on Fracture (ICF14) will be held in 2017 (18-23 June) in Rhodes, Greece. The website is http://www.icf14.org

Report composed by Frederic Dias

ICHMT (International Centre for Heat and Mass Transfer

ICHMT organized one international symposium and sponsored four in 2014. Details of these meetings can be found on the web site, http://www.ichmt.org.

Meetings Organized by ICHMT:

"International Symposium on Convective Heat and Mass Transfer, CONV-14", 8 - 13 June 2014, in Kusadasi, Turkey. The Symposium Chair was Professor Mourad Rebay, University of Reims Champagne-Ardenne.

Meetings Co-Sponsored by ICHMT:

"5th International conference on Heat Transfer and Fluid Flow in Microscale, HTFFM V", 22-26 April 2014, at Marseille, France. The symposium was Chaired by Lounes Tadrist, Aix Marseille University, IUSTI Laboratory, France.

"10th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics, HEFAT-2014", 06-09 July, 2014, Orlando, Florida, USA. The symposium was Chaired by Prof. J.P. Meyer, University of Pretoria, South Africa.

"15th International Heat Transfer Conference, IHTC-15", 10-16 August 2014, in Kyoto, Japan. The symposium was Chaired by Prof. Nobuhide Kasagi, Japan Sci. & Tech. Agency, Japan.

"The 11th International Conference on Flow Dynamics, ICFD-2014", 08-10 October 2014, at Sendai International Center, Japan. The symposium was Chaired by Prof. Shigenao Maruyama, Tohoku University, Japan.

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

"Advances in Computational Heat Transfer, CHT-15", 25 - 29 May 2015, Rutgers University, New Jersey, USA. The symposium Chairman is Professor Yogesh Jaluria, Rutgers University, New Jersey, USA. Detailed information can be found on the Web site: http://www.ichmt.org/cht-15/.

"BIOTRANSPORT'15: Heat and Mass Transfer in Biological and Medical Engineering", With much regret, the International Centre for Heat and Mass Transfer (ICHMT) would like to inform you that the International Conference on "Heat and Mass Transfer in Biological and Medical Engineering", BIOTR-15, to be held in Cesme, Turkey, during 5-10 July 2015, must be postponed to 2016, because of unexpected difficulties in its organization.

"8th International Symposium on Turbulence, Heat and Mass Transfer, THMT-15", 15-18 September 2015, Sarajevo, Bosnia and Herzegovina. The symposium Chairman is Professor Kemal Hanjalic, Delft University of Technology, The Netherlands; co-chairman is Professor Toshio Miyauchi, Tokyo Institute of Technology, Japan. Detailed information can be found on the Web site: http://www.thmt-15.org/.

Co-Sponsored by ICHMT:

"Computational Thermal Radiation in Participating Media V, CTRPM-V", 01-03 April 2015, Albi and Toulouse, France. The symposium Chairmen are M. El Hafi, Mines-Albi, France and R. Fournier, Laplace, Université de Toulouse, France. Detailed information can be found on the symposium Web site: http://ctrpm5.wp.mines-telecom.fr/.

"ASME-ATI-UIT-2015 Thermal Energy Systems: Production, Storage, Utilization and the Environment", 17-20 May 2015, Naples, Italy. The symposium Chairmen are 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. Detailed information can be found on the symposium Web site: http://www.asmeatiuit2015.com/public/index.php.

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 is A.I. Leontiev, Moscow State Technical University. Detailed information can be found on the symposium Web site: http://www.nchmt.ru/.

"Ninth Mediterranean Combustion Symposium, MCS-15", 07-11 June 2015, Rhodes, Greece. The symposium Co-Chairmen are 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. Detailed information can be found on the symposium Web site: http://www.mcs-2015.org/.

"11th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics, HEFAT-2015", 20-24 July, 2015, Kruger National Park, South Africa. The symposium Chairman is Prof. Josua P. Meyer, University of Pretoria, South Africa. Detailed information can be found on the symposium Web site: http://edas.info/web/hefat2015/.

"First Thermal and Fluids Engineering Summer Conference, TFESC", 09-12 August 2015, New York City, USA. The symposium Chairmen are Richard Goldstein, University of Minnesota, USA and Yong X. Tao, University of North Texas, USA. Detailed information can be found on the symposium Web site: http://www.astfe.org/tfesc/.

7th Baltic Heat Transfer Conference (BHTC 2015), 24 - 26 August 2015, Tallinn, Estonia. The symposium Chairman is Prof. B. Sundén, Lund Institute. Detailed information can be found on the symposium Web site: http://www.ttu.ee/bhtc2015 .

"9th Minsk International Seminar on Heat Pipes, Heat Pumps, Refrigerators, Power Sources", 07-10 September 2015 Minsk, Belarus. The symposium Chairman is Prof. Leonard L. Vasiliev, National Academy of Sciences of Belarus. Detailed information can be found on the symposium Web site: http://minskheatpipes.org/.

"3rd International Workshop on Heat Transfer Advances for Energy Conservation and Pollution Control, IWHT-2015", 16-19 October 2015, Taipei, Taiwan. The symposium Chairman is Prof. C.C. Wang, Chiao Tung University, Taiwan. Detailed information can be found on the symposium Web site: http://iwht.ntut.edu.tw/.

"23rd National Heat and Mass Transfer Conference, ISHMT", 18-21 December 2015, Liquid Propulsion Systems Centre, Indian Space Research Organization at Thiruvanathapuram, Kerala, India. The symposium Chairman is Prof. S. Srinivasa Murthy, IIT Madras, India. Webpage is under construction!

Report composed by Tugba Gun

ICM (International Congress on the Mechanical Behaviour of Materials)

The 12th International Conference on the Mechanical Behavior of Materials (ICM12) will be held on 2015 (10-14 May) in Karlsruhe, Germany. The website is http://www.icm12.com

Report composed by Frederic Dias

ICR (International Committee on Rheology)

The XVIIth International Congress on Rheology (ICR2016) will be held in 2016 (8-13 August) in Kyoto, Japan. The website is http://www.icr2016.com

Report composed by Frederic Dias

ICTS (International Congresses on Thermal Stresses)

The recent activity of the ICTS organization is the preparation of the 11th International Congress on Thermal Stresses that will be held at the University of Salerno in Italy on June 5 to 9, 2016. After the 10th Congress that was held in the Nanjing University of Aeronautics and Astronautics in Nanjing, China, in 2013, the 11th Congress will be the first that is to be held in Italy, where so many researchers contributed to the field of thermal stresses in the past. The latest Congress that was held in Europe, was the 9th Congress, held in Budapest, Hungary, in 2011.

Chair of the 11th Congress is Professor Michele Ciarletta, and the Secretary is Vincenzo Tibullo. Co-Chairs are Richard B. Hetnarski and Naotake Noda, the original organizers of these Congresses. The First Congress was held in Hamamatsu, Japan, in 1995. At the present time, the work concentrates on the organizational matters. The webpage of the Congress is
http://ts2016.tumblr.com/home/
Although not fully developed yet, it contains already many items, first of all, the First Announcement and Call for Papers.

Report composed by Richard B. Hetnarski

IIAV (International Institute of Acoustics and Vibration)

The eighteenth IIAV annual election was held in 2014 in which all members voted on candidates for five new director positions and one vice-president for communications position. The elected directors replaced the directors whose four-year terms had expired. The vice-president for communications position is also for a four-year term. The five directors elected were: Bela Buna (Hungary), Maria de Diego (Spain), Mohammed Hussein (Qatar), Giuseppe Miccoli (Italy), and Konstantinos E. Vogiatzis (Greece.) Marc Asselineau (France) was elected as Vice-President for Communications. The IIAV Honorary Fellow award will be made in 2015 to Roberto Pompoli to recognize his scientific contributions in acoustics.

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 agreements of cooperation was signed between IIAV and the Acoustical Society of Japan. A formal agreement was also signed between IIAV and the Slovak Acoustical Society (SkAS).

The Twenty-first International Congress on Sound and Vibration (ICSV21), sponsored by the International Institute of Acoustics and Vibration (IIAV) took place in Beijing, China, 13-17 July, 2014. ICSV21 was held in cooperation with the Acoustical Society of China (ASC) and the Institute of Acoustics, Chinese Academy of Sciences (IACAS.) Almost 1000 abstracts from 60 different countries on all areas of acoustics, noise and vibration were received.

Six distinguished plenary lectures were presented during ICSV21 by engineers and scientists from around the globe. The six keynote lectures were as follows: Jie Pan, UWA, Australia, on “Acoustics of Ancient Chinese Chimes”; David Thompsom, ISVR, UK, on “Railway Noise and Vibration: the Use of Appropriate Models to Solve Practical Problems”; Yang Jun, IOA, China, on “Parametric Acoustic Array in Air: from Theory to Applications”; Cyrille Breard, COMAC, China, on “Aircraft Noise: an Industry Perspective at Comac”; Shaobo Young, ChangAn Ford Mazda, China on “Vehicle NVH Design and Technologies”; and Ines Lopez Arteaga, Eindhoven University of Technology, the Netherlands, on “Tyre/Road Noise and Vibration: Understanding Their Interaction and Contribution to Vehicle Noise and Fuel Consumption.”

The ICSV21 technical proceedings were made available to all delegates at the congress itself on CD-ROM. The ICSV21 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. The last two years issues of IJAV have now been made open-access for all interested scientists and engineers around the world to view**.**

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

IMSD (International Association of Multibody System Dynamics)

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 2014 was essential for IMSD due to many changes and many important activities took place. Information about IMSD can be found at www.itm.uni-stuttgart/imsd including the activities, committees, bylaws, ... and more.

The Third IMSD Conference took place in Busan / Korea from June 30 to July 3, 2014. About 360 participants from 26 countries participated in the conference and 240 talks have been delivered. There were 7 keynote lectures delivered by international well-known scientists and 17 invited sessions organized on the most recent topics as follows.
Algorithms, Integration Codes, and Software
Biomechanics
Contact and Impact Problems
Control and Mechatronics

Dynamics of All Vehicles
Dynamics of Machines and Rotating Structures
Efficient Methods and Real-Time Applications
Flexible Multibody Systems
Multidisciplinary Approaches
Modeling, Formalisms, and DAE solution method
Optimization, Sensitivity Analysis and Parameter Identification
Robotic Systems
Theoretical and Computational Methods
High Performance Computing
Multibody Applications
Experiments and Other Topics
Benchmark Problems in Multibody System Dynamics

A special feature of this conference was that it was organized together with the Seventh ACMD (Asian Conference on Multibody Dynamics).

During the Conference also the IMSD – ISC meeting (International Steering Committee) was held and many well-prepared decisions and statute changes have been made. It was decided that the next IMSD conference will be held in May/June 2016 in Montreal/Canada.

During the General Assembly of IUTAM in Lyngby in August 2014 IMSD was admitted as one of the Affiliated Organizations of IUTAM. This is a great honor for IMSD and we are looking forward to a close cooperation.

IMSD is proud that Springer accepted to make the Multibody System Dynamics journal the official journal of IMSD. This journal is the leading publication organ in multibody dynamics and IMSD looks forward to a fruitful partnership.

Report composed by Peter Eberhard

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

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 2014 activity of the ISIMM has been focused on the XIX International Symposium on Trends in Applications of Mathematics to Mechanics which took place in Poitiers, France, on September 8-11, 2014. The meeting has been chaired by Alain Miranville, and organized by Augusto Visintin, Ulisse Stefanelli, and Lev Truskinovsky (scientific) and Laurence Cherfils, Julien Dambrine, Nicolas James, Madalina Petcu, Morgan Pierre, Philippe Rogeon, Germain Rousseaux (local). The speakers included H.-D. Alber, G. Allaire, G. Bertotti, D. Bigoni, Y. Brenier, M. Cicalese, G. Dal Maso, E. Feireisl, M. Fremond, G. Goldstein, M. Grasselli, D. Knees, E. Lamballais, G. Lazzaroni, I. Mayergoyz, A. Mielke, N. Pugno, F. Rindler, T. Roubicek, G. Saccomandi, A. Schloemerkemper, B. Straughan, and M. Sugiyama.

Additional information can be found at the STAMM 2014 website: http://www-math.sp2mi.univ-poitiers.fr/STAMM2014/.

The STAMM 2014 has been the occasion to celebrate also the new ISIMM Prize and ISIMM Junior Prize laureates. The ISIMM Prize 2014 has been presented to Prof. Dr. Constantine M. Dafermos (Brown University). The ISIMM Junior Prize 2014 has been co-awarded to Prof. Dr. Elisabetta Rocca, currently at the WIAS Berlin, and to Prof. Dr. Stefan Neukamm, currently at the University of Dresden. Professors Dafermos, Neukamm, and Rocca were introduced by lautationes by I. Mueller, A. Mielke, and U. Stefanelli, respectively, and delivered prize lectures. Slides of most of the talks are available at the society website http://www.mat.univie.ac.at/~isimm

Report composed by Ulisse Stefanelli

ISSMO (International Society for Structural and Multidisciplinary Optimization)

ISSMO Biennial World Congress on Structural and Multidisciplinary Optimization (WCSMO-11) will take place in Sydney, Australia on June 07-12, 2015. Professors Qing Li and Grant Steven, University of Sydney, coordinate the organizing committee. Up-to-date information can be found at:
http://www.aeromech.usyd.edu.au/WCSMO2015/

The Young Researcher ISSMO-Springer Prize 2013 was awarded to Dr Christopher J. Brampton: “Optimization of Tow Steered Fiber Orientation Using the Level Set

Method", by C.J. Brampton and H.A. Kim. The award ceremony will be held at WCSMO-11.

ISSMO endorsed the following international scientific meetings during 2014:

- 8th China-Japan-Korea Joint Symposium on Optimization of Structural and Mechanical System (CJK-OSM8) Gyeongju, Republic of Korea, May 25-29, 2014
- Conference on Engineering and Applied Sciences Optimization (OPT-i), Kos Island, June 2014.
- CISM Advanced School 'Topology optimization of structures and continua -computational aspects and background', Udine, June 9-13, 2014.
- 10th ASMO UK/ISSMO Conference on Engineering Design Optimization, Delft University of Technology, The Netherlands, June 30 - July 1, 2014.
- 4th International Conference on Engineering Optimization (EngOpt2014), Lisbon, Portugal, 8-11 September 2014.
- Workshop on Shape and Topology Optimization with PDE Constraints. August 11-15, 2014, LNCC/MCT, Petrópolis - Rio de Janeiro, Brazil
- 13th International Symposium on Multiscale, Multifunctional and Functionally Graded Materials (MM&FGM 2014), October 19-22, 2014; Taua Resort, SP, Brazil

Please consult the website http://www.issmo.net for more information about ISSMO.

Report composed by H.-C. Rodrigues

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

No report was submitted by LACCOTAM.

Reports on ICSU and its Scientific Committees

ICSU (International Council for Science)

31st General Assembly of ICSU – 31 August – 3 September 2014

The ICSU General Assembly took place on 31 August to 3 September 2014 in Auckland, New Zealand, and VT represented IUTAM at this General Assembly (about ICSU see http://www.icsu.org). ICSU has relations to UNESCO, which was also represented at the meeting. ICSU is now called International Council for Science (Unions has disappeared), and apparently they wish to change the abbreviation to ICS within too long.

ICSU has currently 31 Scientific Union Members and 121 National Scientific Members (mainly Science Academies). Most of these were represented in Auckland, so there was indeed a very broad representation of scientific activities in the world. But obviously, the general meetings were dominated by the national representatives (some nations were represented by 3 or more persons). However, conversations with several of the national representatives have shown that often they had previously served in the executive boards of their scientific unions, so their views did not differ much from those of the Unions. In the voting carried out, the votes from each Union were given higher weight, so that the two member groups had equal influence.

On the first day the Union Members and the National Members held separate meetings, while everybody were together the last three days. Already at the Union Members meeting it was stated by several members that few scientists know what ICSU is, or have even heard about ICSU, and it was requested that ICSU should improve this situation. Some subcommittee results were presented during the Union Member meeting, but these presentations were repeated during the actual GA meeting, so it was not an efficient use of the time. There was also a vote on the Union representatives to appear on the final slate for election of Ordinary Members of the Executive Board, maximum two persons from each of the four Union Clusters, where finally one from each Cluster would be elected by the full GA. IUTAM belongs to the Physical, Chemical and Mathematical Sciences Cluster.

All representatives could sign up to present their organisation to the full GA in a 2-minute 'Poster Expresso'. There were 30 such presentations, spread in two efficient 10-minute sessions each of the three days. Thus, IUTAM activities were described in a 2-minute oral presentation, in addition to the IUTAM poster.

There was also on each day a longer invited scientific lecture (each of these lectures were very interesting and well presented):

- "*Potential collapse of the West Antarctic Ice Sheet – Implications for Global Sea Level*", by Nancy Bertler, Assoc. Prof., Antarctic Research Centre, Victoria University of Wellington, New Zealand.
- "*Spreading Science for All*", by Bruce Alberts, Prof., University of California, San Francisco. Previous Director of NAS in Washington DC.
- "*Predicting and reducing the impact of future earthquakes*", by Mark C. Quigley, Assoc. Prof., University of Canterbury, New Zealand.

Work of various subcommittees was presented and discussed at some length during the meeting, including:

- "*CSPR Report: Implementation of the Strategic Plan 2012-2017*".
- "*30 years of Global Environmental Change Research*", discussed results and coordination of a number of international activities in this area.
- "*Future Earth*", a project started at the ICSU GA in 2011, which will include studies of the effects of an increasing rate of temperature growth, and development of sustainable goals. ICSU puts much emphasis on this project, and it is expected that the project will continue over many years.
- "*Urban Health and Well-Being*". Also this project was approved at the ICSU GA in 2011, and started the year after.
- "*Intergovernmental and Science Community Assessments of Climate Change*". Here was discussed both ICSU activities and other international activities in the area.
- "*Committee on Freedom and Responsibility in the Conduct of Science (CFRS)*". This committee deals with Human Rights of scientists, Freedom of Movement, Autonomy of Science Academies, and Academic Freedom. Occasionally lawyers are hired to defend people in various countries.
- "*Open Access*". ICSU considers this an area of critical importance in shaping the future of international science. This includes open access to both publications and to the underlying data. This will cost something, and it did not become quite clear who should pay. Scientists from less rich countries emphasized that payment to the publishers, as is already possible today, would make it practically impossible for them to publish. Also "*Metrics*" was discussed here, emphasizing that bibliometric indices should not be used heavily in evaluation of scientists for promotion, as such indices can give a very skew picture.
- "*CODATA, Committee on Data for Science and Technology*" was reviewed. This committee is now 48 years old. It was mentioned that perhaps this activity should be more closely integrated with the World Data System (WDS).

On the last day the *Regional Offices of ICSU* were presented by the regional Chairs/Directors. There is one for *Africa*, one for *Asia and the Pacific*, and one for *Latin America and the Caribbean*. There was also a presentation by the *Early Career Science Panel*, consisting of six enthusiastic young scientists.

The International Cartographic Association (ICA) had sent an application to ICSU for scientific union membership. The Executive Board had considered the application before the GA meeting. The Chair of ICA gave a short presentation before the general discussion. Then, ICA was elected as a new Union Member.

An "*External Review of ICSU*" was carried out in the fall of 2013. Also IUTAM had been asked in this process. It was emphasized in the subsequent discussion that even though several reviewers had mentioned the problem that ICSU has only small visibility among researchers, this had not come out as an important conclusion from the review panel. In fact this point was raised again and again in the discussions of different projects, even when this point was less relevant to the ongoing discussion.

The whole GA meeting was chaired by the ICSU President, Yuan Tseh Lee, Nobel Laureate in Chemistry, from Taiwan. The change of President took place at the end of the closing ceremony, where the President-Elect, Gordon McBean, took over. Gordon McBean is a meteorologist and climate change expert from Canada.

At the end of the meeting new members of the Executive Board were elected. While the Board members have usually been far from IUTAM, it is noticeable that the new President-Elect became Daya Reddy, Cape Town University, who was member of our GA in the late nineties, and who chaired a very successful IUTAM Symposium in 2008. One of the new Ordinary Members is a pure mathematician, John Ball, who has a few important contributions in solid mechanics.

Report composed by Viggo Tvergaard, President of IUTAM

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 Adélaide, 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 Adélaide, 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 1er 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 President 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 Adélaide, 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 Adélaide, 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:
   - 5.1. le but du Congrès;
   - 5.2. la sélection des communications pour le Congrès;
   - 5.3. le choix des conférences générales pour le Congrès;
   - 5.4. la désignation des présidents de sessions du Congrès;
   - 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 doit 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:
   - 5.1. the scope of the Congress;
   - 5.2. the screening of papers for the Congress;
   - 5.3. the selection of general lectures for the Congress;
   - 5.4. the appointment of chairs of sessions of the Congress;
   - 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
See page xxx

Proceedings of IUTAM Symposia

The Proceedings of IUTAM Symposia published since 2000 are listed below.
The names of the editors and of the publisher are given in every case.
A complete listing of all published Proceedings can be found at the IUTAM website http://www.iutam.net or http://www.iutam.org.

2000

00-1 *IUTAM Symposium on Creep in Structures*
(Nagoa, Japan, 3-7 April 2000).
The Proceedings of the Symposium, edited by S. Murakami and N. Ohno, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2000. ISBN 0-7923-6737-5.

00-2 *IUTAM Symposium on Bluff Body Wakes and Vortex-induced Vibration*
(Marseille, France, 13-16 June 2000).
The Proceedings of the Symposium edited by T. Leweke, P.W. Bearman and C.H.K. Williamson, have been published by Academic Press in the Journal of Fluids and Structures, Special Issue on Bluff Body Wakes and Vortex-Induced Vibrations, London, 2001. ISSN 0889-9746, Vol. 15, nos. 3/4.

00-2a *IUTAM Symposium on Scaling Laws in Ice Mechanics and Ice Dynamics*
(Fairbanks, Alaska, USA, 13-16 June 2000).
The Proceedings of the Symposium, edited by J.P. Dempsey and H.H. Shen, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2001. ISBN 1-4020-0171-1.

00-3 *IUTAM Symposium on Mechanical Waves for Composite Structures Characterization*
(Chania, Crete, Greece, 14-17 June 2000).
The Proceedings of the Symposium, edited by D.A. Sotiropoulos, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2001. ISBN 0-7923-7164-X.

00-4 *IUTAM Symposium on Advances in Mathematical Modelling of Atmosphere and Ocean Dynamics*
(Limerick, Ireland, 2-7 July 2000).
The Proceedings of the Symposium, edited by P.F. Hodnett, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2001. ISBN 0-7923-7075-9.

00-5 *IUTAM Symposium on Free Surface Flows*
(Birmingham, United Kingdom, 10-14 July 2000).

The Proceedings of the Symposium, edited by A.C. King and Y.D. Shikhmurzaev , have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2001. ISBN 0-7923-7085-6.

00-6 *IUTAM Symposium on Diffraction and Scattering in Fluid Mechanics and Elasticity*
(Manchester, England, 17-20 July 2000).
The Proceedings of the Symposium, edited by I.D. Abrahams, P.A. Martin and M.J. Simon, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2002. ISBN 1-4020-0590-3.

00-7 *IUTAM Symposium on Field Analyses for Determination of Material Parameters-Experimental and Numerical Aspects*
(Kiruna, Sweden, 31 July-4 August 2000).
The Proceedings of the Symposium, ,edited by P. Stahle and K.G. Sundin, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2003. ISBN 1-4020-1283-7.

00-8 *IUTAM Symposium on Smart Structures and Structronic Systems*
(Magdeburg, Germany, 26-29 September 2000).
The Proceedings of the Symposium, edited by U. Gabbert and H.S. Tzou, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2001. ISBN 0-7923-6968-8.

00-9 *IUTAM Symposium on Designing for Quietness*
(Bangalore, India, 12-14 December 2000).
The Proceedings of the Symposium, edited by M.L. Munjal, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2002. ISBN 1-4020-0765-5.

2001

01-1 *IUTAM Symposium on Flow in Collapsible Tubes and Past Other Highly Compliant Boundaries*
(Warwick, Coventry, March 26-30, 2001).
The Proceedings of the Symposium, edited by P.W. Carpenter and T.J. Pedley, have been published by Kluwer Academic Publishers, Dordrecht, The Netherlands, 2003. ISBN 1-4020-1161-X.

01-2 *IUTAM Symposium on Material Instabilities and the Effect of Microstructure*
(Austin, Texas, USA, 7-11 May 2001).
The Proceedings of the Symposium, edited by S. Kyriakides and N. Triantafyllidis, have been published by Elsevier 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. Bajer 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-Ineleastic 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. Shibutani, 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 Elastohydrodynamics and Microelastohydrodynamics*
(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 I*UTAM Symposium on 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 (*Cambridge, UK, July 7-9, 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 Kovecses, 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 Hikihara, Takashi have been published by Elsevier, 2012, as the fifth issue of the IUTAM e-Procedia series. **Procedia IUTAM Volume 5**

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*
(Izhsvesk, 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 will be published by Elsevier, in the IUTAM e-Procedia series. **Procedia IUTAM**

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 will be published by Elsevier, in the IUTAM e-Procedia series. **Procedia IUTAM**

2014

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**

14-5 *IUTAM Symposium on Dynamical Analysis of Multibody Systems with Design Uncertainties*
(Stuttgart, Germany, June 9-13, 2014)
The Proceedings of the Symposium will be published by Elsevier, in the IUTAM e-Procedia series. **Procedia IUTAM**

14-7 *IUTAM Symposium on Dynamics of Capsules, Vesicles and Cells in Flow*
(Compiegne, France, July 15-18, 2014)
The Proceedings of the Symposium will be published by Elsevier, in the IUTAM e-Procedia series. **Procedia IUTAM**

14-10 *IUTAM Symposium on Multiphase Flows with Phase Change: Challenges and Opportunities*
(Hyderabad, India, December 8-11, 2014)
The Proceedings of the Symposium will be published by Elsevier, in the IUTAM e-Procedia series. **Procedia IUTAM**

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 - Compte 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, Piazelle delle Science 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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