

INTERNATIONAL UNION OF THEORETICAL AND APPLIED MECHANICS

ANNUAL REPORT 2022

Edited by
Robert M. McMeeking
Secretary-General

| Table of Contents | Page |
|--|-------------|
| 1. Incorporation of IUTAM in the Netherlands. | 2 |
| 2. Bureau Members/Board of Directors. | 3 |
| 3. Registered Office of the Incorporated IUTAM and Registration Information | 3 |
| 4. Secretariat. | 4 |
| 5. IUTAM Congress Committee. | 4 |
| 6. IUTAM Symposia Panels. | 5 |
| 7. General Assembly Voting Members | 6 |
| 8. Adhering Organisations. | 9 |
| 9. Affiliated Organisations. | 15 |
| 10. Records of General Assemblies/Minutes of the General Meeting of Members. | 18 |
| 10.1 Summary Record of the General Assembly, Cambridge UK, Aug. 2022. | 18 |
| 10.2 Summary Record of the Extraordinary General Assembly, Online, Oct. 2022. | 39 |
| 10.3 Minutes of the General Meeting of Members, Amsterdam, 12 th Dec. 2022. | 47 |
| 11. Treasurer's Report. | 49 |
| 12. Articles of Incorporation and Internal Regulations. | 54 |
| 12.1 Official Articles of Incorporation (Dutch). | 54 |
| 12.2 Unofficial English Translation of the Articles of Incorporation. | 61 |
| 12.3 Internal Regulations of IUTAM Inc. | 66 |
| 13. List of IUTAM Publications for 2022. | 74 |
| 14. Summary of IUTAM Symposia Held in 2022. | 74 |
| 15. Summary of IUTAM Summer Schools Held in 2022. | 94 |

1. Incorporation of IUTAM in the Netherlands

IUTAM functioned as an unincorporated body until 4th November, 2022, with a domicile that was effectively in Denmark. On 4th November, 2022, IUTAM was incorporated as a Vereniging (an Association) in the Netherlands. In this Annual Report, where necessary, the unincorporated IUTAM will be referred to as the Union whereas the incorporated Association will be referred to as IUTAM Inc., though that is not its official, registered name, which continues to be the International Union of Theoretical and Applied Mechanics.

The Articles of Incorporation of IUTAM Inc. are provided in Section 12 of this Annual Report. In addition, Section 12 also contains the Internal Regulations that were adopted to govern the regular activities of IUTAM Inc.

The Union was governed by a General Assembly, with a Bureau acting in its place between meetings of the General Assembly. Meetings of the General Assembly occurred in even numbered years.

IUTAM Inc. is governed by a General Meeting of Members, which is required to meet at least once each calendar year. A Board of Directors acts in place of the General Meeting of Members between its meetings. The first General Meeting of Members of IUTAM Inc. was held in Amsterdam on 12th December, 2022, attended by the members at that time, who were the incorporators, Norman A. Fleck (President), Pilar Ariza (Treasurer) and Robert M. McMeeking (Secretary-General). During this meeting other individuals and organisations with connections to the Union were made members of IUTAM Inc. These are Bureau members who also joined the Board of Directors of IUTAM Inc., the Secretary of the Congress Committee, the Chairs of the Symposia Panels, some Members-at-Large of the Union, and the Adhering Organisations of the Union.

In the transition from Union to IUTAM Inc. there was of necessity an overlap, with the two bodies functioning in parallel until the affairs of the Union were transferred completely to IUTAM Inc.

2. Bureau Members/Board of Directors

The Bureau of the Union

Officers

| | |
|---------------------------|--|
| Norman A. Fleck (UK) | President |
| Nadine Aubry (USA) | Vice-President |
| Pilar Ariza (Spain) | Treasurer |
| Henryk Petryk (Poland) | Secretary-General (until 31 st October, 2022) |
| Robert M. McMeeking (USA) | Secretary-General (from 1 st November, 2022) |

Members

Atila P.S. Freire (Brazil)
Irina G. Goryacheva (Russia)
Kikuo Kishimoto (Japan)
Detlef Lohse (Netherlands)

The Board of Directors of IUTAM Inc.

Officers

| | |
|---------------------------|---|
| Norman A. Fleck (UK) | President (from 4 th November, 2022) |
| Nadine Aubry (USA) | Vice-President (from 12 th December, 2022) |
| Pilar Ariza (Spain) | Treasurer (from 4 th November, 2022) |
| Robert M. McMeeking (USA) | Secretary-General (from 4 th November, 2022) |

Directors (all from 12th December, 2022)

Atila P.S. Freire (Brazil)
Irina G. Goryacheva (Russia)
Kikuo Kishimoto (Japan)
Detlef Lohse (Netherlands)

3. Registered Office of the Incorporated IUTAM and Registration Information

The registered office of IUTAM Inc. is

International Union of Theoretical and Applied Mechanics
Stardock Keizersgracht B.V.
Keizersgracht 482
Amsterdam, 1017EG
Netherlands

Registration number with the Dutch Trade Register: 864498925

4. Secretariat

Until 31st October, 2022

Henryk Petryk

IUTAM-Secretariat, Institute of Fundamental Technological Research
Polish Academy of Sciences, Pawinskiego 5B, 02-106 Warsaw, Poland

E-mail: IUTAM.Petryk@ippt.pan.pl

From 1st November, 2022

Robert M. McMeeking

Department of Mechanical Engineering

University of California

Santa Barbara CA 93106

USA

rmcm@ucsb.edu

Internet: <https://www.iutam.org>

5. IUTAM Congress Committee

Executive Committee of the Congress Committee

Norman A. Fleck (UK) President

Sanjay Mittal (India) Secretary

Leslie Banks-Sills (Israel)

Shiyi Chen (China)

Alberto Corigliano

Heuy Dong Kim (Korea)

Paul Linden (UK)

| <i>Congress Committee</i> | | Year in which term on the committee ends* |
|---------------------------|---------|---|
| Pilar Ariza | Spain | 2024 |
| Ellen Arruda | USA | 2024 |
| Leslie Banks-Sills | Israel | 2024 |
| Davide Bigoni | Italy | 2022 |
| L. Catherine Brinson | USA | 2024 |
| Shiyi Chen | China | 2024 |
| Alan C.F. Cocks | UK | 2022 |
| Alberto Corigliano | Italy | 2024 |
| Anne De Wit | Belgium | 2022 |
| Norman A. Fleck | UK | 2024 |
| J. Maciej Floryan | Canada | 2024 |
| Samuel Forest | France | 2024 |
| Peter Frick | Russia | 2024 |
| Michael D. Gilchrist | Ireland | 2022 |
| Elisabeth Guazzelli | France | 2024 |

Congress Committee (continued)

| | | |
|-------------------------|-------------|------|
| Stefan Hartmann | Germany | 2024 |
| Peter Hunter | New Zealand | 2024 |
| Anne Juel | UK | 2022 |
| Huey Dong Kim | Korea | 2024 |
| Paul F. Linden | UK | 2024 |
| Detlef Lohse | Netherlands | 2022 |
| Gareth McKinley | USA | 2024 |
| Sanjay Mittal | India | 2024 |
| Henryk Petryk | Poland | 2024 |
| Stéphane Popinet | France | 2024 |
| Gherhardt Ribatski | Brazil | 2024 |
| Maria Vittoria Salvetti | Italy | 2024 |
| Alfredo Soldati | Austria | 2024 |
| Kathleen Stebe | USA | 2024 |
| Shu Takagi | Japan | 2022 |
| Jiangxiang Wang | China | 2022 |
| Wei-Chung Wang | China-Tapei | 2022 |
| Hiroshi Yabuno | Japan | 2024 |
| Xiaojing Zheng | China | 2024 |

*Terms end on October 31st in the year stated. New members whose 1st term on the committee commenced in 2022 started their service on 1st November. However, these new members are not listed in this Annual Report but will be included in the IUTAM Annual Report for 2023. This comment also applies to members of the Symposia Panels in 6.

6. Symposia Panels

Fluids Symposia Panel

| | | |
|----------------------|-------------|------|
| Detlef Lohse (Chair) | Netherlands | 2024 |
| Rama Govindjara | India | 2022 |
| Elisabeth Guazzelli | France | 2024 |
| Ann Karagozian | USA | 2022 |
| Hua Liu | China | 2024 |

Solids Symposia Panel

| | | |
|---------------------|-----------|------|
| Huajian Gao (Chair) | Singapore | 2024 |
| Leslie Banks-Sills | Israel | 2022 |
| Alexander Belyaev | Russia | 2024 |
| Davide Bigoni | Italy | 2024 |
| Tianjian Lu | China | 2022 |

7. General Assembly Voting Members

An IUTAM General Assembly was held in Cambridge UK in August 2022. The individuals who were authorized to vote at that General Assembly are as follows. Note that the attendance at that General Assembly is provided below in the Summary Record of the meeting. The appearance of a name on the list of authorized voting members does not mean that the authorized voting member attended the General Assembly.

Authorized Voting Member

| | | |
|----------------------|-------------|--------------------------------|
| I. David Abrahams | UK | |
| Marco Amabili | Canada | |
| Jorge Ambrósio | Portugal | |
| Pilar Ariza | Spain | Treasurer |
| Nadine Aubry | USA | Vice-President |
| Marc Avila | Germany | |
| Yilong Bai | China | Member-at-Large |
| Kamran Behdinin | Canada | |
| Davide Bigoni | Italy | |
| Alessandro Bottaro | Italy | |
| Mark Bradford | Australia | |
| Felix Chernousko | Russia | |
| Richard J. Clarke | New Zealand | |
| Alan C.F. Cocks | UK | |
| Enrico De Bernardis | Italy | |
| Wim Desmet | Belgium | |
| Jürg Dual | Switzerland | |
| Peter Eberhard | Germany | Member-at-Large |
| Horia Ene | Romania | |
| Horacio Espinosa | USA | |
| Daining Fang | China | |
| Nenad Filipovic | Serbia | |
| Norman A. Fleck | UK | President |
| J. Maciej Floryan | Canada | |
| Linda Franzoni | USA | |
| Atila P.S. Freire | Brazil | Bureau Member |
| François Gallaire | Switzerland | |
| Huajian Gao | Singapore | Chair of Solids Symposia Panel |
| Michael D. Gilchrist | Ireland | (until August 31, 2022) |
| Irina Goryacheva | Russia | Bureau Member |
| Elisabeth Guazzelli | France | |
| Nenad Gubeljak | Slovenia | |
| Peter Gudmundson | Sweden | |
| Patrick Guillaume | Belgium | |
| Alexandr Guz | Ukraine | |
| Michael Hanss | Germany | |
| Stefan Hartmann | Germany | |

| | | |
|---------------------------|----------------|--|
| Guowei He | China | |
| Christian Hellmich | Austria | |
| Dan Henningson | Sweden | |
| Francois Hild | France | |
| Koichi Hishida | Japan | |
| Muneo Hori | Japan | |
| K. Jimmy Hsia | Singapore | |
| Shu-San Hsiau | China-Taipei | |
| George Jaiani | Georgia | |
| Masuhara Kameda | Japan | |
| Tomasz Kapitaniak | Poland | |
| Santosh Kapuria | India | |
| Kikuo Kishimoto | Japan | Bureau Member |
| Reijo Kouhia | Finland | |
| V. Kumaran | India | |
| Vladimir Levin | Russia | |
| Detlef Lohse | Netherlands | Bureau Member, Chair Fluids Symposia Panel |
| Juliana B.R. Loureiro | Brazil | |
| Tianjian Lu | China | |
| Fernando Lund | Chile | |
| Staffan Lundström | Sweden | |
| Giulio Maier | Italy | Member-at-Large |
| Beverley J. McKeon | USA | |
| Gareth H. McKinley | USA | |
| Robert M. McMeeking | USA | Member-at-Large |
| Marcello A.F. de Medeiros | Brazil | |
| Sanjay Mittal | India | Secretary of the Congress Committee |
| Nicolas Moës | France | |
| Nikita Morozov | Russia | |
| Hung Nguyen-Xuan | Viet Nam | |
| Jarkko Niiranen | Finland | |
| Christian Niordson | Denmark | |
| Miloslav Okrouhlik | Czech Republic | |
| Niels N. Olhoff | Denmark | Member-at-Large |
| Patrick Onck | Netherlands | |
| Vikram Pakrashi | Ireland | from September 1, 2022 |
| Timothy J. Pedley | UK | Member-at-Large |
| Henryk Petryk | Poland | Secretary-General |
| Stéphane Popinet | France | |
| Stefan Radev | Bulgaria | |
| G.P. Rajasekhar | India | |
| Eduardo Ramos | Mexico | |
| Krishnaswamy Ravi-Chandar | USA | |
| Giuseppe Rega | Italy | |
| Miles B. Rubin | Israel | |
| John Sader | Australia | |

| | | |
|--------------------------|-------------------|-----------------|
| Takashi Sakajo | Japan | |
| Jean Salençon | France | Member-at-Large |
| Andrus Salupere | Estonia | |
| Werner Schiehlen | Germany | Member-at-Large |
| Bernhard A. Schrefler | Italy | Member-at-Large |
| Jörg Schumacher | Germany | |
| Reuven Segev | Israel | |
| Georgios E. Stavroulakis | Greece | |
| Gábor Stépán | Hungary | |
| Stanislaw Stupkiewicz | Poland | |
| Erdogan S. Suhubi | Turkey | |
| Qing-Ping Sun | China-Hong Kong | |
| Hyung Jin Sung | Republic of Korea | |
| Jens Nørkær Sørensen | Denmark | |
| Peichun Amy Tsai | Canada | |
| Goran Turkalj | Croatia | |
| Viggo Tvergaard | Denmark | Member-at-Large |
| Dirk Vandepitte | Belgium | |
| Wei-Chung Wang | China-Taipei) | |
| Sarah Waters | UK | |
| Daniel N. Wilke | South Africa | |
| Helen Wilson | UK | |
| Wei Yang | China | |
| Xiaoqing Zheng | China | |

8. Adhering Organisations

Armenia (2016) (*Associate Organization*)

Armenian National Committee on Theoretical and Applied Mechanics

24B Marshall Baghramyan Ave., 0019 Yerevan

President/Chair: Prof. Ara Avetisyan, Representative in IUTAM: Prof. Avetik V. Sahakyan

Australia (1964)

The Australian National Committee for Mechanical and Engineering Sciences of the Australian Academy of Science, GPO Box 783, ACT 2601, Canberra City

President/Chair: Prof. Mark Bradford

Representatives in IUTAM: Prof. Mark Bradford, Prof. John E. Sader

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. Manfred Kaltenbacher, Contact: Prof. Franz Rammerstorfer

Representative in IUTAM: Prof. Christian Hellmich

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. Patrick Guillaume

Representatives in IUTAM: Prof. Wim Desmet, Prof. Patrick Guillaume,

Prof. Dirk V.H. Vandepitte

Brazil (1982)

Associação Brasileira de Engenharia e Ciências Mecânicas – ABCM

Avenida Rio Branco 124/18º andar, 20040-001 Rio de Janeiro

President/Chair: Prof. Gherhardt Ribatski, Contact: Prof. Atila P.S. Freire

Representatives in IUTAM: Prof. Juliana B.R. Loureiro, Prof. Marcello A.F. de Medeiros

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. Stefan Radev

Representative in IUTAM: Prof. Stefan Radev

Canada (1963)

The National Research Council of Canada, Canadian National Committee for IUTAM

1200 Montreal Road, Building M-50, Ontario K1A 0R6, Ottawa

President/Chair: Prof. Marco Amabili, Secretary: Prof. Peidong Wu

Representatives in IUTAM: Prof. Marco Amabili, Prof. Kamran Behdinan,

Prof. J. Maciej Floryan, Prof. Peichun Amy Tsai

Chile (1996)

The Chile National Committee on Theoretical and Applied Mechanics
Academia Chilena de Ciencias, Almirante Montt 454, Santiago
President/Chair: Dr. Juan Asenjo, Secretary: Dr. Francisco Hervé
Representative in IUTAM: Prof. Fernando Lund

China (1980)

The Chinese Society of Theoretical & Applied Mechanics, 15 Beisihuanxi Road, 100190 Beijing
President/Chair: Prof. Daining Fang, Secretary: Prof. Yazheng Yang, Contact: Mr. Jie Chen
Representatives in IUTAM: Prof. Daining Fang, Prof. Guowei He, Prof. TJ Lu, Prof. Wei Yang,
Prof. Xiaojing Zheng

China-Hong Kong (1996)

The Hong Kong Society of Theoretical and Applied Mechanics (HKSTAM), Department of
Mech. Engin., City University of Hong Kong, 83 Tat Chee Ave., Kowloon Tong, Hong Kong
President/Chair: Prof. Li Cheng, Secretary: Prof. Zhong-Qing Su
Representative in IUTAM: Prof. Qing-Ping Sun

China-Taipei (1980)

The Society of Theoretical and Applied Mechanics, Department of Civil Engineering, National
Taiwan University, No. 1, Sec. 4, Roosevelt Rd., 10617 Taipei
President/Chair: Prof. Chuin-Shan David Chen, Secretary: Prof. Shu-Wei Chang
Representatives in IUTAM: Prof. Shu-San Hsiau, Prof. Wei-Chung Wang

Croatia (1994)

Croatian Society of Mechanics, Ivana Lučića 5, HR-10000 Zagreb
President/Chair: Prof. Zdenko Tonković
Representative in IUTAM: Prof. Goran Turkalj

Czech Republic (2018/1949)

Czech Society for Mechanics, Dolejškova 5, CZ-18200 Prague 8
President/Chair: Prof. Jindrich Petruska, Secretary: Dr. Jiri Naprstek
Representative in IUTAM: Prof. 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. Tom Fenchel
Representatives in IUTAM: Prof. Christian Niordson, Prof. Jens Nørkær Sørensen

Estonia (1992)

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

Finland (1952)

The Finnish National Committee on Mechanics
Tampere University, Attent. Prof. Reijo Kouhia, PO Box 600, FI-33014 Tampere
President/Chair: Prof. Reijo Kouhia, Secretary: Prof. Jarkko Niiranen
Representatives in IUTAM: Prof. Reijo Kouhia, Prof. Jarkko Niiranen

France (1949)

Comité National Français de Mécanique, Académie des Sciences, 23, quai Conti, F-75006 Paris
President/Chair: Prof. Pierre Suquet, Secretary: Prof. Jacques Magnaudet
Representatives in IUTAM: Prof. Samuel Forest, Prof. Elisabeth Guazzelli, Prof. Francois Hild,
Prof. Stéphane Popinet

Georgia (2000)

Georgian National Committee of Theoretical & Applied Mechanics, I. Vekua Institute of Applied
Mathematics of Iv. Javakishvili Tbilisi State University, 2 University Str., 0186 Tbilisi
President/Chair: Prof. George Jaiani
Representative in IUTAM: Prof. George Jaiani

Germany (1950)

Gesellschaft für angewandte Mathematik und Mechanik/Deutsches Komitee für Mechanik,
TUHH, Institute of Mechanics and Ocean Engineering, Eissendorfer Str. 42, D-21073, Hamburg
President/Chair: Prof. Robert Seifried
Representatives in IUTAM: Prof. Marc Avila, Prof. Michael Hanss, Prof. Stefan Hartmann,
Prof. Jörg Schumacher

Greece (1979)

Hellenic Society for Theoretical and Applied Mechanics, National Technical University of
Athens, Mechanics Division, Zographou Campus, GR-15773, Athens
President/Chair: Prof. Georgios E. Stavroulakis, Secretary: Prof. George C. Tsiatas
Representative in IUTAM: Prof. Georgios E. Stavroulakis

Hungary (1948)

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

India (1950)

National Committee for Theoretical and Applied Mechanics of the Indian National Science
Academy, Bahadur Shah Zafar Marg, 110 002 New Delhi
President/Chair: Prof. Santosh Kapuria
Representatives in IUTAM: Prof. Santosh Kapuria, Prof. V. Kumaran, Prof. G.P. Rajasekhar

Ireland (1984)

Irish Nat. Comm. for Mathematical Sciences, Royal Irish Academy, 19 Dawson Street, Dublin 2
Representative in IUTAM: Prof. Michael D. Gilchrist, replaced by Prof. Vikram Pakrashi

Israel (1950)

Israel Society for Theoretical and Applied Mechanics (ISTAM), Faculty of Mechanical Engineering, Technion-Israel Institute of Technology, 32000 Haifa

President/Chair: Prof. Reuven Segev

Representatives in IUTAM: Prof. Miles B. Rubin, Prof. Reuven Segev

Italy (1949)

Associazione Italiana di Meccanica Teorica ed Applicata, Piazza L. da Vinci 32, I-20133 Milano

President/Chair: Prof. Stefano Lenci, Secretary: Prof. Sandra Carillo

Representatives in IUTAM: Prof. Davide Bigoni, Prof. Alessandro Bottaro,

Dr. Enrico De Bernardis, Prof. Giuseppe Rega

Japan (1951)

The National Committee for Theoretical and Applied Mechanics, Science Council of Japan, 7-22-34 Roppongi, Minato-ku, 106-8555 Tokyo

President/Chair: Prof. Yasuyuki Takata, Secretary: Prof. Shu Takagi

Representatives in IUTAM: Prof. Koichi Hishida, Prof. Muneo Hori, Prof. Masuhara Kameda, Prof. Takashi Sakajo

Korea, Republic of (2012/1989)

Korean Committee for Theoretical & Applied Mechanics, c/o The Korean Society of Mechanical Engineers, Room 702, KSTC New Bld., 635-4, Yeogsam-dong, Kangnam-ku, 135-703 Seoul

President/Chair: Prof. Heuy Dong Kim, Contact: Prof. Simon Song

Representative in IUTAM: Prof. 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. 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. GertJan J.F. van Heijst, Secretary: Prof. Dick H. van Campen

Representatives in IUTAM: Prof. Detlef Lohse, Prof. Patrick Onck

New Zealand (1979)

Royal Society Te Apārangi, P.O. Box 598, 6140 Wellington

Representative in IUTAM: Prof. Richard J. Clarke

Poland (1952)

Committee for Mechanics of the Polish Academy of Sciences, Pawinskiego 5B, 02-106 Warsaw

President/Chair: Prof. Stanislaw Stupkiewicz, Contact: Prof. Henryk Petryk

Representatives in IUTAM: Prof. Tomasz Kapitaniak, Prof. Stanislaw Stupkiewicz

Portugal (1968)

Portuguese Society of Theoretical, Applied and Computational Mechanics Laboratório Nacional de Engenharia Civil, Avenida do Brasil 101, 1700-066 Lisboa

President/Chair: Prof. Jose Cesar de Sa, Contact: Prof. Carlos A.B. Pina

Representative in IUTAM: Prof. Jorge A.C. Ambrósio

Romania (1956)

Romanian Academy, Department of Mathematics, Romanian National Committee of Theoretical and Applied Mechanics, Calea Victoriei 125, 71102 Bucharest

Representative in IUTAM: Prof. Horia Ese

Russia (1992/1956)

Russian National Committee of Theoretical and Applied Mechanics of the Russian Academy of Sciences, Prospekt Vernadskogo 101: 1, 119526 Moscow

President/Chair: Prof. Irina G. Goryacheva, Secretary: Prof. Vladimir Karev

Representatives in IUTAM: Prof. Felix L. Chernousko, Prof. Irina G. Goryacheva, Prof. Vladimir A. Levin, Prof. Nikita F. Morozov

Serbia (2006/1952)

Serbian Society of Mechanics, Kneza Milosa 9/1, 11000 Belgrade

President/Chair: Prof. Nenad Filipovic, Secretary: Dr. Dalibor Nikolic

Representative in IUTAM: Prof. Nenad Filipovic

Singapore (2021)

Council on Theoretical and Applied Mechanics of the Materials Research Society of Singapore, Nanyang Technological University, 60 Nanyang Drive, 637551, Singapore

President/Chair: Prof. Huajian Gao

Representative in IUTAM: Prof. Huajian Gao, Prof. K. Jimmy Hsia

Slovenia (1994)

Slovene Mechanics Society, Jamova 2, 1000 Ljubljana

President/Chair: Prof. Janko Slavič, Secretary: Dr. Martin Česnik

Representative in IUTAM: Prof. Nenad Gubelj

South Africa (1994)

National Research Foundation (NRF), South African Association for Theoretical and Applied Mechanics (SAAM), South African ICSU Secretariat, P.O. Box 2600, 0001 Pretoria

President/Chair: Prof. Daniel N. Wilke

Representative in IUTAM: Prof. Daniel N. Wilke

Spain (2018/1950)

SEMATA, ETSI, Camino de los descubrimientos s/n, 41092, Sevilla

President/Chair: Prof. Pilar Ariza

Representative in IUTAM: Prof. Pilar Ariza

Sweden (1950)

Swedish National Committee for Mechanics, Lund University, Avdelning för Hållfasthetslära,
Box 118, SE-22100 Lund

President/Chair: Prof. Matti Ristinmaa, Secretary: Prof. Hakan Hallberg

Representatives in IUTAM: Prof. Peter Gudmundson, Prof. Dan Henningson,
Prof. Staffan Lundström,

Switzerland (1950)

Rat der Eidgenössischen Technischen Hochschulen, ETH-Zentrum, CH-8092 Zürich

President/Chair: Prof. Michael Hengartner

Representatives in IUTAM: Prof. Jürg Dual, Prof. François Gallaire

Turkey (1977)

Turkish National Committee of Theoretical and Applied Mechanics, Istanbul Teknik
Üniversitesi, Fen-Edebiyat Fakültesi, Maslak 80626, Istanbul

President/Chair: Prof. Can Fuad Delale, Secretary: Prof. Mehmet Ali Tasdemir

Representative in IUTAM: Prof. Erdogan S. Suhubi

UK (1948)

The Royal Society, UK Panel for IUTAM, 6 Carlton House Terrace, SW1Y 5AG London

President/Chair: Prof. Anne Juel, Secretary: Prof. Alan C.F. Cocks

Representatives in IUTAM: Prof. I. David Abrahams, Prof. Alan C.F. Cocks, Prof. Sarah Waters,
Prof. Helen Wilson

Ukraine (1995)

National Committee of Ukraine on Theoretical and Applied Mechanics, S.P.Timoshenko Institute
of Mechanics, 3 Nesterov Str., 03680 Kyiv

President/Chair: Prof. Alexandr N. Guz , Secretary: Prof. Jeremiah J. Rushchitsky

Representative in IUTAM: Prof. Alexandr N. Guz

USA (1949)

The U.S. National Committee for Theoretical and Applied Mechanics of the National Academies
of Science, Engineering and Medicine, 500 Fifth Street NW, DC 20001, Washington

President/Chair: Prof. Horacio Espinosa, Secretary: Prof. Linda Franzoni

Representatives in IUTAM: Prof. Horacio Espinosa, Prof. Linda Franzoni,
Prof. Beverley J. McKeon, Prof. G.H. (Gareth) McKinley, Prof. Krishnaswamy Ravi-Chandar,

Viet Nam (1990)

Vietnamese Association of Mechanics (VAM), Hoi Co Hoc Vietnam, 264 Doi Can, Hanoi

President/Chair: Prof. Nguyen Tien Khiem, Secretary: Prof. Tran Van Lien

Representative in IUTAM: Prof. Hung Nguyen-Xuan

9. Affiliated Organisations (with year of affiliation)

Asian Fluid Mechanics Committee (AFMC, 1982)

Center for Atmospheric and Oceanic Sciences, Indian Institute of Science, 560012 Bangalore
President/Chair: Prof. Song Fu, Representative in IUTAM: Prof. Ganapati S. Bhat,
Representative of IUTAM in AFMC: Prof. Frédéric Dias

Beijing International Center for Theoretical and Applied Mechanics (BICTAM, 2010)

Institute of Mechanics, Chinese Academy of Sciences, 15 Beisihuanxi Road, 100190 Beijing,
President/Chair: Prof. Daining Fang, Representative in IUTAM: Prof. Daining Fang,
Representative of IUTAM in BICTAM: Prof. Narinder Gupta

European Mechanics Society (EUROMECH, 1978)

4 impasse Nikola Tesla, CS 40006, 13453, Marseille Cedex 13, France, President/Chair: Prof.
Marc G.D. Geers, Secretary: Prof. Jacques Magnaudet, Representative in IUTAM: Prof. Anne
Juel, Representative of IUTAM in EUROMECH: Prof. Norman A. Fleck

International Association for Boundary Element Methods (IABEM, 1994)

President/Chair: Prof. Naoshi Nishimura, Representative in IUTAM: Prof. Naoshi Nishimura,
Representative of IUTAM in IABEM: Prof. Naoshi Nishimura

International Association for Computational Mechanics (IACM, 1984)

International Center for Numerical Methods in Engineering, Edificio C-1, Gran Capitán s/n, E-
08034 Barcelona, Spain, President/Chair: Prof. Antonio Huerta, Secretary: Prof. John Dolbow,
Representative in IUTAM: Prof. Pierre Ladevèze, Representative of IUTAM in IACM: Prof. R.
Eduardo de Arantes e Oliveira

International Assoc for Hydromagnetic Phenomena and Applications (HYDROMAG, 1996)

Applied Mathematics Research Centre, Coventry University, Priory Street, Coventry, CV1 5FB,
UK, President/Chair: Prof. Alban Pothérat, Representative in IUTAM: Prof. Alban Pothérat,
Representative of IUTAM in HYDROMAG: Prof. H. Keith Moffatt

International Association for Multibody System Dynamics (IMSD, 2014)

President/Chair: Prof. Jorge Ambrosio, Secretary: Prof. Javier Cuadrado, Representative in
IUTAM: Prof. Peter Eberhard, Representative of IUTAM in IMSD: Prof. Werner Schiehlen

International Association for Structural Control and Monitoring (IASCM, 2014)

President/Chair: Prof. Hui Li, Secretary: Prof. Sami Masri, Representative in IUTAM: Prof. Sami
Masri, Representative of IUTAM in IASCM: Prof. Robert Seifried

International Association for Vehicle System Dynamics (IAVSD, 1977)

Institute of Mechanics and Mechatronics, TU Wien, Getreidemarkt 9, 1060, Vienna, Austria
President/Chair: Prof. Tim Gordon, Secretary: Prof. Manfred Plöchl, Representative in IUTAM:
Prof. Mats Berg, Representative of IUTAM in IAVSD: Prof. Robert Seifried

International Centre for Heat and Mass Transfer (ICHMT, 1972)

Mechanical Engineering Department E-104, Middle East Technical University, Dumlupınar Bulvarı No:1, 06800 Çankaya Ankara, Turkey, President/Chair: Prof. Terrence W. Simon, Secretary: Prof. Ilker Tari, Representative in IUTAM: Prof. Faruk Arinc, Representative of IUTAM in ICHMT: Dr. Rudolf Dvorák

International Centre for Mechanical Sciences (CISM, 1970)

Palazzo del Torso, Piazza Garibaldi, I-33100 Udine, Italy, Rectors of CISM: Prof. Elisabeth Guazzelli, Prof. Alfredo Soldati and Prof. Wolfgang A. Wall, President/Chair: Mario Pezzetta, Secretary: Prof. Bernhard A. Schrefler, Representative in IUTAM: Prof. Bernhard A. Schrefler, Representative of IUTAM in CISM: Prof. Frédéric Dias

International Commission for Acoustics (ICA, 1998)

President/Chair: Prof. Mark Hamilton, Secretary: Prof. Antonino Di Bella, Representative in IUTAM: Prof. Andrew Norris, Representative of IUTAM in ICA: Prof. Andrew Norris

International Committee on Rheology (ICR, 1974)

President/Chair: Prof. Paulo R. de Souza Mendes, Secretary: Prof. Gerald Fuller, Representative in IUTAM: Prof. L.Gary Leal, Representative of IUTAM in ICR: Prof. Gareth H. McKinley

International Conference on the Mechanical Behaviour of Materials (ICM, 1982)

President/Chair: Dr. Raj Das, Secretary: Prof. Yoshihiko Uematsu, Representative in IUTAM: Prof. Soo Woo Nam, Representative of IUTAM in ICM: Prof. Christian Niordson

International Congress on Fracture (ICF, 1978)

Research Institute for Strength and Fracture of Materials, Tohoku University, Sendai, Japan, President: Prof. Robert M. McMeeking, Secretary: Prof. A. Toshimitsu Yokobori, Jr., Representative in IUTAM: Prof. Leslie Banks-Sills, Representative of IUTAM in ICF: Prof. Jean-Baptiste Leblond

International Congresses on Thermal Stresses (ICTS, 2002)

Department of Mechanical Science & Engineering, University of Illinois Urbana-Champaign, USA, President/Chair: Prof. Martin Ostoja-Starzewski, Secretary: Prof. Kumar K. Tamma, Representative in IUTAM: Prof. Martin Ostoja-Starzewski, Representative of IUTAM in ICTS: Prof. Masato Abe

International Institute of Acoustics and Vibration (IIAV, 1997)

Dept. of Mechanical Engineering, Auburn University, 201 Ross Hall, Auburn, AL 36849 USA, President/Chair: Prof. Marek Pawelczyk, Secretary: Mr. Rupert M. Thornely-Taylor, Contact: Prof. Malcolm J. Crocker, Representative in IUTAM: Prof. Malcolm J. Crocker, Representative of IUTAM in IIAV: Prof. Peter Eberhard

International Society for the Interaction of Mechanics and Mathematics (ISIMM, 1978)

President/Chair: Prof. Anja Schlömerkemper, Secretary: Dr. Paolo Piovano, Representative in IUTAM: Prof. Alain Goriely, Representative of IUTAM in ISIMM: Prof. Felix L. Chernousko

International Society for Structural and Multidisciplinary Optimization (ISSMO, 1996)

Structural Engineering Department, University of California, San Diego, 9500 Gilman Drive, Mail Code 0085, CA 92093, San Diego, USA, President/Chair: Prof. Wei Chen, Secretary: Prof. H. Alicia Kim, Representative in IUTAM: Prof. James K. Guest, Representative of IUTAM in ISSMO: Prof. Niels Olhoff

Latin American & Caribbean Conf. on Theor. & Appl. Mechanics (LACCOTAM, 2010)

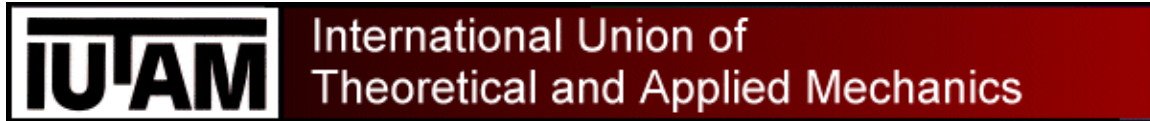
Department of Math and Computer Science, University of the West Indies, St. Augustine, Trinidad, West Indies, President/Chair: Prof. Harold Ramkissoon, Secretary: Dr. Donna Comissiong, Representative in IUTAM: Dr. Sreedhara Rao Gunakala, Representative of IUTAM in LACCOTAM: Prof. Atila P.S. Freire

World Council of Biomechanics (WCB, 2016)

President/Chair: Prof. Peter Hunter, Secretary: Prof. Lynne Bilston, Representative in IUTAM: Prof. Peter Hunter, Representative of IUTAM in WCB: Prof. Timothy J. Pedley

10. Records of General Assemblies/Minutes of the General Meeting of Members

10.1 *Summary Record of the General Assembly, Cambridge UK hybrid, August, 2022.*



IUTAM GENERAL ASSEMBLY

Summary Record of the General Assembly of IUTAM in Cambridge, UK, on 22 and 23 August 2022

The General Assembly of IUTAM convened at the Cambridge University Engineering Department. The schedule of sessions was as follows:

Monday, 22 August 2022

14:00 – 17:30 *General Assembly: 1st session*

Tuesday, 23 August 2022

14:00 – 17:30 *General Assembly: 2nd session*

Attendance:

Members with voting rights:

P. Ariza (Spain), N. Aubry (USA), D. Bigoni (Italy), A. Cocks (UK), E. De Bernardis (Italy), N.A. Fleck (UK), L. Franzoni (USA), A.P.S. Freire (Brazil), F. Gallaire (Switzerland), H. Gao (Singapore), E. Guazzelli (France), M. Hanss (Germany), S. Hartmann (Germany), C. Hellmich (Austria), F. Hild (France), T. Kapitaniak (Poland), K. Kishimoto (Japan), R. Kouhia (Finland), D. Lohse (Netherlands), J.B.R. Loureiro (Brazil), B.J. McKeon (USA, *First Session*), G.H. McKinley (USA), R.M. McMeeking (USA, Member-at-Large), S. Mittal (India), C. Niordson (Denmark), P. Onck (Netherlands), T.J. Pedley (UK, Member-at-Large), H. Petryk (Poland), S. Popinet (France), K. Ravi-Chandar (USA), M.B. Rubin (Israel), J. Salençon (France, Member-at-Large), B.A. Schrefler (Italy, Member-at-Large), J. Schumacher (Germany), R. Segev (Israel), G. Stépán (Hungary), S. Stupkiewicz (Poland), H.J. Sung (Republic of Korea), J.N. Sørensen (Denmark), G. Turkalj (Croatia), W.-C. Wang (China-Taipei), D.N. Wilke (South Africa)

In-person non-voting observers:

T. Børvik (Norway), D. Reddy (South Africa, representative of ISC)

Online non-voting observers:

I.D. Abrahams (UK), M. Avila (Germany), K. Behdinan (Canada), J. Dual (Switzerland), P. Eberhard (Germany, Member-at-Large), H. Espinosa (USA), D. Fang (China), A. Ferreras (USA, representative of NAS), J.M. Floryan (Canada), I.G. Goryacheva (Russia), K. Hishida (Japan), G. Jaiani (Georgia), S. Kapuria (India), T.J. Lu (China), F. Lund (Chile), N. Morozov (Russia), G. Rega (Italy), G.E. Stavroulakis (Greece), P.A. Tsai (Canada), D.V.H. Vandepitte (Belgium), X.J. Zheng (China)

Members with voting rights represented by proxies:

I.D. Abrahams (UK), represented by T.J. Pedley
M. Amabili (Canada), represented by D. Bigoni
M. Avila (Germany), represented by J. Schumacher
K. Behdinan (Canada), represented by D. Bigoni
A. Bottaro (Italy), represented by D. Bigoni
R.J. Clarke (New Zealand), represented by T.J. Pedley
J. Dual (Switzerland), represented by F. Gallaire
P. Eberhard (Germany, Member-at-Large), represented by M. Hanss
H. Espinosa (USA), represented by B.J. McKeon (*First Session*) and by K. Ravi-Chandar (*Second Session*)
D. Fang (China), represented by H. Gao
J. M. Floryan (Canada), represented by D. Bigoni
M.D. Gilchrist (Ireland), represented by H. Petryk
K. Hishida (Japan), represented by K. Kishimoto
M. Hori (Japan), represented by K. Kishimoto
K.J. Hsia (Singapore), represented by H. Gao
S.-S. Hsiao (China-Taipei), represented by W.-C. Wang
G. Jaiani (Georgia), represented by H. Petryk
M. Kameda (Japan), represented by K. Kishimoto
S. Kapuria (India), represented by S. Mittal
T.J. Lu (China), represented by H. Gao
F. Lund (Chile), represented by H. Petryk
B.J. McKeon (USA), represented by L. Franzoni (*Second Session*)
M.A.F. de Medeiros (Brazil), represented by J.B.R. Loureiro
J. Niiranen (Finland), represented by R. Kouhia
G. Rega (Italy), represented by D. Bigoni
T. Sakajo (Japan), represented by K. Kishimoto
W. Schiehlen (Germany, Member-at-Large), represented by M. Hanss
G.E. Stavroulakis (Greece), represented by S. Hartmann
P.A. Tsai (Canada), represented by D. Bigoni
S. Waters (UK), represented by A. Cocks
H. Wilson (UK), represented by A. Cocks

Agenda Monday, 22 August 2022, 14:00 – 17:30 London time

1. Opening of the meeting by the President
Summary Record of the General Assembly virtual meeting on 22 and 25/08/2021 (IUTAM Report 2021, pp. 59-69)
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 Associate Organizations
8. Matters concerning Affiliated Organizations
9. Proposal for the Electoral Committee
10. Proposals for election of members of the Congress Committee
11. Proposals for election of members of Symposia Panels
12. Preliminary discussion on future IUTAM Symposia and Summer Schools. Reports from Solids and Fluids Panels
13. Preliminary discussion on a resolution on diversity
14. Discussion on the draft deed of incorporation and the internal regulations of the IUTAM association in the Netherlands
15. The Batchelor Prize in Fluid Mechanics and the Rodney Hill Prize in Solid Mechanics

Agenda Tuesday, 23 August 2022, 14:00 – 17:30 London time

16. Election of members of the Congress Committee
17. Continued discussion and final decision regarding future IUTAM Symposia
18. Continued discussion and final decision regarding future IUTAM Summer Schools
19. Continued discussion and final decision regarding annual dues
20. Election of members of the Electoral Committee
21. Election of members of Symposia Panels
22. Continued discussion and decision regarding the resolution on diversity
23. Continued discussion and decision regarding acceptance of the draft deed of incorporation of the IUTAM association in the Netherlands
24. Any other business

Proceedings of the General Assembly

Item 1 – Opening of the meeting by the President

The President, Professor Norman Fleck, welcomed all members and observers. Then the President formally opened the meeting. The General Assembly was informed that the meeting would be recorded.

The President reported with great sadness on the death of a distinguished colleague:

Professor Alfred Kluwick, a former member of the IUTAM Bureau (2004-2008) and Congress Committee (1998-2010), as well as a member of the General Assembly (1990-2020) and Electoral Committee (2014-2018) of IUTAM, passed away on 2 February 2022.

The memory of Professor Alfred Kluwick was honored by the General Assembly with a moment of silence.

The General Assembly voted in favor of allowing the General Assembly members who did not attend the meeting in person to participate in the meeting as online observers without voting rights. The Agenda was unanimously adopted. The Summary Record of the General Assembly virtual meeting held on 22 and 25 August 2021 was adopted.

Item 2 – Report by the Secretary-General

The Secretary-General, Professor Henryk Petryk, submitted the following report to the General Assembly on the activities of IUTAM since the General Assembly virtual meeting held on 22 and 25 August 2021:

Mr. President, distinguished Colleagues,

It is a great honor for me to deliver my report in front of the General Assembly. One year has passed since we met online in August 2021, and four years since the previous in-person meeting in Boston, 2018. As Mr. President has reported, during this year we had the sad duty of recording the death of our distinguished colleague and friend Alfred Kluwick. A summary of his achievements has been posted on the IUTAM website.

IUTAM Report and IUTAM Newsletters

IUTAM Report 2021 and two IUTAM Newsletters 2021-2 and 2022-1 have been distributed and published on the IUTAM website. As usual, the Newsletters are intended to inform the IUTAM community about the current and future events, while the IUTAM Report contains a fairly complete record of the most important aspects of IUTAM's activity in the past year. The IUTAM Report is also available in paper form, and its distribution was planned at this meeting, which unfortunately proved impossible due to external difficulties with the delivery.

Adhering Organizations

The matters concerning five adhering organizations, among the 45 adhering organizations IUTAM currently has, will be addressed under item 6 on the Agenda.

I have nothing new to report on *Associate Organizations*.

Affiliated Organizations

A change of CISM representatives will be addressed under item 8 on the Agenda. At this moment I would like to thank Professor Bernhard Schrefler, who remains a Member-at-Large of IUTAM, for the past two decades of being the leader of the remarkably fruitful cooperation between CISM and IUTAM.

IUTAM Symposia and Summer Schools

The statistics of IUTAM Symposia and Summer Schools are still strongly affected by the Covid-19 pandemic. 4 IUTAM Symposia, including one Special Event, were held in 2021, three of them online and 1 in a hybrid format. Other Symposia originally planned for 2020 or 2021 have been postponed to 2022 or 2023 as exceptionally allowed by the Bureau. In the time of the pandemic, organizers have been free to choose an in-person, hybrid or fully virtual format for their Symposia. 5 Symposia and 2 Summer Schools were held in 2022 so far, among them 4 Symposia in person, and 1 Symposium as well as both Summer Schools in a hybrid format. Details concerning forthcoming Symposia in the years 2022 and 2023 can be found in the last Newsletter published in June, but the situation is changing as the organizers may need to postpone the events. Currently, 2 more Symposia and 1 more Summer School in 2022, and 12 Symposia in 2023, are planned. Three additional Symposia may also be held, but their status is uncertain at this moment.

The call for proposals for IUTAM Symposia and IUTAM Summer Schools for the years 2024 and 2025 ran smoothly, although one proposal needed to be re-evaluated because of a system error. The total number of 29 Symposia proposals is higher than in two previous calls, and the outcome of their evaluation will be discussed under item 12.

IUTAM endorsed events

In 2022, three IUTAM endorsed events took place and one event is still to be held, as listed in IUTAM Newsletter 2022-1.

IUTAM website

The IUTAM website is running smoothly and it is the basic and frequently updated source of public information about the current activities of IUTAM, its history and future events.

Publications

As reported earlier, we have an agreement with Springer for publication of IUTAM Symposia proceedings in the IUTAM Bookseries until the end of 2023 that can be further prolonged.

The basic conditions are very convenient for the Symposia organizers. Publication in the Series, recommended by IUTAM since 2018, is voluntary and free of charge, with temporary free access to online proceedings granted to all participants of a Symposium. This is an opportunity to leave a published legacy of a meeting, regardless of the Symposium format. Seven volumes have already appeared.

Other acceptable formats for proceedings are special issues of high-quality journals or other forms previously approved by the Bureau of IUTAM.

Incorporation of the IUTAM association in the Netherlands

A significant progress was made this year in this important topic that will be discussed under item 14 on the Agenda.

Mr. President, this concludes my report.

Henryk Petryk, Secretary-General

The report by the Secretary-General was adopted.

At the request of the President, the order of considering the next items on the agenda was changed as below.

Item 14 – Discussion on the draft deed of incorporation and the internal regulations of the IUTAM association in the Netherlands

The President summarized the essential features of the proposed way to incorporate the IUTAM association in the Netherlands. Objections raised by the General Assembly in August 2021 have been addressed. The Adhering Organizations (as legal subjects, not necessarily of full legal capacity) will be members of the association, and not the individuals that represent the Adhering Organizations. The other members of the General Assembly of the current IUTAM will become non-paying members of the association, while Adhering Organizations will be the paying members. There will be a single IUTAM as a non-profit international organization. The current IUTAM Statutes and Rules of Procedure reappear, with needed modifications and additions, in the Articles of Association and Internal Regulations whose drafts were distributed to the General Assembly prior to this meeting. The Articles of Association are reduced to a minimum required by Dutch law, and a number of current Statutes are included in the Internal Regulations. It is proposed that the General Assembly accepts at this meeting the draft Deed of Incorporation that contains the Articles of Association. The respective draft Resolution was distributed to the General Assembly prior to this meeting. Upon registration of the Deed of Incorporation in the Netherlands Chamber of Commerce by a notary, the first three directors of the association will be the first members of the association in the transitory period. At an extra-ordinary meeting to be held in 2022, the General Assembly will debate and vote on the Internal Regulations of Association, which can be subsequently adopted without involvement of a notary.

The President opened the discussion. In the discussion it was stated that the unofficial English translation of the Dutch original of the Introduction of the draft Deed of Incorporation was accurate. In the case of an incorporated association, the liability rests in the incorporated association and its members are protected. Liability of members of the association, especially Directors, can become an issue in the event of breach of Dutch law. The initial transitory period with the first three members is planned to be short. Upon admitting the adhering organizations and individuals as new members, the association can reach its full size.

The Resolution was put to a vote in the second session under item 23.

Item 13 – Preliminary discussion on a resolution on diversity

The President recalled the actions that preceded the preparation and distribution of the draft resolution on diversity to the General Assembly for discussion and vote at this meeting. The President presented the proposed resolution and the Bureau's proposal for a Diversity Advocacy Group (DAG) that would report to the Bureau, with the following **Terms of Reference**.

The DAG comprises individuals within existing committees who will pay particular attention to Diversity:

- *Provide data on Diversity (only after individuals have volunteered to provide data on gender, age, race, subject)*
- *Determine best practices from other organizations*
- *Meet as a group to co-ordinate their activities such as share best practice, and report findings to the Bureau on an annual basis*
- *Stimulate and maintain diversity through the functioning of the various committees of IUTAM*
- *Diversity becomes an agenda item at IUTAM meetings, including the GA, CC, Bureau, XCCC, nomination committees and Symposium panels*

The members of the DAG will comprise:

- (i) Chair: A Member of the General Assembly (GA)*
- (ii) Secretary: A member of the Bureau who is not an IUTAM Officer*
- (iii) A Member of the GA*
- (iv) A Member of the XCCC*
- (v) A Member of the Nominations Committee of the CC*
- (vi) A Member of the Symposium panels.*

The membership rotates every 4 years, on 1 November following an ICTAM, and thus be aligned with the membership of the Bureau, CC, Symposia Panels, etc. Electronic votes for membership can immediately follow an ICTAM.

If a Diversity Advocacy Group (DAG) is to be set-up after this GA, then the composition of the DAG can be voted by electronic means subsequent to the GA. The composition of the DAG should remain consistent with the change of committee membership at each ICTAM. Consequently, at ICTAM 2024 there will be some required changes to the DAG as committee membership changes, but it will be possible for members to be re-elected exceptionally for a further 4 years.

It was noted that the final decision regarding adoption of the resolution on diversity would be made in the second session under item 22.

Item 3 – Report by the Treasurer on financial matters

The Treasurer, Professor Pilar Ariza, submitted a report to the General Assembly.

The financial audit procedure for the year 2021 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 December 31, 2021 IUTAM had

809,929.29 USD on its accounts,

119,145.77 USD which were collected in 2021,

59,265.01 USD which were spent in 2021.

Compared to the balance of December 31, 2020, which was 759,929.86 USD, this gives an increase of 49,248.43 USD for the year 2021 (including a loss of 10,632.33 USD from changes in the exchange rates).

The money is distributed between three checking accounts (in USD, EURO, DKK) at Spar Nord Bank, a checking account (in DKK) at Nordea Bank, a savings account at Spar Nord Bank and a savings account at Nordea Bank. Unfortunately, the interest rates were negative in 2021.

Many thanks go to our Assistant Treasurer Professor Jens Nørkær Sørensen for his ongoing help dealing with Danish authorities and bank accounts.

Pilar Ariza, Treasurer

The report by the Treasurer was adopted.

Item 4 – Preliminary discussion on annual dues

Following her 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 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|-----------|------|------|------|------|------|------|------|------|------|------|------|
| Unit dues | 794 | 810 | 810 | 810 | 810 | 810 | 810 | 810 | 810 | 810 | 810 |

The Treasurer proposed not to increase the dues in USD for 2023 and 2024.

It was noted that the final decision regarding annual dues would be made in the second session of the General Assembly, see item 19 below.

Item 5 – Report by the Secretary of the Congress Committee

The Secretary of the Congress Committee, Professor Sanjay Mittal, presented the following report:

President Fleck, Members of the Bureau and Members of the General Assembly, the Congress Committee (CC) in its online meeting held on August 27, 2020 selected Daegu as the venue for ICTAM2024. It will be held in the Daegu EXCO of Korea from 25th to 30th August 2024 under the leadership of ICTAM2024 President Huey Dong Kim from Andong National University and ICTAM2024 Secretary-General Simon Song from Hanyang University. The CC met online on August 28th 2021 after the conclusion of ICTAM2020+1. ICTAM2024 President Kim informed the CC about the proposed structure of the Congress, details of the venue and that the Congress will be co-hosted by the Korean Society of Mechanical Engineers and the Korean Committee of Theoretical and Applied Mechanics. The Congress will also celebrate the 100th Anniversary of ICTAM. The Executive Committee of the Congress Committee (XCCC) met thereafter on August 31st, 2021 in the online mode. One of the points of discussion was the increasing workload on the International Papers Committee (IPC) and measures to be taken to reduce it. 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 Executive Committee of the Congress Committee (XCCC) met online on November 24th and 25th, 2021. The meetings began with wrap up discussions of ICTAM2020+1 and the learnings for the organization of ICTAM2024. ICTAM2020+1 President Alberto Corigliano and ICTAM2024 President Huey Dong Kim were present to enable the best possible transition and continuity from ICTAM2020+1 to ICTAM2024. To include more contemporary topics and invoke increased interest in the Congress, the XCCC decided to increase the number of Mini-Symposia from 6 held in ICTAM2020+1 to 8 in ICTAM2024. Drawing from the response to call for proposals, the XCCC identified the Mini-Symposia and also proposed possible Co-chairs. I have secured agreement from the selected individuals. The Mini-Symposia and the co-chairs are:

MS01. Chemo-mechanics and materials for energy conversion and storage

Co-Chairs: Professor Hanqing Jiang
Materials Science and Engineering
School of Engineering
Westlake University
Zhejiang, PR China

Professor Robert M. McMeeking
Department of Mechanical Engineering
University of California
Santa Barbara, USA

MS02. Soft matter, theory meets experiment

Co-Chairs: Professor Lihua Jin
Department of Mechanical and Aerospace Engineering
University of California, Los Angeles
California, USA

Professor John S. Biggins
Mechanics, Materials and Design
Department of Engineering
University of Cambridge United Kingdom

MS03. Nonlinear mechanical models for biological and bioinspired materials

Co-Chairs: Professor Nicola Pugno
Solid and Structural Mechanics
Università di Trento, Italy

Professor Peter Fratzl
Max Planck Institute of Colloids and Interfaces,
Potsdam, Germany

MS04. Mechanics in Health and Sport

Co-Chairs: Professor Christophe Clanet
Ecole polytechnique
LadHyX, France

Professor Guy Genin
Mechanical Engineering
Washington University in St. Louis, USA

MS05. Data-driven mechanics and Artificial Intelligence

Co-Chairs: Professor Stefanie Reese
Aachen, Germany

Professor George Haller
Institute for Mechanical Systems
Department of Mechanical and Process Engineering
ETH Zurich, Switzerland

MS06. Fluid Dynamics of disease transmission

Co-Chairs: Professor Lydia Bourouiba
Civil and Environmental Engineering and Mechanical Engineering
Cambridge, USA

Professor Roberto Verzicco
Dept. of Industrial Engineering
Università di Roma, Italy

MS07. Non-reacting and reacting fluid dynamics for sustainable propulsion systems

Co-Chairs: Professor Thierry Schuller

Département de Mécanique
Université Toulouse 3, France

Professor Adam Michael Steinberg
Danial Guggenheim School of Aerospace Engineering
Georgia Institute of Technology
Atlanta, USA

MS08. Fluid mechanical challenges for Sustainability & Climate change

Co-Chairs: Professor Jens Nørkær Sørensen
Department of Wind Energy
Lyngby, Denmark

Professor Graham Hughes
Department of Civil and Environmental Engineering
Imperial College London, United Kingdom

It was confirmed that at ICTAM2024 Mini-Symposia will consist of 4 invited lectures that the organizer of the Mini-Symposium can invite without reference to the IPC and without the possibility of being overruled by the IPC. Thereafter the Mini-Symposium will continue with 20-minute lectures. There will also be Short Talk with Poster sessions associated with Mini-Symposia.

Full-length presentations in Thematic Sessions will consist only of 20-minute lectures. However, it was confirmed that 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 Short Talk with Poster presentations.

The XCCC confirmed that the proceedings of ICTAM2024 will be produced in the form of a pdf archived on the IUTAM website and retained as a permanent item there, accessible online. It will consist of 4 page documents provided by the Opening, Closing and Sectional Lecturers and 2 page documents submitted by others who present talks at ICTAM2024. 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 confirmed by the XCCC that submissions to ICTAM2024 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. The Opening, Closing and Sectional Lecturers will be required to submit a 4 page description that commences with a short abstract.

Following up on its earlier discussion, the XCCC decided to enlarge the size of IPC to keep the load on the members under check. The XCCC identified a priority ranked list of names for the International Papers Committee (IPC) for ICTAM2024. Following my invitation, I am pleased to report that the IPC is now in place with 4 members each

in solids and fluids. The IPC is tentatively scheduled to meet during April 7-9, 2024 in Milan, Italy.

In the same meeting, 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 in the afternoon today and elections will be undertaken tomorrow on 23rd August 2022.

The XCCC also met yesterday, 21st August 2022, here at Cambridge University. At this meeting, the two nominations from the organizers of ICTAM2024, of Professor Hyung Jin Sung of the Korean Advanced Institute of Science and Technology University in the area of fluids and Professor Yoon Young Kim of the Seoul National University in the area of solids were discussed. Opening Lecture: Consistent with the past tradition that the Opening Lecture is delivered by a person associated with the host nation, the XCCC accepted these nominations and decided that the Congress Committee will vote to decide the opening speaker. It was also decided at this meeting that there will be 16 Sectional Lectures at ICTAM2024. These will be in addition to the Prize presentations, namely the Batchelor and Hill Lectures.

The CC met this morning. It held a vote to select the opening speaker. I am pleased to inform you that our Opening Speaker for ICTAM2024 will be Yoon Young Kim. The CC then held a vote to select the person to give the Closing Lecture. As Professor Yoon Young Kim will give his lecture in the area of solids the ballot for Closing Lecture was restricted to candidates in the fluids area. The result of the vote is that Professor Bérengère Dubrulle CNRS France will be invited to give the Closing Lecture at ICTAM2024. The CC also commenced its effort to select the 16 Sectional Lecturers for ICTAM2020. However, this process was not completed today and will continue at the CC meeting tomorrow, 23rd August 2022. It will also elect the co-chairs of the thematic sessions. The elections are being conducted electronically, and not via paper votes.

Finally, I wish to report on the preliminary expressions of interest that we have received concerning ICTAM2028. So far, three groups have informed us of their interest in organizing this Congress. The relevant locations are Brazil, to be held in Rio de Janeiro, Greece, to be held either in the island of Crete or in the capital, Athens, and Australia, to be held in Melbourne. It is expected that these three 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 2024 when final proposals will be due.

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

Sanjay Mittal, Secretary of the Congress Committee

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

Norway

The Norwegian Academy of Technological Sciences requested that they become a Category I Adhering Organization of IUTAM representing Norway, with one representative on the IUTAM General Assembly.

The General Assembly admitted the Norwegian Academy of Technological Sciences as the Adhering Organization of IUTAM representing Norway.

Korea

The Korean Committee for Theoretical and Applied Mechanics, the Adhering Organization of IUTAM representing the Republic of Korea, requested that their status be upgraded from a Category I to a Category II adhering organization, with two representatives on the IUTAM General Assembly.

The General Assembly agreed to the upgrade of the status of the Korean Committee for Theoretical and Applied Mechanics to a Category II adhering organization of IUTAM.

Romania

The Romanian Academy, whose Romanian National Committee of Theoretical and Applied Mechanics was the Adhering Organization of IUTAM representing Romania, informed IUTAM that they did not want to continue their membership of the Union.

The General Assembly suspended the Adhering Organization from Romania with immediate effect.

Turkey

The Turkish National Committee of Theoretical and Applied Mechanics, the Turkish Adhering Organization of IUTAM since 1977, has not paid its dues to IUTAM since 2017. Attempts to resolve the issue of missing payments have not been successful.

The General Assembly suspended the Adhering Organization from Turkey immediately after this General Assembly meeting.

Mexico

The Mexican Academy of Sciences, the Mexican Adhering Organization of IUTAM since 2008, has not paid its dues to IUTAM since 2019. Despite the efforts of the Representative of Mexico on the General Assembly of IUTAM, Professor Eduardo Ramos, to obtain the financing, no progress was managed to be achieved.

The General Assembly suspended the Adhering Organization from Mexico effective from 1 January 2023.

Item 7 – Matters concerning Associate Organizations

Nothing to report.

Item 8 – Matters concerning Affiliated Organizations

The Secretary-General reported that CISM had appointed Professor Antonio DeSimone as the new Representative to IUTAM, in place of Professor Bernhard Schrefler who had represented CISM since 2004 and retired in 2022 as CISM Secretary General. The Bureau has appointed Professor Vikram S. Deshpande (UK) as the new IUTAM Representative to CISM.

Item 9 – Proposal for the Electoral Committee

The President presented a slate of names for the Electoral Committee. Election was scheduled in item 20.

Item 10 – Proposals for election of members of the Congress Committee

The Nominations Subcommittee (NSCC), consisting of Professors Gareth McKinley (Chair), Sanjay Mittal (Ex Officio, Secretary), Pilar Ariza Moreno, Samuel Forest, Stefan Hartmann, Hiroshi Yabuno, Peter Hunter, Maria Salvetti and Xiaojing Zheng provided recommendations regarding the elections to the Congress Committee (CC) for the period 2022 through 2026 to be carried out by the General Assembly. NSCC Chairperson McKinley gave a report on the recommendations of the NSCC.

This morning the CC heard a summary of the report of the Nominations Subcommittee. Salient points of that report are that 3 members retire from the CC effective 31st October 2022 having completed 2 terms of office. These persons are Davide Bigoni, Michael Gilchrist and Jianxiang Wang. I wish to thank them for their service to the Committee. The report also notes that 6 members complete their 1st term of office on 31st October 2022 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 3 vacancies on the CC, to be filled by election from the 20 candidates who have been nominated for possible appointment to the Committee. The first recommendation of the Nominations Subcommittee is that the 3 vacancies be filled by nominees from the area of solids to address the imbalance in the membership of the 31 continuing with respect to solids and fluids. This, then, leaves 15 candidates in solids to fill the 3 vacancies. The field of 15 candidates is further subdivided in 3 groups. Constituents of Group 1 are the candidates belonging to countries which have no representation in the CC at present. Group 2 consists of candidates from countries which have no continuing members in the area of solids. Group 3 is the remaining candidates. The list of 15 nominees include 3 women

candidates and they all belong to Group 3. The Nominations Subcommittee has recommended that one candidate be elected from each of these three groups.

The actual elections were held during the second session of the General Assembly under item 16.

Item 11 – Proposals for election of members of Symposia Panels

Fluid Mechanics Panel

The Secretary-General reported that Professor Rama Govindarajan (India) had served for two consecutive terms and should be replaced, and Professor Ann Karagozian (USA) had served her first term, but her replacement was also proposed. The Bureau proposed to the General Assembly to appoint Professor Meheboob Alam (India) and Professor Ellen Longmire (USA) as new members of the Fluid Mechanics Panel.

Solid Mechanics Panel

The Secretary-General reported that Professor Tian Jian Lu (China) had served for two consecutive terms and should be replaced, and Professor Leslie Banks-Sills (Israel) had served her first term. The Bureau proposed to the General Assembly to reappoint Professor Leslie Banks-Sills and appoint Professor Huiling Duan (China) as a new member of 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 21 below.

Item 12 – Preliminary discussion on future IUTAM Symposia and Summer Schools. Reports from Solids and Fluids Panels

The call for proposals for IUTAM Symposia in 2024/2025 has resulted in 29 proposals, listed below (FL stands for Fluids, FS for Fluids/Solids and SO for Solids).

- FL.01 *Data assimilation in fluid flow* (Beijing, China)
- FL.02 *Rapid granular flows and turbulent particle suspensions* (Mumbai, India)
- FL.03 *Chaotic flows in polymer solutions* (Edinburgh, UK)
- FL.04 *Machine learning in diverse fluid mechanics* (Yokohama, Japan)
- FL.05 *Fundamental mechanics for future microfluidics* (Manchester, UK)
- FL.06 *Laminar-turbulent transition* (Nagano, Japan)
- FL.07 *Data-driven modelling for turbomachinery flows* (Cambridge, UK)
- FL.08 *Physics-compatible numerical methods for fluid flow* (Barcelona, Spain)
- FL.09 *Capillarity and elastocapillarity in biology* (Seoul, South Korea)
- FL.10 *New horizons of computational fluid mechanics* (Munich, Germany)
- FL.11 *Multiphase flows with solid-fluid systems* (Curitiba, Brazil)
- FL.12 *Non-Hermitian singularities and hydrodynamic stability* (Newcastle upon Tyne, UK)
- FL.13 *Physics and modeling of slamming and breaking waves* (Shanghai, China)

- FS.01 *Advances in theoretical and computational mechanics in structural engineering* (Chennai, India)
- FS.02 *Mechanics and design* (Christchurch, New Zealand)
- FS.03 *Nonlocal gradient multiscale/multidiscipline mechanics models in solids, fluids, emerging materials* (Thessaloniki, Greece)
- SO.01 *Nonlinear dynamics of systems and structures for green energy generation* (Ancona, Italy)
- SO.02 *Data-driven mechanics* (Cambridge, UK)
- SO.03 *Mechanics of soft materials and soft robots* (Tokyo, Japan)
- SO.04 *Chemo-mechanical fracture and material degradation* (London, UK)
- SO.05 *Computational methods on coupled multifield* (Lanzhou, China)
- SO.06 *Computational fracture mechanics in multifield problems* (Siegen, Germany)
- SO.07 *Theoretical and numerical developments in cellular mechanobiology* (Seville, Spain)
- SO.08 *Nonlocal/nonclassical mechanics and peridynamic approaches for modeling fracture and damage* (Hyderabad, India)
- SO.09 *Frontiers of physical mechanics* (Nanjing, China)
- SO.10 *Advanced computational methods in solid mechanics* (Guwahati, India)
- SO.11 *Mechanics of nonlinear slender structures* (Dublin, Ireland)
- SO.12 *Machine learning and data-driven methods in computational mechanics* (New Delhi, India)
- SO.13 *Frontiers of solid mechanics for energy transition* (Aberdeen, UK)

The call for proposals has resulted in 3 proposals for IUTAM Summer Schools:

- SSFS.01 *Machine learned physical models for mechanics* (New Delhi, India)
- SSFS.02 *Mathematical advances for complex materials with microstructures* (Würzburg, Germany)
- SSSO.01 *Multi-field problems across different scales - materials for the development of green technologies* (Udine, Italy)

The proposals for IUTAM Symposia and Summer Schools have been reviewed by the two Symposia Panels. All proposals, the evaluation tables and the full reports of the Panels have been distributed to the members of the General Assembly in advance of the meeting. The recommendations of the two Panels were reported by Professor Detlef Lohse, the Chairman of the Fluids Symposia Panel, and Professor Huajian Gao, the Chairman of the Solids Symposia Panel.

The President thanked the Symposia Panels' Chairs and members for the comprehensive reports and all their work.

The Bureau proposed that no more than sixteen proposals for Symposia and two proposals for Summer Schools should receive funding from IUTAM.

After a preliminary discussion the proposals for IUTAM Symposia were divided into three groups. The first group consisted of the twelve proposals of rating Y and coded FL.02,

FL.03, FL.05, FL.06, FL.09, FL.10, FL.13, FS.03, SO.02, SO.06, SO.07, SO.13. The second group consisted of eight proposals coded FL.01, FL.04, FL.07, FL.08, SO.01, SO.03, SO.04, SO.09. The third group consisted of the remaining nine proposals of rating N coded FL.11, FL.12, FS.01, FS.02, SO.05, SO.08, SO.10, SO.11, SO.12.

It was agreed that the IUTAM Symposia of the first group and Summer Schools of rating Y would be accepted in the second session of the General Assembly under item 16, whereas those of the third group of rating N would not be considered in the second session.

Item 15 – The Batchelor Prize in Fluid Mechanics and the Rodney Hill Prize in Solid Mechanics

The compositions of the Prize Committees were being finalized between the recommendations of the Bureau and XCCC and the sponsors of the Prizes, Cambridge University Press/Journal of Fluid Mechanics and Elsevier, respectively.

The meeting then adjourned.

The meeting reconvened on 23 August 2022 at 14:00 London time.

At the request of the President, the order of considering the next items on the agenda was changed as below.

Item 23 – Continued discussion and decision regarding acceptance of the draft deed of incorporation of the IUTAM association in the Netherlands

The General Assembly unanimously adopted the following Resolution on the registration of IUTAM as a new legal entity.

The General Assembly of the International Union of Theoretical and Applied Mechanics (IUTAM) agrees to the establishment of an incorporated association for IUTAM in Amsterdam, the Netherlands, in accordance with Dutch Civil Law. The new association will be a continuation of IUTAM under the same name.

The General Assembly accepts the text of the Deed of Incorporation of the association that is attached to the Resolution.

Internal regulations of the new association will be debated until they are acceptable to the General Assembly of the current IUTAM before they will be adopted by the general meeting of the first three members of the new association.

Item 22 – Continued discussion and decision regarding the resolution on diversity

The General Assembly adopted the following Resolution on Diversity.

IUTAM understands Diversity as the range of human differences, including but not limited to race, gender, age, subject of expertise and geographic representation.

IUTAM values Diversity as a supporting principle for pursuing basic objectives of IUTAM and maintaining the highest standards in all its activities.

- 1. The GA wishes to establish a Diversity Advocacy Group (DAG) on diversity matters that is composed of members of the various IUTAM committees and reports to the Bureau, and thereby to the GA. The GA will vote at its ICTAM meetings on whether the DAG will continue or not for another 4 years, with a rotation of members on 1 November following each ICTAM.***
- 2. Early career researchers should be more involved in IUTAM organisational activity, and can be invited to attend, without voting rights, particular meetings of the GA, CC, XCCC and Bureau in order to express their ideas on the planning and future directions of IUTAM and ICTAM activities.***
- 3. The following statement will be placed on the IUTAM website: A diverse and inclusive scientific community, that brings together the widest range of talents, backgrounds, perspectives and experiences, maximises scientific innovation and creativity. IUTAM seeks to uphold principles of inclusivity and diversity, to defend the free and responsible practice of science, to promote equitable opportunities and to oppose all forms of discrimination. The objectives of IUTAM are best achieved by ensuring that diversity and inclusion are integral to its membership and activities.***
- 4. The Adhering and Affiliate Organisations of IUTAM are strongly encouraged to endorse diversity and seek out diverse candidates for their various activities and positions, including those serving as representatives on the GA of IUTAM.***
- 5. IUTAM will seek out diverse candidates for the membership of its committees (Bureau, Congress Committee, Symposia Panels) with the goal of achieving a composition that reflects Diversity.***
- 6. IUTAM Symposia and ICTAMs need to embrace Diversity in their choice of speakers and in all aspects of their activity. For example, the active seeking out of speakers and participants from under-represented groups is strongly encouraged, consistent with the notion that IUTAM values Diversity. Organisers of Symposia and of ICTAMs should consider imaginative ways of attracting high quality researchers, regardless of age, gender and race.***

With reference to item 13, *the General Assembly adopted the Terms of Reference of a Diversity Advocacy Group.*

Item 16 – Election of members of the Congress Committee

These elections were held as prescribed by the recommendations of the NSCC. The Secretary of the Congress Committee, Professor Mittal, conducted the elections. The General Assembly unanimously agreed to maintain the Congress Committee at the size of 34 members.

The General Assembly decided to re-elect to a 2nd term of membership, from 1st November 2022 to 31st October 2026, the following persons as members of the Congress Committee:

Prof. Alan Cocks (UK),
Prof. Anne De Wit (Belgium)
Prof. Anne Juel (UK)
Prof. Detlef Lohse (Netherlands)
Prof. Shu Takagi (Japan)
Prof. Wei-Chung Wang (China-Taipei)

The General Assembly decided to elect the following persons as members of the Congress Committee for the period from 1st November 2022 to 31st October 2026:

Prof. Raj Das (Australia)
Prof. Yoon Young Kim (Korea)
Prof. Stefano Lenci (Italy)

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

Prof. P. (Pilar) Ariza, Spain, 2024
Prof. E.M. (Ellen) Arruda, USA, 2024
Prof. L. (Leslie) Banks-Sills, Israel, 2024, member of XCCC
Prof. L.C. (Catherine) Brinson, USA, 2024
Prof. S. (Shiyi) Chen, China, 2024, member of XCCC
Prof. A. (Alan) Cocks, UK, 2026
Prof. A. (Alberto) Corigliano, Italy, 2024, member of XCCC
Prof. R. (Raj) Das, Australia, 2026
Prof. A. (Anne) De Wit, Belgium, 2026
Prof. N.A. (Norman) Fleck, UK, 2024, Chair of CC and XCCC (ex officio)
Prof. J.M. (Maciej) Floryan, Canada, 2024
Prof. S. (Samuel) Forest, France, 2024
Prof. P. (Peter) Frick, Russia, 2024
Prof. E. (Elisabeth) Guazzelli, France, 2024
Prof. S. (Stefan) Hartmann, Germany, 2024
Prof. P. (Peter) Hunter, New Zealand, 2024
Prof. A. (Anne) Juel, UK, 2026
Prof. H.D. (Heuy Dong) Kim, Korea, 2024, member of XCCC (ex officio)
Prof. Y.Y. (Yoon Young) Kim, Korea, 2026
Prof. S. (Stefano) Lenci, Italy, 2026
Prof. P.F. (Paul) Linden, UK, 2024, member of XCCC
Prof. D. (Detlef) Lohse, Netherlands, 2026
Prof. G.H. (Gareth) McKinley, USA, 2024
Prof. S. (Sanjay) Mittal, India, 2024, Secretary of CC and XCCC
Prof. H. (Henryk) Petryk, Poland, 2024
Prof. S. (Stéphane) Popinet, France, 2024
Prof. G. (Gherhardt) Ribatski, Brazil, 2024
Prof. M.V. (Maria Vittoria) Salvetti, Italy, 2024
Prof. A. (Alfredo) Soldati, Austria, 2024

Prof. K.J. (Kathleen) Stebe, USA, 2024
Prof. S. (Shu) Takagi, Japan, 2026
Prof. W.-C. (Wei-Chung) Wang, China-Taipei, 2026
Prof. H. (Hiroshi) Yabuno, Japan, 2024
Prof. X.J. (Xiaojing) Zheng, China, 2024

Item 17 – Continued discussion and final decision regarding future IUTAM Symposia

The General Assembly decided to accept the twelve IUTAM Symposia of rating Y coded FL.02, FL.03, FL.05, FL.06, FL.09, FL.10, FL.13, FS.03, SO.02, SO.06, SO.07, SO.13, and reject the nine IUTAM Symposia of rating N coded FL.11, FL.12, FS.01, FS.02, SO.05, SO.08, SO.10, SO.11, SO.12.

After further discussion on the remaining eight proposals, a vote was taken separately on each of them.

Six IUTAM Symposia coded FL.01, FL.04, SO.01, SO.03, SO.04, SO.09 were finally accepted, and two coded FL.07, FL.08 were rejected.

It was decided that an IUTAM grant would be provided to all accepted Symposia except three (FL.01, FL.13, SO.06) for which funding from IUTAM was not requested.

Item 18 – Continued discussion and final decision regarding future IUTAM Summer Schools

The General Assembly decided to accept all three Summer Schools coded SSFS.01, SSFS.02, SSSO.01 with an IUTAM grant.

Item 19 – Continued discussion and final decision regarding annual dues

The General Assembly unanimously voted in favor of the following amounts for the units of dues (no increase):

*US \$ 810 in 2023,
US \$ 810 in 2024.*

Item 20 – Election of members of the Electoral Committee

Following discussions, *the General Assembly decided to postpone the election of members of the Electoral Committee to the next General Assembly meeting.*

Item 21 – Election of members of Symposia Panels

With reference to the discussion under Item 11, *the General Assembly unanimously elected the following members of Symposia Panels for the period 2022 to 2026:*

- Professor Leslie Banks-Sills (Israel) – reappointed to the Solid Mechanics Panel
- Professor Meheboob Alam (India) – appointed to the Fluid Mechanics Panel
- Professor Ellen Longmire (USA) – appointed to the Fluid Mechanics Panel

- Professor Huiling Duan (China) – appointed to the Solid Mechanics Panel.

Item 24 – Any other business

The Bureau would decide about the date of the next General Assembly meeting.

Then, the President closed the meeting.

Henryk Petryk, Secretary-General



International Union of
Theoretical and Applied Mechanics

IUTAM GENERAL ASSEMBLY

Summary Record of the extra-ordinary virtual meeting of the General Assembly of IUTAM on 10 and 11 October 2022

The General Assembly of IUTAM convened remotely in October 2022. The schedule of sessions was as follows:

Monday, 10 October 2022

13:00 – 15:00 (London time) *General Assembly: 1st session*

Tuesday, 11 October 2022

13:00 – 15:00 (London time) *General Assembly: 2nd session*

Attendance:

Members with voting rights:

I.D. Abrahams (UK), P. Ariza (Spain), N. Aubry (USA), K. Behdian (Canada), D. Bigoni (Italy), A. Bottaro (Italy), E. De Bernardis (Italy), H. Espinosa (USA), D. Fang (China), N. Filipovic (Serbia, *Second Session*), N.A. Fleck (UK), L. Franzoni (USA), A.P.S. Freire (Brazil), H. Gao (Singapore), I.G. Goryacheva (Russia), E. Guazzelli (France), M. Hanss (Germany), S. Hartmann (Germany), C. Hellmich (Austria), F. Hild (France), K. Hishida (Japan), M. Hori (Japan), K.J. Hsia (Singapore, *Second Session*), S.-S. Hsiau (China-Taipei), M. Kameda (Japan), T. Kapitaniak (Poland), K. Kishimoto (Japan), R. Kouhia (Finland, *First Session*), J.B.R. Loureiro (Brazil), T.J. Lu (China), F. Lund (Chile), B.J. McKeon (USA), G.H. McKinley (USA), R.M. McMeeking (USA, Member-at-Large), M.A.F. de Medeiros (Brazil, *First Session*), S. Mittal (India), C. Niordson (Denmark), V. Pakrashi (Ireland), T.J. Pedley (UK, Member-at-Large), H. Petryk (Poland), S. Popinet (France), G.P. Raja Sekhar (India), K. Ravi-Chandar (USA), G. Rega (Italy), M.B. Rubin (Israel), T. Sakajo (Japan, *First Session*), J. Salençon (France, Member-at-Large), A. Salupere (Estonia), W. Schiehlen (Germany, Member-at-Large), B.A. Schrefler (Italy, Member-at-Large), R. Segev (Israel), G. Stépán (Hungary), S. Stupkiewicz (Poland), J.N. Sørensen (Denmark, *First Session*), P.A. Tsai (Canada), G. Turkalj (Croatia), D.V.H. Vandepitte (Belgium), W.-C. Wang (China-Taipei), S. Waters (UK, *First Session*), D.N. Wilke (South Africa, *Second Session*), H. Wilson (UK), X.J. Zheng (China, *First Session*)

Non-voting observers:

L. Banks-Sills (Israel, representative of ICF), A. Ferreras (USA, representative of NAS, *First Session*), S.R. Gunakala (Trinidad and Tobago, representative of LACCOTAM), M. Ostoja-Starzewski (USA, representative of ICTS, *First Session*), D. Reddy (South Africa, representative of ISC), A.V. Sahakyan (Armenia, *Second Session*)

Per Article V of IUTAM's Statutes, no proxies were allowed at the virtual meeting.

Agenda Monday, 10 October 2022, 13:00-15:00 London time

1. Opening of the meeting by the President
 - Summary Record of the General Assembly meeting on 22 and 23 August 2022
2. Proposal by the Electoral Committee for the appointment of the Secretary-General of IUTAM as of 1 November 2022
3. Discussion on the draft Internal Regulations of the IUTAM association in the Netherlands
4. Discussion on the election of two General Assembly representatives (one as chair) to the Diversity Advocacy Group
5. Proposals for the Electoral Committee

Agenda Tuesday, 11 October 2022, 13:00-15:00 London time

6. Election of the Secretary-General of IUTAM
7. Continued discussion and decision regarding acceptance of the draft Internal Regulations of the IUTAM association in the Netherlands
8. Election of two General Assembly representatives (one as chair) to the Diversity Advocacy Group
9. Election of the Electoral Committee
10. Any other business

Proceedings of the General Assembly

Item 1 – Opening of the meeting by the President

The President, Professor Norman Fleck opened the meeting and welcomed all members and observers. The General Assembly was informed that the meeting would be recorded.

The Agenda was unanimously approved. The Summary Record of the General Assembly meeting held in Cambridge, UK on 22 and 23 August 2022 was adopted.

Item 2 – Proposal by the Electoral Committee for the appointment of the Secretary-General of IUTAM as of 1 November 2022

The President referred to the previously circulated report of the Electoral Committee composed of Professor Norman Fleck (UK, Chair *ex officio* as President), Professor Timothy Pedley (UK), and Professor Wei Yang (China). The Electoral Committee had unanimously agreed to nominate Professor Robert McMeeking (solids, USA) for the vacant position of Secretary-General after the recent resignation of Professor Henryk Petryk, for the period 1 November 2022 - 31 October 2024.

Professor Robert McMeeking was willing to accept nomination and provided a curriculum vitae distributed to the General Assembly members ahead of the meeting. The President emphasized the high experience of the candidate and his understanding of the IUTAM functioning. In the discussion, several members of the General Assembly supported the candidature of Professor Robert McMeeking.

The nomination was put to the vote in the second session of the General Assembly under item 6.

Item 3 – Discussion on the draft Internal Regulations of the IUTAM association in the Netherlands

The President described the current stage of the registration process of IUTAM as an incorporated association. He recalled the resolution adopted unanimously at the previous General Assembly meeting in Cambridge on 22-23 August 2022, in which the General Assembly had agreed to the establishment of an incorporated association for IUTAM in Amsterdam, the Netherlands, in accordance with Dutch Civil Law. The resolution also stated that Internal Regulations of the new association would be debated until they were acceptable to the General Assembly of the current IUTAM, which was the purpose of this item of the extra-ordinary meeting. The President mentioned that the draft Internal Regulations (IR) had been worked out by the Bureau, particularly by Professor Atila Freire and Professor Henryk Petryk. The latest version dated 1 August 2022 was circulated to the General Assembly members along with a set of attachments.

The President summarized the structure and content of the draft Internal Regulations (IR) with reference to the current IUTAM Statutes and rules of procedure, and then opened the discussion.

The Bureau Officers and a number of the General Assembly members participated in the discussion. In response to the question by Assistant-Treasurer Jens Sørensen about the circumstances regarding money transfer from the bank accounts in Denmark, the President answered that IUTAM had only the Spar Nord bank account at present, and the intention was to open a Dutch bank account to which the assets from the Danish account would be transferred. Vice-President Nadine Aubry indicated that it might be wise to keep two bank accounts for safety reasons. Treasurer Pilar Ariza said that in the uncertain situation as there was it would be necessary to explore every situation before taking any decision. In response to the question by Professor Robert McMeeking regarding tax

implications, the President answered that according to the information gathered so far, the money transfer would not be taxed. The President reported that about USD 350 000, i.e. half of IUTAM's money, had been converted from US dollars to Euros the previous week at a very good rate, almost parity. The Treasurer pointed out that the reason for the exchange was that more and more transactions would be in Euros. The Treasurer added that there was another issue that needed to be taken care of, which was to arrange that IUTAM would not pay taxes in the Netherlands. The President remarked that it should be checked whether higher interest rates were available if IUTAM opened a Dutch account.

Professor David Abrahams asked whether the issue that under Dutch law members are appointed for an indefinite period causes any problems. The President responded that the Dutch lawyer had highlighted that point and suggested that members could sign a voluntary resignation from membership after a specified period of service. Secretary-General Henryk Petryk shared several concerns regarding the draft Internal Regulations (IR) that had been written as a preparatory document for discussion, and now they were proposed to be accepted as a final document. He pointed out that: (1) The issue raised a moment before of the indefinite period of membership as required by Dutch Law was not yet fully resolved; (2) There was some inconsistency of the title "Internal Regulations" with the wording "rules and regulations of the association" as stated in the Articles of Association, and IUTAM would be an exceptional Union in the International Science Council in that it would have no document in English entitled "Statutes"; (3) Duties of Directors had not been sufficiently specified in the IR. There was an important Dutch Civil Code (DCC) Article 2:9 "Performance of tasks and liability of Directors" which was not referred to, and it was also unclear what happens if a Director does not respect some established rule or procedure, which is by no means an abstract question; (4) Almost nothing was said in the IR about financial matters while there were plenty of articles on that in DCC Title 2.9, Art. from 2:360 to 455; (5) In general, in the IR there were no specific references to DCC, therefore the General Assembly might get an impression that this document was self-contained, while it was not. The IR could perhaps be improved in order not to force Directors and maybe members of the association to read hundreds of articles of DCC to find the one which is of the most interest in a given situation. As minor comments, the Secretary-General mentioned that the size of General Meeting of Members, referred to in the IR Article XIII c) concerning the Congress Committee, was not explicitly defined, and that it was unclear whether the case of appointment of the audit committee mentioned in DCC Art. 2:24.2 should be included in the IR or not. He stressed that all these remarks did not mean that the proposed IR were not acceptable for the present General Assembly, as these shortcomings referred rather to the future organization and could perhaps be remedied later, but he felt obliged to share these concerns with the General Assembly.

The President mentioned that at the end of the IR it was stated that "In case of a conflict between the text of the Articles of Association of IUTAM and the text of the Internal Regulations, the text of the Articles of Association will prevail", and "In matters not covered by the Articles of Association or Internal Regulations, the provisions of Dutch Civil Code

shall apply.” The President expressed the opinion that it would be rather straightforward to construct an appendix which was not itself internal regulations but rather contained useful notes taken from the DCC in order for IUTAM to function in consistency with the DCC.

Professor Reuven Segev asked who was responsible for the policy of investments. The President answered that the Treasurer is the one who is responsible for running the financial aspects, certainly in discussion with the Bureau, and that there is also an annual audit that goes to the General Assembly to be adopted, and that process would continue. Professor Robert McMeeking said that the Secretary-General had made some very good points, and that the idea of a commentary added to the IR was a good way to address that. He mentioned that the registration of IUTAM would be an improvement with respect to the current situation as settling down in the Netherlands would enable IUTAM to identify the features of local law as a permanent aspect. Professor Atila Freire agreed with the previous speaker and expressed the opinion that the IR contained all that was needed to run IUTAM just in a manner in which it had always been done in the past, and that the term “Internal Regulations” was consistent with the DCC Book 2.

As yet another issue, the President mentioned that getting a mandatory physical address of the association in Amsterdam would cost IUTAM about 1000 Euro per year. Professor Krishnaswamy Ravi-Chandar pointed out that the resolution on diversity adopted in August by the General Assembly was not included in the IR. The President remarked that resolutions historically do not automatically become part of statutes or regulations and can be implemented in other ways. Professor Ravi-Chandar specified that he had in mind mentioning the Diversity Advocacy Group, maybe in an appendix. The President agreed that it could be a good point. The Treasurer stated that the finances were going to be almost the same after the incorporation of the association, the only main change being that Dutch law requires that the General Assembly meet every year, to approve the budget.

The Vice-President stated that the incorporation of the association for IUTAM would be a huge improvement and a huge step in the history of IUTAM.

It was noted that the final decision regarding acceptance of the draft Internal Regulations of the IUTAM association in the Netherlands would be made in the second session under item 7.

Item 4 – Discussion on the election of two General Assembly representatives (one as chair) to the Diversity Advocacy Group

The President recalled the resolution on diversity adopted at the previous General Assembly meeting in Cambridge in August 2022, and reported that the Bureau had recently appointed Professor Kikuo Kishimoto as Secretary of the Diversity Advocacy Group (DAG). The President presented a slate of names for the General Assembly representatives to the DAG, previously nominated by members of the General Assembly, who were then introduced and supported in the discussion.

It was noted that the election of the two General Assembly representatives would be conducted in the second session under item 8.

Item 5 – Proposals for the Electoral Committee

The President recalled the rules for election of the Electoral Committee (EC). Then he presented a slate of names for the next EC that the Bureau had supported.

In the discussion it was proposed to take either the chair or the member of the DAG elected by the General Assembly as a member of the EC. It was also pointed out that this would limit diversity of the future Bureau because EC members should not self-appoint to the new Bureau. It was remarked that it is a good approach to elect the EC members who can no longer be elected to the Bureau.

Election of the Electoral Committee is reported under item 9.

The meeting then adjourned.

The meeting reconvened on 11 October 2022 at 13:00 London time.

Item 6 – Election of the Secretary-General of IUTAM

The General Assembly elected Professor Robert McMeeking (solids, USA) to the position of Secretary-General of IUTAM for the period 1 November 2022 - 31 October 2024.

Item 7 – Continued discussion and decision regarding acceptance of the draft Internal Regulations of the IUTAM association in the Netherlands

The President presented the status of the draft Internal Regulations of the IUTAM association in the Netherlands that had been distributed to the General Assembly members ahead of the meeting. The President then opened a discussion on new points that were not addressed on the first day of the General Assembly meeting.

Professor Daya Reddy, former President of the International Science Council (ISC), said that this motion was really a substantial development for IUTAM. It would be important to inform the ISC of the new statutory position of IUTAM, assuming that it goes through.

In the discussion, the issue of keeping track of the resolutions passed by the General Assembly was addressed. It was explained that every adopted resolution is recorded in the Summary Record of the General Assembly meeting, and then published in the annual IUTAM Report, which makes it available to everyone permanently.

Then the General Assembly adopted the following resolution.

The attached text of the Internal Regulations for the incorporated association of the International Union of Theoretical and Applied Mechanics (IUTAM) in

Amsterdam, the Netherlands is acceptable to the General Assembly of the current IUTAM.

The results of the voting were as follows: 49 yes, 0 no, 6 abstain.

Item 8 – Election of two General Assembly representatives (one as chair) to the Diversity Advocacy Group

The General Assembly elected the following two General Assembly representatives to the Diversity Advocacy Group (DAG):

Professor Helen Wilson (UK) as the chair of the DAG
Professor Horacio Espinosa (USA) as a member of the DAG

Item 9 – Election of the Electoral Committee

The General Assembly elected the following persons as the members of the Electoral Committee in addition to the President (Chair, ex officio):

Professor Timothy Pedley (fluids, UK)
Professor Wei Yang (solids, China)
Professor Bernhard Schrefler (solids/fluids, Italy)

Item 10 – Any other business

Professor Krishnaswamy Ravi-Chandar raised a procedural issue that the possibility for making amendments to Bureau's proposals at the General Assembly meeting seemed to be very limited. Professor Miles Rubin agreed that it might appear that way, but the Bureau has to balance a lot of different things and it is hard to do that at the last minute. The Secretary-General mentioned a legal reason why the text of a resolution is distributed to all members of a body along with the agenda, which is to let each member know the text ahead of the meeting, even if they are not attending the meeting. He added that any ten voting members of the General Assembly can prepare their own proposal for a resolution to be discussed and voted at a meeting. Professor Robert McMeeking suggested that members of the General Assembly could be encouraged to study the proposed resolutions and motions well ahead of the meeting so that they could propose alternative ones. The General Assembly discussed further the issue of participation of members from outside of the Bureau in the preparation of resolutions and encouraged the use of various ways to achieve this goal.

The President thanked all participants for the good discussion. He thanked Secretary-General Henryk Petryk for his efforts and welcomed the new Secretary-General Robert McMeeking. The President mentioned that this extra-ordinary meeting might be the last General Assembly meeting of the 'old' IUTAM.

Vice-President Nadine Aubry thanked Henryk Petryk for having served six years as Secretary-General, for having been so conscientious, knowledgeable about the statutes etc., and said it had been a pleasure to work with him. Henryk Petryk thanked Nadine Aubry for these warm words, and expressed deep gratitude to all friends and colleagues who supported him in his activities over these six years.

Then, the President closed the meeting.

Henryk Petryk, Secretary-General

*10.3 Minutes of the General Meeting of Members of the Incorporated IUTAM Association
Amsterdam, 12th December, 2022.*

International Union of Theoretical and Applied Mechanics (IUTAM)
Startdock Offices, Keizersgracht 482, 1017EG Amsterdam, Netherlands

General Meeting of Members of IUTAM, KvK-nummer 88085457, RSIN 864498925 on 12th
December, 2022 at Keizersgracht 482, 1017EG Amsterdam, Netherlands

Minutes

Present: Norman A. Fleck, President (in the Chair); Pilar Ariza, Treasurer; Robert M. McMeeking,
Secretary-General.

Absences: None.

1. President Fleck called the meeting to order at 10:20.
2. The President declared that for clarity the IUTAM incorporated association will be referred to as the IUTAM Association and the unincorporated organization will be referred to as the IUTAM Union.
- 2.1. McMeeking proposed approval of the agenda, and this was seconded by Ariza. Approval of the agenda was carried unanimously.
3. President Fleck provided a report on diversity. He reported that the Diversity Advocacy Group (DAG) membership is complete except for the appointment of a member from the Symposia Panels.
4. After due discussion McMeeking proposed and Ariza seconded a motion to admit all organizations that currently adhere as adhering organisations to the IUTAM Union as members of the IUTAM Association in categories I, II, III, IV & V consistent with the number of votes each adhering organization exercises in the IUTAM Union, as explained in Article 3 of the Articles of Association. The motion was carried unanimously.
5. After due discussion McMeeking proposed and Ariza seconded a motion to admit those members of the Bureau of the IUTAM Union who are not Directors of the IUTAM Association to become Directors of the IUTAM Association. The motion was carried unanimously.
6. After due discussion McMeeking proposed and Ariza seconded a motion to admit members of the Board of Directors of the IUTAM Association who are not already members of the IUTAM Association as members of the IUTAM Association in category I. The motion was carried unanimously.
7. After due discussion McMeeking proposed and Ariza seconded a motion to admit members-at-large of the IUTAM Union, who have responded to IUTAM's invitation, to become members-at-large of the IUTAM Association. The motion was carried unanimously.
8. After due discussion McMeeking proposed and Ariza seconded a motion to admit members-at-large of the IUTAM Association as members of the IUTAM Association in category I. The motion was carried unanimously.

9. After due discussion McMeeking proposed and Ariza seconded a motion to appoint the Secretary of the Congress Committee of the IUTAM Union as Secretary of the Congress Committee of the IUTAM Association. The motion was carried unanimously.
10. After due discussion McMeeking proposed and Ariza seconded a motion to admit the Secretary of the Congress Committee of the IUTAM Association as a member of the IUTAM Association in category I. The motion was carried unanimously.
11. After due discussion McMeeking proposed and Ariza seconded a motion to appoint the Chairs of the Fluids and Solids Symposia Panels of the IUTAM Union as Chairs of the Fluids and Solids Symposia Panels, respectively, of the IUTAM Association. The motion was carried unanimously.
12. After due discussion McMeeking proposed and Ariza seconded a motion to admit the Chairs of the Fluids and Solids Symposia panels of the IUTAM Association as members of the IUTAM Association in category I. The motion was carried unanimously.
13. After due discussion McMeeking proposed and Ariza seconded a motion to adopt the attached text of the Internal Regulations for the incorporated association of the International Union of Theoretical and Applied Mechanics (IUTAM Association) seated in Amsterdam. **The attached text of the Internal Regulations for the incorporated association of the International Union of Theoretical and Applied Mechanics (IUTAM) in Amsterdam, the Netherlands was accepted by the General Assembly of the current IUTAM, that is the IUTAM Union, on 11 October 2022.* The motion was carried unanimously.
14. After due discussion McMeeking proposed and Ariza seconded a motion to amend the Internal Regulations for the incorporated association of the IUTAM Association deleting a comment attached to the Internal Regulations in Part I, Paragraph III at the subparagraph beginning “The term of membership ...” The motion was carried unanimously.
15. (a) Under any other business, Ariza proposed a budget for the IUTAM Association for 2023. After due discussion McMeeking proposed and Fleck seconded a motion to accept the proposed budget for 2023, as attached. The motion was carried unanimously. (b) Under any other business, McMeeking proposed a motion appointing Xuerui Mao as Chair of the IUTAM Symposium on Data Assimilation in Fluid Flow. The motion was discussed and then was seconded by Ariza. The motion was carried unanimously. (c) Under any other business, McMeeking proposed a motion appointing Kerstin Weinberg as Chair and Anna Pandolfi as Co-Chair of the IUTAM Symposium on Computational Fracture Mechanics in Multifield Problems. The motion was discussed and then was seconded by Ariza. The motion was carried unanimously.
16. There being no other business President Fleck adjourned the meeting at 11:55.

*To avoid duplication, the text of the Internal Regulations of the IUTAM Association is not included here as it is provided under Section 12 of this Annual Report.

IUTAM Association Budget, 2023.

| | | | | |
|--------------------|----------|--|--|--|
| Interest | 0 | | | |
| Fees | -1200 | | | |
| Dues | 117450 | | | |
| Symp | -65000 | 13 symposia | | |
| TravBu | -6000 | travel | | |
| TravCC | -6000 | travel | | |
| TravO | -500 | Euromech council | | |
| Secretary Gen. | -2000 | Cambridge staffing | | |
| insurance | 0 | | | |
| ISC | -4658.54 | | | |
| ICTAM levy/seed | -8000 | Grant Bureau+XCCC Sevilla (hotel+food) | | |
| Auditor | -3000 | | | |
| Transfer | | | | |
| Web maintenance | -5000 | | | |
| Bureau Price | | | | |
| IUTAM registration | | | | |
| virtual office | 0 | 2023 paid | | |
| Net | 16091.46 | | | |

11. Treasurer's Report

See the next 4 pages.

Treasurer's Report 2022

| | U.S. Dollars |
|--|----------------------|
| Statement of Change in Fund Balance | |
| Balance, 31 December 2021 | 809.178,29 |
| Net revenues minus expenses for 2022 | 63.337,27 |
| Balance, 31 December 2022 | 872.515,56 |
| Statement of Cash Revenues Collected over Expenses Paid | |
| Revenues collected during 2022: | |
| Subscription dues | 113.012,74 |
| Interest income | 2.754,38 |
| ICTAM levy/seed | 27.676,36 |
| Total | 143.443,48 |
| Expenses paid during 2022: | |
| IUTAM Symposia | 39.786,58 |
| Travel, Bureau | 6.560,36 |
| Travel, Executive Committee of Congress Committee | 3.238,41 |
| Travel, others | 1.704,94 |
| Contribution to ISC | 4.658,54 |
| Auditor's fee | 2.703,98 |
| Administration Website | 2.752,78 |
| Transfer | 90,13 |
| Bank fees | 834,99 |
| Insurance | 0,00 |
| Office costs Secretary General | 12.977,08 |
| Bureau prize | 0,00 |
| IUTAM registration | 20.644,16 |
| Virtual office - Amsterdam | 1.433,18 |
| Total | 97.385,13 |
| Revenues minus expenses for 2022 | 46.058,35 |
| Gain from exchange of currency | 18.752,76 |
| Net revenues minus expenses for 2022 | 64.811,11 |

IUTAM Bank Accounts 2022

Running Accounts

| Bank | Balance 31 Dec. 2021 | Withdrawals 2022 | Deposits 2022 | Balance 31 Dec. 2022 | Currency |
|--|----------------------------|---------------------|------------------|-------------------------|----------|
| Spar Nord Bank Aalborg 9236 457 73 07097* | 678.933,94 | -397.832,42 | 152.976,03 | 434.077,55 | USD |
| Spar Nord Bank Aalborg 9236 457 73 07089 | 3.203,53 | -8.295,37 | 308.143,06 | 303.051,22 | EUR |
| Spar Nord Bank Aalborg 9236 457 22 92520 | 4.630,52 | -17.389,06 | 821.152,75 | 808.394,21 | DKK |
| Nordea Bank Horsholm 6887 390 760 (Account is not used but required by the bank) | 0,00 | 0,00 | 0,00 | 0,00 | DKK |
| Nordea Bank Horsholm 0745 417 701 | 824.905,83 | -824.905,83 | 0,00 | 0,00 | DKK |

Savings Account

| Bank | Balance 31 Dec. 2021 | Withdrawal s 2022 | Deposits 2022 | Balance 31 Dec. 2022 | Currency |
|-------------------------|----------------------------|-------------------------|------------------|----------------------------|----------|
| Nordea Bank Horsholm | 0,00 | 0,00 | 0,00 | 0,00 | DKK |

Summary of Subscriptions Received

| Adhering Organization | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|-----------------------|------|------|------|------|------|------|
| Armenia | 1 | 1 | 1 | 1 | 1 | 1 |
| Australia | 3 | 3 | 3 | 3 | 3 | 3 |
| Austria | 1 | 1 | 1 | 1 | 1 | 1 |
| Belgium | 5 | 5 | 5 | 5 | 5 | - |
| Brazil | 3 | 3 | 3 | 3 | 3 | 3 |
| Bulgaria | 1 | 1 | 1 | 1 | 1 | - |
| Canada | 8 | 8 | 8 | 8 | 8 | 8 |
| Chile | 1 | 1 | 1 | 1 | 1 | 1 |
| China/Beijing | 12 | 12 | 12 | 12 | 12 | 12 |
| China/Hong Kong | 1 | 1 | 1 | 1 | 1 | 1 |
| China/Taipei | 3 | 3 | 3 | 3 | 3 | 3 |
| Croatia | 1 | 1 | 1 | 1 | 1 | 1 |
| Czech Republic | 1 | 1 | 1 | 1 | 1 | 1 |
| Denmark | 3 | 3 | 3 | 3 | 3 | 3 |
| Egypt | - | - | - | - | - | - |
| Estonia | 1 | 1 | 1 | 1 | 1 | 1 |
| Finland | 3 | 3 | 3 | 3 | 3 | 3 |
| France | 8 | 8 | 8 | 8 | 8 | 8 |
| Georgia | 1 | 1 | 1 | 1 | - | - |
| Germany | 8 | 8 | 8 | 8 | 8 | 8 |
| Greece | 1 | 1 | 1 | 1 | 1 | 1 |
| Hungary | 1 | 1 | 1 | 1 | 1 | 1 |
| India | 5 | 5 | 5 | 5 | 5 | 5 |
| Ireland | 1 | 1 | 1 | 1 | 1 | 1 |
| Israel | 3 | 3 | 3 | 3 | 3 | 3 |
| Italy | 8 | 8 | 8 | 8 | 8 | 8 |
| Japan | 8 | 8 | 8 | 8 | 8 | 8 |
| Korea | 1 | 1 | 1 | 1 | 1 | 1 |
| Mexico | 1 | 1 | - | - | - | - |
| Netherlands | 3 | 3 | 3 | 3 | 3 | 3 |
| New Zealand | 1 | 1 | 1 | 1 | 1 | 1 |
| Norway | 1 | 1 | 1 | 1 | 1 | - |
| Poland | 3 | 3 | 3 | 3 | 3 | 3 |

| | | | | | | |
|----------------|----|----|----|----|----|----|
| Portugal | 1 | 1 | 1 | 1 | 1 | - |
| Romania | 1 | 1 | 1 | - | - | - |
| Russia | 8 | 8 | 8 | 8 | 8 | - |
| Saudi Arabia | - | - | - | - | - | - |
| Serbia | 1 | 1 | 1 | 1 | 1 | 1 |
| Singapore** | | | | | 3 | 3 |
| Slovenia | 1 | 1 | 1 | 1 | 1 | 1 |
| South Africa | 1 | 1 | 1 | 1 | 1 | 1 |
| Spain | 1 | 1 | 1 | 1 | 1 | 1 |
| Sweden | 5 | 5 | 5 | 5 | 5 | 5 |
| Switzerland | 3 | 3 | 3 | 3 | 3 | 3 |
| Turkey | - | - | - | - | - | - |
| Ukraine | 1 | 1 | 1 | 1 | 1 | 1 |
| United Kingdom | 8 | 8 | 8 | 8 | 8 | 8 |
| United States | 12 | 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 December 31, 2022. Dues are expressed in membership units of 1, 3, 5, 8 or 12, corresponding to category of membership from I through V, respectively.

**Singapore paid the dues for 2021-2024 in 2020 (3 units each year).

Saudi Arabia and Egypt memberships were suspended in GA 2021.

Mexico, Turkey and Romania memberships were suspended in GA 2022.

Pilar Ariza, Treasurer of IUTAM

12. Articles of Incorporation and Internal Regulations

On 4th November, 2022, IUTAM was incorporated as a Vereniging (an Association) in the Netherlands. The official Articles of Incorporation of the IUTAM Association, known colloquially as IUTAM Inc., that were used for setting up the Vereniging are in Dutch and are given below in Section 12.1.

An unofficial English translation of the Articles of Incorporation is provided in Section 12.2.

At the 1st General Meeting of Members of IUTAM Inc., held in Amsterdam on 12th December, 2022, the membership, which consisted at that time of the incorporators, Norman A. Fleck (President), Pilar Ariza (Treasurer) and Robert M. McMeeking (Secretary-General), adopted Internal Regulations to govern the regular activities of IUTAM Inc. The Internal Regulations had been approved at an online Extraordinary General Assembly of the IUTAM Union held on 10th & 11th October, 2022. The Internal Regulations are given below in Section 12.3.

12.1 Official Articles of Incorporation (Dutch)

See the next 6 pages.



AKTE VAN OPRICHTING INTERNATIONAL UNION OF THEORETICAL AND APPLIED MECHANICS

Heden, vier november tweeduizend tweeëntwintig, verscheen voor mij, Nick Maarten van Dijk, — toegevoegd notaris, hierna te noemen "notaris", bevoegd om akten te passeren in het protocol — van mr. Remco Bosveld, notaris te Amsterdam: _____

mevrouw Mylène Groeneveld, geboren te Amsterdam op vijf juni negentienhonderdnegeenvijftig, werkzaam bij de naamloze vennootschap AKD N.V., statutair gevestigd te Rotterdam, op haar — vestiging te Gustav Mahlerlaan 2970, 1081 LA Amsterdam als schriftelijk gevolmachtigde van en als zodanig vertegenwoordigend: _____

1. **Norman Andrew Fleck**, wonende te 76 Green End, Comberton, Cambridge, CB23 7DY, Verenigd Koninkrijk, geboren te Lisburn, Verenigd Koninkrijk, op elf mei _____ negentienhonderdachtenvijftig, houder van een Brits paspoort met nummer 127381713, — geldig tot dertig oktober tweeduizendeenendertig, gehuwd ("**Oprichter 1**"); en _____
2. **Robert Maxwell McMeeking**, wonende te 10 Hobbs House, 18-19 Regent Terrace, — Cambridge, CB2 1AA, Verenigd Koninkrijk, geboren te Glasgow, Verenigd Koninkrijk, op tweeëntwintig mei negentienhonderdvijftig, houder van een Brits paspoort met nummer — 506070172, geldig tot negentien juni tweeduizendzesentwintig, gehuwd ("**Oprichter 2**" en gezamenlijk met Oprichter 1: de "**Oprichters**"). _____

Inleiding

De comparant verklaarde dat de Oprichters een vereniging oprichten met de navolgende — statuten. _____

Namens de Oprichters verklaarde de comparant ten eerste dat de International Union of — Theoretical and Applied Mechanics (de "**Unie**") in negentienhonderdzesenveertig werd opgericht als een internationale non-gouvernementele, niet op winst gerichte, wetenschappelijke — organisatie en voortkwam uit de internationale congressen voor toegepaste mechanica, waarvan de eerste werd gehouden in negentienhonderdvierentwintig te Delft. De Oprichters hebben — aangegeven dat het hun bedoeling is dat de bij deze akte op te richten vereniging een — voortzetting zal vormen van de Unie en dat bij alle door de Unie ontplooidde activiteiten de traditie van de Unie als richtsnoer zal worden genomen. Bij al haar besluiten zal de algemene — ledenvergadering zich laten leiden door de traditie van vrije internationale wetenschappelijke — samenwerking, zoals die op de internationale congressen van de Unie is ontwikkeld. Bij het — nastreven van haar doelstellingen neemt de Unie het fundamentele beleid van non-discriminatie in acht en bevestigt zij de rechten van wetenschappers over de hele wereld om zich aan te sluiten bij of zich te associëren met internationale wetenschappelijke activiteiten, ongeacht ras, — godsdienst, politieke gezindheid, etnische afkomst, staatsburgerschap, taal, geslacht, handicap of leeftijd. _____

Het bovenstaande in acht nemend, verklaarde de comparant, handelend in genoemde — hoedanigheden, namens de Oprichters dat de statuten als volgt zullen luiden: _____

STATUTEN

Naam en zetel

Artikel 1

- 1.1 De vereniging draagt de naam: **International Union of Theoretical and Applied** _____

Mechanics.

De vereniging kan ook met diens afgekorte naam worden aangeduid: **IUTAM.**

- 1.2 De vereniging heeft als zetel de gemeente Amsterdam.
- 1.3 Op de vereniging zijn deze statuten van toepassing. De algemene ledenvergadering kan een huishoudelijk reglement van de vereniging vaststellen en wijzigen.

Doel

Artikel 2

De vereniging heeft tot doel:

- a. een band tot stand brengen tussen personen en organisaties die zich bezighouden met wetenschappelijk werk in alle takken van de theoretische en toegepaste mechanica en aanverwante wetenschappen, met inbegrip van analytisch, computationeel en experimenteel onderzoek;
- b. door middel van een permanente congrescommissie toezien op de organisatie van internationale congressen voor theoretische en toegepaste mechanica, alsmede toezien op de organisatie van andere internationale bijeenkomsten over onderwerpen die binnen het gebied van de theoretische en toegepaste mechanica vallen;
- c. andere activiteiten ontplooiën die de ontwikkeling van mechanica, zowel theoretisch als toegepast, als tak van wetenschap bevorderen,

dit alles in de breedste zin van het woord.

Leden. Verplichtingen van de leden. Waarnemers

Artikel 3

- 3.1 Rechtssubjecten kunnen lid worden van de vereniging; zij hoeven niet noodzakelijkerwijs een rechtspersoon of natuurlijk persoon te zijn. De algemene ledenvergadering beslist over de toelating van leden. Bij toelating wordt ieder lid gecategoriseerd in een categorie variërend van I tot en met V. De algemene ledenvergadering kan ervoor kiezen bestuursleden van de vereniging, secretarissen van een commissie van de vereniging, voorzitters van een werkgroep van de vereniging en buitengewone leden ("*members-at-large*") toe te laten als lid. Buitengewone leden zijn natuurlijke personen die als zodanig toegelaten zijn door de algemene ledenvergadering.
- 3.2 De leden zijn verplicht jaarlijks een bedrag bij wijze van contributie te betalen. Bestuursleden van de vereniging, secretarissen van een commissie van de vereniging, voorzitters van een werkgroep van de vereniging en buitengewone leden hoeven geen jaarlijkse contributie aan de vereniging te betalen. De algemene ledenvergadering stelt de eenheden van jaarlijkse contributie vast per categorie leden.
- 3.3 Het bestuur kan waarnemers, niet zijnde leden, tot de algemene ledenvergadering toelaten. Waarnemers hebben geen stem- of spreekrecht tijdens de algemene ledenvergadering.

Algemene ledenvergadering

Artikel 4

- 4.1 Ten minste een maal per jaar vindt een algemene ledenvergadering plaats. Het bestuur van de vereniging kan een algemene ledenvergadering bijeenroepen. Ten minste tien (10) leden van de vereniging kunnen het bestuur verzoeken een algemene ledenvergadering op te roepen.
- 4.2 Bijeenroeping van een algemene ledenvergadering kan geschieden door berichten van oproeping aan de leden te zenden, waarbij een oproepingstermijn van ten minste dertig (30) dagen (de dag van verzending van de oproeping en de dag van de algemene ledenvergadering niet meegerekend) in acht dient te worden genomen. Mits leden daartoe een e-mailadres hebben opgegeven, kan een oproeping ook aan het door een lid



- opgegeven e-mailadres worden gezonden.
- 4.3 De algemene ledenvergadering wordt voorgezeten door het bestuurslid dat voorzitter is. – Indien de voorzitter niet in staat is de algemene ledenvergadering voor te zitten, zal hij of zij een van de andere bestuursleden aanwijzen als zijn of haar plaatsvervanger. Indien de voorzitter dit niet heeft gedaan, kan de algemene ledenvergadering een van de leden als voorzitter van de algemene ledenvergadering aanwijzen. Ieder lid uit categorie I heeft één (1) stem. Ieder lid uit categorie II heeft twee (2) stemmen. Ieder lid uit categorie III heeft drie (3) stemmen. Ieder lid uit categorie IV heeft vier (4) stemmen. Ieder lid uit categorie V heeft vijf (5) stemmen. Met uitzondering van besluiten ten aanzien van Artikel 5.4 (ontslag van een bestuurslid) en Artikel 5.5 (schorsing van een bestuurslid), Artikel 7 (statutenwijziging) en Artikel 8 (ontbinding), worden alle besluiten genomen met gewone meerderheid (de helft plus één) van alle geldig uitgebrachte stemmen, blanco stemmen – en onthoudingen niet meegerekend. Een lid kan zijn stem(men) uitbrengen door middel – van een elektronisch communicatiemiddel.
- 4.4 Een lid dat niet in staat is een algemene ledenvergadering bij te wonen, kan aan een – ander lid dat wel de algemene ledenvergadering bijwoont, volmacht verlenen om namens hem/haar te stemmen. Stemmen bij volmacht is niet toegestaan indien een algemene – ledenvergadering uitsluitend langs elektronische weg wordt gehouden, mits dit ten tijde – van de algemene ledenvergadering wettelijk is toegestaan.
- 4.5 Besluiten van de algemene ledenvergadering kunnen in plaats van in een algemene – ledenvergadering ook schriftelijk worden genomen, mits met algemene stemmen van alle leden. Zodanige besluiten kunnen slechts geldig worden genomen met voorafgaande – kennisgeving aan het bestuur. Het bestuur houdt aantekening van de door de algemene ledenvergadering genomen besluiten.

Bestuur. Vertegenwoordiging. Benoeming, ontslag en schorsing van bestuursleden. – Afwezigheid of verhindering van bestuursleden. Belangenverstrengeling.

Artikel 5

- 5.1 Het bestuur van de vereniging bestaat uit ten minste drie (3) bestuursleden en dient in – ieder geval te bestaan uit een voorzitter, een secretaris-generaal en een penningmeester.
- 5.2 Bij de vervulling van hun taak richten de bestuursleden zich naar het belang van de – vereniging en de met haar verbonden organisatie.
- 5.3 Het bestuur kan, gezamenlijk handelend, de vereniging tegenover derden – vertegenwoordigen. Daarnaast kunnen de voorzitter, de secretaris-generaal en de – penningmeester, alleen handelend, de vereniging tegenover derden vertegenwoordigen.
- 5.4 De algemene ledenvergadering kan een bestuurslid benoemen. De algemene – ledenvergadering kan een bestuurslid ontslaan. Een voorstel tot ontslag van een – bestuurslid kan slechts worden genomen met gewone meerderheid (de helft plus één) – van alle geldig uitgebrachte stemmen, blanco stemmen en onthoudingen niet – meegerekend, in een vergadering waarin ten minste de helft van de leden aanwezig of – vertegenwoordigd is. Indien de meerderheid wordt gehaald, maar het quorum niet wordt – gehaald, kan een tweede vergadering worden bijeengeroepen met inachtneming van een oproepingstermijn van ten minste dertig (30) dagen, de dag van verzending van de – oproeping en de dag van de algemene ledenvergadering niet meegerekend. In deze – tweede vergadering kan het voorstel tot ontslag van een bestuurslid met gewone – meerderheid (de helft plus één) van de uitgebrachte stemmen worden genomen, – ongeacht het aantal aanwezige of vertegenwoordigde leden.
- 5.5 De algemene ledenvergadering kan een bestuurslid voor een periode van ten hoogste – drie (3) maanden schorsen. Deze periode kan eenmaal met ten hoogste drie (3) maanden

worden verlengd. Een voorstel tot schorsing van een bestuurslid of tot verlenging van de periode van schorsing van een bestuurslid kan slechts worden genomen met gewone meerderheid (de helft plus één) van alle geldig uitgebrachte stemmen, blanco stemmen en onthoudingen niet meegerekend, in een vergadering waarin ten minste de helft van de leden aanwezig of vertegenwoordigd is. Indien de meerderheid wordt gehaald, maar het quorum niet wordt gehaald, kan een tweede vergadering worden bijeengeroepen met inachtneming van een oproepingstermijn van ten minste dertig (30) dagen, de dag van verzending van de oproeping en de dag van de algemene ledenvergadering niet meegerekend. In deze tweede vergadering kan het voorstel tot schorsing van een bestuurslid of tot verlenging van de schorsingsperiode met gewone meerderheid (de helft plus één) van de uitgebrachte stemmen worden genomen, ongeacht het aantal aanwezige of vertegenwoordigde leden.

- 5.6 Bij ontstentenis of belet van een bestuurslid zijn de overige bestuursleden met het bestuur van de vereniging belast. Bij ontstentenis of belet van alle bestuursleden is de persoon of zijn de personen die daartoe door het bestuur of, indien het bestuur op dit vlak in gebreke is gebleven, de algemene ledenvergadering is/zijn aangewezen, tijdelijk belast met het bestuur van de vereniging.
- 5.7 Indien een bestuurslid een belang heeft dat tegenstrijdig is met de belangen van de vereniging, neemt dit bestuurslid niet deel aan de beraadslaging en besluitvorming. Indien alle bestuursleden een belang hebben dat tegenstrijdig is met de belangen van de vereniging, zal de algemene ledenvergadering gerechtigd zijn het bestuursbesluit te nemen in plaats van het bestuur.

Boekjaar. Goedkeuring van de jaarrekening.

Artikel 6

- 6.1 Het boekjaar van de vereniging loopt van de eerste dag van januari tot en met de laatste dag van december.
- 6.2 Het bestuur is verplicht, naar de eisen die voortvloeien uit de wet, van de vermogenstoestand van de vereniging op zodanige wijze een administratie te voeren en de daartoe behorende boeken en bescheiden op zodanige wijze te bewaren dat daaruit te allen tijde de rechten en verplichtingen van de vereniging kunnen worden gekend.
- 6.3 Het bestuur is verplicht, binnen zes (6) maanden na afloop van het boekjaar, de balans en de staat van baten en lasten van de vereniging naar de eisen die voortvloeien uit de wet, op te maken.
- 6.4 De algemene ledenvergadering dient de jaarrekening binnen zeven (7) maanden na afloop van het boekjaar goed te keuren.

Statutenwijziging

Artikel 7

De algemene ledenvergadering kan besluiten tot wijziging van de statuten. Een besluit tot statutenwijziging kan slechts worden genomen door de algemene ledenvergadering, daartoe bijeengeroepen volgens het in artikel 4.2 bepaalde. De oproeping dient te vermelden dat tijdens de vergadering een voorstel tot wijziging van de statuten op de agenda staat. Een voorstel tot statutenwijziging kan slechts worden genomen met een meerderheid van twee derde (2/3) van alle geldig uitgebrachte stemmen, blanco stemmen en onthoudingen niet meegerekend, in een vergadering waarin ten minste twee derde (2/3) van de leden aanwezig of vertegenwoordigd is. Indien de meerderheid wordt gehaald, maar het quorum niet wordt gehaald, kan een tweede vergadering worden bijeengeroepen met inachtneming van een oproepingstermijn van ten minste dertig (30) dagen, de dag van verzending van de oproeping en de dag van de algemene ledenvergadering niet meegerekend. In deze tweede vergadering kan het voorstel tot



statutenwijziging met een meerderheid van twee derde (2/3) van de uitgebrachte stemmen — worden genomen, ongeacht het aantal aanwezige of vertegenwoordigde leden. —

Ontbinding en uitkering van liquidatiesaldo —

Artikel 8 —

- 8.1 De algemene ledenvergadering kan besluiten tot ontbinding van de vereniging. Een — voorstel tot ontbinding van de vereniging kan slechts worden genomen met een — meerderheid van twee derde (2/3) van alle geldig uitgebrachte stemmen, blanco stemmen en onthoudingen niet meegerekend, in een vergadering waarin ten minste twee derde — (2/3) van de leden aanwezig is. Indien de meerderheid wordt gehaald, maar het quorum — niet wordt gehaald, kan een tweede vergadering worden bijeengeroepen met — inachtneming van een oproepingstermijn van ten minste dertig (30) dagen, de dag van — verzending van de oproeping en de dag van de algemene ledenvergadering niet — meegerekend. In deze tweede vergadering kan het voorstel tot ontbinding van de — vereniging met een meerderheid van twee derde (2/3) van de uitgebrachte stemmen — worden genomen, ongeacht het aantal aanwezige of vertegenwoordigde leden. —
- 8.2 Indien tot ontbinding van de vereniging is besloten, vervullen de bestuursleden de taak — van vereffenaars van de activa en passiva van de vereniging, tenzij de algemene — ledenvergadering anders besluit. —
- 8.3 De vereffenaars keren de na de vereffening overblijvende activa en passiva uit aan een — organisatie zonder winstoogmerk die een doel heeft dat zo veel mogelijk overeenkomt — met het doel van de vereniging. —

Overgangsbepaling —

Het eerste boekjaar van de vereniging eindigt op de laatste dag van december tweeduizend — drieëntwintig. —

Ten slotte verklaarde de comparant dat de Oprichters de volgende eerste bestuursleden — benoemen: —

1. de Oprichter 1 als voorzitter; —
2. de Oprichter 2 als secretaris-generaal; en —
3. María del Pilar Ariza Moreno, geboren te San Fernando, Spanje, op elf juni — negentienhonderdzeventig, als penningmeester. —

Ten slotte verklaarde de comparant, handelend als genoemd, dat in overeenstemming met artikel 3 de eerste bestuursleden van de vereniging de eerste leden van de vereniging zijn. Handelend als zodanig, zullen zij na het verlijden van deze akte alle organisaties die als aangesloten — organisaties bij de Unie zijn aangesloten, als lid van de vereniging toelaten. —

Volmachten —

- ./. Van de aan de comparant verstrekte volmachten is gebleken uit twee (2) onderhandse akten, die aan deze akte zullen worden gehecht. —

Slot —

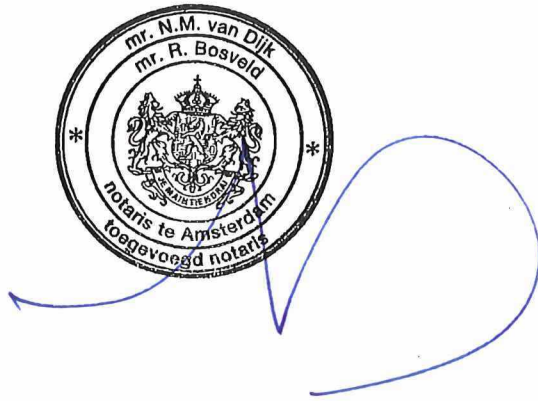
De comparant is mij, notaris, bekend. —

Deze akte is verleden te Amsterdam op de datum in het hoofd van deze akte vermeld. —

Na zakelijke opgave van de inhoud van deze akte en het geven van een toelichting daarop en — nadat ik, notaris, heb gewezen op de gevolgen van de inhoud van deze akte voor de partijen, — heeft de comparant verklaard van de inhoud van deze akte te hebben kennis genomen na — daartoe tijdig in de gelegenheid te zijn gesteld, met de inhoud van de akte in te stemmen en op — volledige voorlezing daarvan geen prijs te stellen. —

Onmiddellijk na beperkte voorlezing is deze akte ondertekend door de comparant en mij, notaris. (volgt ondertekening).

UITGEGEVEN VOOR AFSCHRIFT



12.2 Unofficial English Translation of the Articles of Incorporation

International Union of Theoretical and Applied Mechanics (IUTAM)

An Association Incorporated in the Netherlands
(Seat: Amsterdam)

Articles of Association

Preamble

A deed of incorporation was executed on November 4th 2022 in order to register IUTAM as an incorporated Association with full legal capacity (in Dutch, *vereniging mit volledige rechtsbevoegdheid*), seated in Amsterdam, the Netherlands with the address Keizersgracht 482, 1017EG Amsterdam. The Incorporators were (1) Norman Andrew Fleck and (2) Robert Maxwell McMeeking. A civil-law notary (in Dutch: *toegevoegd notaris*), Nick Maarten van Dijk, appeared before the relevant authority in Amsterdam to incorporate and register IUTAM. Proof of registration at the Dutch Business Register (Handelsregister) is IUTAM's KVK number: 88085457. This KVK number also proves that IUTAM officially has a business. The official Articles of Association of IUTAM are in Dutch.

Unofficial Translation of the ARTICLES OF ASSOCIATION of the INTERNATIONAL UNION OF THEORETICAL AND APPLIED MECHANICS (IUTAM)

Introduction

The International Union of Theoretical and Applied Mechanics (the 'Union') was founded in nineteen hundred and forty-six as an international non-governmental non-profit scientific organization and emerged from the international congresses of mechanics initiated in Delft, the Netherlands, in nineteen hundred and twenty-four. The Incorporators have indicated that it is their intention that the association to be incorporated by means of this deed will constitute a continuation of the Union and that all activities of the association shall be guided by the tradition of the Union. In all its decisions the general meeting of members shall be guided by the tradition of free international scientific cooperation, developed at the international congresses of the Union. 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, sex, disability or age. Taking into account the foregoing, the articles of association will read as follows:

ARTICLES OF ASSOCIATION

Name and seat

Article 1

1.1 The association bears the name: International Union of Theoretical and Applied Mechanics. The association can also be referred to under its abbreviated name: IUTAM.

1.2 The seat of the association is in the municipality of Amsterdam, the Netherlands.

1.3 The association will be governed by these articles of association. The general meeting of members may adopt and amend rules and regulations of the association.

Objects

Article 2

The objects of the association 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 supervise international congresses of theoretical and applied mechanics through a standing congress committee, and to supervise other international meetings on subjects falling within the field of theoretical and applied mechanics;

(c) to engage in other activities meant to promote the development of mechanics, both theoretical and applied, as a branch of science, all in the broadest sense of the words.

Members. Obligations of the members. Observers

Article 3

3.1 Only legal subjects (in Dutch: *rechtssubject*), not necessarily being a legal person (in Dutch: *rechtspersoon*) or a natural person may become a member of the association. The general meeting of members decides on admittance of members. Upon admittance each member will be categorized in a category ranging from I up to and including V. The general meeting of members may choose to admit directors of the association, secretaries of a committee of the association, chairs of a panel of the association and members-at-large as members. Members-at-large are natural persons admitted as such by the general meeting of members.

3.2 The members are obliged to pay an annual subscription to the association. Directors of the association, secretaries of a committee of the association, chairs of a panel of the association and members-at-large are not required to pay an annual subscription to the association. The general meeting of members determines the units of annual subscription per category of members.

3.3 The board of directors may admit observers, not being members, to the general meeting of members. Observers do not have any voting rights in the general meeting of members. Observers do have speaking rights in the general meeting of members.

General meeting of members

Article 4

4.1 At least once a year a general meeting of members shall take place. The board of directors of the association may convene a general meeting of members. At least ten (10) members of the association may request the board of directors of the association to convene a general meeting of members.

4.2 A meeting of the general meeting of members may be convened by sending convening notices to the members taking into account a convening period of at least thirty (30) days (not including the day of sending out the convening notice and the day of the general meeting of members).

Provided that members have provided an e-mail address for this purpose, a convening notice may also be sent to the e-mail address provided by a member.

4.3 The general meeting of members shall be chaired by the director who is the president. If the president is not able to chair the general meeting of members he or she shall designate one of the other directors as his or her substitute. If the president has failed to do so, the general meeting of members may designate one of the members as chair of the general meeting of members. Each member of category I shall have one (1) vote. Each member of category II shall have two (2) votes. Each member of category III shall have three (3) votes. Each member of category IV shall have four (4) votes. Each member of category V shall have five (5) votes. Except for the resolutions of articles 5.4 (dismissal of a director) and 5.5 (suspending a director), article 7 (amendment articles of association) and article 8 (liquidation) all resolutions shall be adopted by simple majority (more than half) of the votes validly cast, blank and abstaining votes excluded. A member may cast his vote(s) by making use of electronic means of communication.

4.4 A member not able to attend a general meeting of members may provide a proxy to another member attending the general meeting of members to vote on its behalf. Voting by proxy is not allowed if a general meeting of members will be solely held by electronic means provided this is allowed by law at the time of the general meeting of members.

4.5 Decisions of the general meeting of members can also be taken in writing instead of in a general meeting of members, provided that all members unanimously vote. Such decisions can only be validly taken with prior notification to the board of directors. The board of directors keeps a record of the decisions taken by the general meeting of members.

Board of directors. Representation. Appointment, dismissal and suspension of directors. Absence or inability to act of directors. Conflict of interest.

Article 5

5.1 The board of directors of the association consists of at least three (3) directors and shall in any event consist of a president (in Dutch: *voorzitter*), a secretary-general (in Dutch: *secretaris-generaal*) and a treasurer (in Dutch: *penningmeester*).

5.2 In fulfilling their duties the directors will be guided by the interests of the association and the associated organization.

5.3 The board of directors acting jointly can represent the association towards third parties. In addition, the president, secretary-general and treasurer acting alone may also represent the association towards third parties.

5.4 The general meeting of members can appoint a director. The general meeting of members can dismiss a director. A resolution to dismiss a director can only be adopted by a simple majority (more than half) of the votes validly cast, blank and abstaining votes excluded, in a meeting in which at least half of the members are present or represented. If this majority is met but the quorum is not met, a second meeting may be convened by taking into account a period of at least thirty (30) days, not taking into account the day of sending out the convening notice and the day of the general meeting of members, in which the resolution to dismiss a director may be adopted with

simple majority (more than half) of the votes cast, regardless of the number of members being present or represented.

5.5 The general meeting of members can suspend a director for a maximum term of three (3) months. This period can be extended once for a maximum term of three (3) months. A resolution to suspend a director or to extend the period of suspension of a director can only be adopted by a simple majority (more than half) of the votes validly cast, blank and abstaining votes excluded, in a meeting in which at least half of the members are present or represented. If this majority is met but the quorum is not met, a second meeting may be convened by taking into account a period of at least thirty (30) days, not taking into account the day of sending out the convening notice and the day of the general meeting of members, in which the resolution to suspend a director or to extend the period of suspension of a director may be adopted with simple majority (more than half) of the votes cast, regardless of the number of members being present or represented.

5.6 If a director is absent (in Dutch: *ontstentenis*) or unable to act (in Dutch: *belet*), the other directors will be charged with the management of the association. If all directors are absent or unable to act, the person or persons designated for such purpose by the board of directors, or if the board of directors has failed to do so, the general meeting of members, will be temporarily charged with the management of the association.

5.7 If a director has an interest which is in conflict with the interests of the association, this director will not take part in the deliberations and decision-making. If all directors have an interest which is in conflict with the interests of the association, the general meeting of members will be able to adopt the resolution instead of the board of directors.

Financial year. Adoption of annual accounts.

Article 6

6.1 The financial year of the association runs from the first day of January until the thirty-first day of December.

6.2 The board of directors is obliged to keep books and records of the assets and liabilities of the association in accordance with the requirements by law, and it must store the books and records in such a way that at all times the rights and obligations of the association can be known.

6.3 The board of directors shall, within six (6) months after the end of the financial year, prepare the balance sheet and the profit and loss account of the association in accordance with the law.

6.4 The general meeting of members shall adopt the annual accounts within seven (7) months after the end of the financial year.

Amendment of the articles of association

Article 7

The general meeting of members can resolve to amend the articles of association. The articles of association can be amended only by a resolution of the general meeting of members, convened by a notice sent in accordance with article 4.2, in which notice it is mentioned that an amendment of

the articles of incorporation will be proposed at this meeting. A resolution to amend the articles of association can only be adopted by a majority of two-thirds (2/3) of the votes validly cast, blank and abstaining votes excluded, in a meeting in which at least two-thirds (2/3) of the members are present or represented. If this majority is met but the quorum is not met, a second meeting may be convened by taking into account another period of at least thirty (30) days, not taking into account the day of sending out the convening notice and the day of the general meeting of members, in which the resolution to amend the articles of association may be adopted with two-thirds of the votes cast, regardless of the number of members being present or represented.

Liquidation and distribution of liquidation proceeds

Article 8

8.1 The general meeting of members can resolve to liquidate the association. A resolution to liquidate the association can only be adopted by a majority of two-thirds (2/3) of the votes validly cast, blank and abstaining votes excluded, in a meeting in which at least two-thirds (2/3) of the members are present or represented. If this majority is met but the quorum is not met, a second meeting may be convened by taking into account another period of at least thirty (30) days, not taking into account the day of sending out the convening notice and the day of the general meeting of members, in which the resolution to liquidate the association may be adopted with two-thirds of the votes cast, regardless of the number of members being present or represented.

8.2 If the association will be liquidated, the directors will be the liquidators of the assets and liabilities of the association, unless the general meeting of members resolves differently.

8.3 The liquidators will distribute the assets and liabilities that remain after liquidation to a non-profit organization which has objects that resemble the objects of the association as much as possible.

Transitional provision

The first financial year of the association will end on the last day of December two thousand twenty-three.

Finally, the person appearing declared that the Incorporators appoint the following first directors:

1. the Incorporator 1 as president;
2. the Incorporator 2 as secretary-general; and
3. Maria del Pilar Ariza Moreno, born in San Fernando, Spain on the eleventh day of June of nineteen hundred and seventy, as treasurer.

Finally, the person appearing acting in said capacities, stated that in accordance with article 3 the first directors of the association are the first members of the association. Acting as such, after execution of this deed they will admit all organizations which have adhered as adhering organizations to the Union as members of the association.

12.3 *Internal Regulations of IUTAM Inc.*

IUTAM's Internal Regulations

Adopted by the IUTAM General Meeting of Members on 12 December 2022

Part I – General

I. "The International Union of Theoretical and Applied Mechanics", hereinafter called "the Association" or "IUTAM", is an international non-governmental scientific organization incorporated in the Netherlands as an Association ('*vereniging*').

II. The objectives of the Association are defined in Article 2 of the Articles of Association.

III. The members of IUTAM are:

- a) adhering organizations (Article VIII of these Internal Regulations);
- b) members-at-large (Part II of these Internal Regulations);
- c) directors (Article XII);
- d) the Secretary of the Congress Committee (Article XIII);
- e) the Chairs of the Fluids and Solids Symposia Panels.

The members of the Association are also the members of the General Meeting of Members.

An adhering organization can become a member of IUTAM with its written consent as a legal subject upon admittance by the General Meeting of Members.

The term of membership of a member-at-large shall be determined by the General Meeting of Members at the time of the election. The members referred to in points c), d), e) are elected by the General Meeting of Members for a specified term, namely a maximum of four years, starting on November 1, following the General Meeting of Members at which they were elected. Reelections are possible.

Matters related to ending of membership, removal of a member and termination of membership are regulated by Dutch law.

The convening notice for a General Meeting of Members shall be given by means of an electronically transmitted message. Each member is obliged to give their consent for that and provide the address disclosed for this purpose.

IV. The highest authority of IUTAM is the General Meeting of Members.

The General Meeting of Members decides on admittance of members as regulated by Article 3 of the Articles of Association.

The General Meeting of Members is regulated by Article 4 of the Articles of Association.

Each adhering organization being a member shall determine who may represent such member in the General Meeting of Members and as a result may vote on behalf of such member. Persons who may represent such member are henceforth called 'representatives' of such member. The number

of persons who may represent a member is equal to the number of votes specified by Article 4.3 of Articles of Association and dependent on the membership category regulated by Article XV of these Internal Regulations.

V. The Board of Directors (Article XII of these Internal Regulations) may admit the following categories of observers in general meetings of members:

- i) observers appointed by adhering organizations (Article VIII of these Internal Regulations);
- ii) representatives of associate organizations (Article IX);
- iii) representatives of affiliated organizations (Article XI);
- iv) representatives of countries applying for membership;
- v) representatives of committees and groups of scientists.

VI. In all its decisions the General Meeting of Members shall be guided by the tradition of free international scientific cooperation, developed at the International Congresses for Theoretical and Applied Mechanics and IUTAM Symposia. In pursuing its objectives the Association 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, sex, disability or age.

VII. The General Meeting of Members shall provide for an adequate representation of any group of scientists carrying out research in theoretical or applied mechanics and not a member of IUTAM.

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, which are called adhering organizations, can be admitted by the General Meeting of Members as members of the Association provided they can be listed under a name that will avoid any misunderstanding about the country or territory represented.

In general, only one adhering organization from each country or territory will be admitted.

IX. Organizations 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 a member of IUTAM may, with the written support of one member, be admitted as an associate organization of IUTAM. The name of the proposed associate organization must be unambiguous and politically neutral in order to avoid misunderstanding about the country or territory being represented.

X. Each adhering organization being a member pays an annual subscription to the Association in accordance with Article XV of these Internal Regulations.

Each associate organization shall have one representative as a non-voting observer in the General Meeting of Members, and shall pay a single subscription once for each four-year period.

XI. International organizations mainly occupied in fields closely related to that of IUTAM can be admitted by the General Meeting of Members as affiliated organizations of IUTAM.

Each affiliated organization has the right to appoint an observer, who is invited to take part in the General Meeting of Members without voting rights. The Board of Directors of IUTAM has the reciprocal right to appoint a non-voting observer to the corresponding council or other executive body of the affiliated organization.

The affiliated organization and IUTAM are mutually obliged to keep each other informed about all important activities and organizational measures taken.

In organizing international scientific events each of the affiliated organizations is obliged to consider carefully the timing of the major events in order to coordinate such activities with IUTAM.

IUTAM will not be held liable for any deficit incurred by events that it endorses. Affiliated members pay no annual dues to the Association.

XII. To execute the decisions of the General Meeting of Members and to perform the administration and management tasks, the General Meeting of Members elects the Board of Directors.

Matters related to Board of Directors including representation, appointment, dismissal and suspension of directors, absence or inability to act of directors and conflict of interest are regulated by Article 5 of the Articles of Association.

The Board of Directors consists of the President, the retiring president who serves as Vice-President, the Secretary-General, the Treasurer and four other persons. These four named directors shall operate as President, Vice-President, Secretary-General and Treasurer of IUTAM, respectively.

The maximum continuous period of service as a director other than the President (P), Vice-President (VP), Secretary-General (SG) and Treasurer (T), is limited to eight years. Newly elected directors enter into office on the date of November 1, following the General Meeting of Members at which they are elected.

The Board of Directors will meet at least once every year.

The Secretary-General will act as a permanent center for all matters affecting IUTAM, including relations with its members and other organizations.

The Board of Directors is authorized to appoint one or more Assistant-Treasurers who will not be directors.

The Board of Directors shall draft a budget for each coming year, and shall administer the finances. The Treasurer prepares an annual financial report, and the accounts are audited. Then, the Board of Directors signs and submits the audited annual financial report to the General Meeting of Members for adoption.

The Vice-President shall normally fulfil the duties of the President should the President become unable to discharge them.

XIII. The General Meeting of Members establishes a standing Congress Committee (henceforth abbreviated CC) which supervises the organization of International Congresses of Theoretical and Applied Mechanics (ICTAM) at regular intervals.

a) The President shall also serve as Chair of the CC.

b) The CC shall nominate a Secretary from its membership or past membership subject to that person's willingness to be nominated. Based on the CC nomination, the General Meeting of Members elects the Secretary of the CC for a four-year term of service 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 Meeting of Members as individuals active in theoretical and applied mechanics and need not be members of the Association. Prior to a General Meeting of Members, the Secretary of the CC shall invite nominations from members of the CC, members of IUTAM and affiliated organizations, and any appropriate subcommittees, such as the Symposia Panels. The size of the CC shall not exceed one-third of the size of the General Meeting of Members. 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 of Theoretical and Applied Mechanics 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 Meeting of Members 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 terms of the Chair, Secretary and members of the CC and Executive Committee of the CC begin on November 1 following the General Meeting of Members at which they are elected, and end on October 31 of the fourth succeeding year.

f) The rules of procedure of the CC shall be adopted by the General Meeting of Members.

XIV. The financial means of the Association are formed by:

- a) the annual subscriptions of the adhering organizations that are members;
- b) the subscriptions of the associate organizations;

- c) the levy from the organizers of International Congresses of Theoretical and Applied Mechanics;
- d) gifts and grants.

The Association 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 Association.

XV. The number of representatives of an adhering organization that is a member of the Association 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 Meeting of Members:

| 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 Meeting of Members not less than one year in advance.

XVI. The subscription of an associate organization 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 member. Admission as an associate organization shall be conditional on receipt of this subscription by the Treasurer. The status of each associate organization shall be reviewed after the initial four years and again after an additional period of four years. Associate organization status shall normally be limited to a maximum of eight years. The option to apply for Category I-II membership shall be open to an associate organization at any time.

XVII. Any proposal for alteration of the Internal Regulations either prepared by the Board of Directors or supported by statements to the Secretary-General signed by at least ten members of the General Meeting of Members with voting rights, will then be considered by the Board of Directors in consultation with lawyers if necessary. Then the proposal shall be sent to the members of the association with the Agenda for a meeting of the General Meeting of Members. Such proposals shall normally be discussed during the first session of that meeting and voted upon during the second session.

Part II
Rules of procedure

Rules of procedure for the Congress Committee (CC)

1. The CC shall hold meetings at least once every two years at a time when the General Meeting

of Members occurs. Typically, this is during an International Congress of Theoretical and Applied Mechanics (ICTAM) and two years after a Congress. Such a meeting shall follow the format (in-person, hybrid or virtual if provided by law) of the accompanying General Meeting of Members.

2. During a Congress, the CC shall review proposals for the next 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 of the CC handles matters arising during the period between meetings of the CC on behalf of the CC. At each General Meeting of Members accompanying a CC meeting, the Secretary of the CC reports on all such matters and their disposition since the last CC meeting. 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 the Association 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, shall present 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 the Association 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. The Association will not be held liable for any deficit incurred by the running of any ICTAM event.

Procedure for election of the Board of Directors

1. The General Meeting of Members convened in accordance with article 4.2 of the Articles of Association at which the new Board of Directors is to be elected shall be held during two consecutive days, and a meeting session shall be held each day. At the General Meeting of

Members preceding the one at which the new Board of Directors is to be elected, an Electoral Committee (EC) shall be elected, consisting of the President of IUTAM (who shall act as Chair of the EC) and two to four members of the General Meeting of Members who are not members of the current Board of Directors.

2. Following its election, the EC shall invite from members and their representatives, as well as observers of the General Meeting of Members indicated in Article VI under i) and ii) of these Internal Regulations, within a specified time limit, suggestions for candidates for the Board of Directors, viz. for the President (P), the Secretary-General (S) and the Treasurer (T), and for the four complementary 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 Board of Directors: one name for each of the positions (P, S, T) and one or more names for each of the other 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 General Meeting of Members in advance of the first session of the General Meeting of Members at which the new Board of Directors is to be elected in accordance with Article 4.2 of the Articles of Association.

4. At this first session, additional candidates may be proposed by members of the General Meeting of Members 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. In the second session of the General Meeting of Members convened in accordance with article 4.2 of the Articles of Association at which the new Board of Directors is to be elected, the proposals under clause 4 above shall be accepted if approved by the General Meeting of Members; otherwise they shall be considered withdrawn.

6. The General Meeting of Members 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 for electing Members-at-Large

1. This procedure shall apply for the election and re-election of the Members-at-Large of the Association provided for in Article III(b) of these Internal Regulations.

2. Proposals, by members of the Association, for Members-at-Large must be received by the Board of Directors at least three months before the General Meeting of Members 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 Board of Directors.

3. Taking into account all material received, the Board of Directors will present to the General Meeting of Members such proposals as it deems will have at least a reasonable support by the General Meeting of Members, provided however that the total number of Members-at-Large is not

to exceed approximately one eighth (1/8) of the total number of votes that can be cast at the General Meeting of Members. Such proposals will be circulated during the first session of the General Meeting of Members at which the proposals are to be voted on.

4. Proposals not identical with those presented by the Board of Directors are considered to be withdrawn, unless they are sustained and supported by at least ten members of the General Meeting of Members before its second session.

5. The General Meeting of Members will vote on those candidates mentioned in the proposals of §3 and §4.

Rules of procedure for Associate Organizations

1. Eligibility: the prime criteria for the eligibility of any country X shall be

a) that X be in the developing world (as commonly understood) and not already a member of the Association;

b) that X can demonstrate an independent scientific activity in theoretical and applied mechanics (TAM), and a desire to extend this activity through association with IUTAM;

c) that an existing member country of the Association has research and/or teaching contacts in X through members of its community, and is prepared to support the application and act in an advisory capacity for X; and

d) that there exists in X a nationally recognized organization with approved Statutes (or equivalent), which represents all interested parties within the TAM community in X, and which can act as the Associate Organization for the purpose of official communication with, and representation in, IUTAM.

2. Rights and privileges: the rights and privileges of Associate Organizations include

a) the right to have a representative attend the General Meeting of Members of IUTAM as an observer without voting rights;

b) the right to have a representative attend an ICTAM, or any IUTAM Symposium, the registration fee being waived;

c) the right to propose the holding of an IUTAM Summer School in the country of the Associate Organization; in the event that such a proposal is successful, IUTAM could undertake to provide an increased grant (say 50 % more than the current standard allocation).

Part III

In case of a conflict between the text of the Articles of Association of IUTAM and the text of these Internal Regulations, the text of the Articles of Association will prevail. The General Meeting of Members may then decide to amend the Articles of Association and/or Internal Regulations. In matters not covered by the Articles of Association or Internal Regulations, the provisions of Dutch Civil Code shall apply.

13. List of IUTAM Publications for 2022

Publications associated with IUTAM Symposia appearing in 2022:

IUTAM Laminar-Turbulent Transitions.

Proceedings of the 9th IUTAM Symposium, London, UK, September 2-6, 2019.

Edited by: Spencer Sherwin, Peter Schmid and Xuesong Wu.

IUTAM Bookseries (IUTAMBOOK, Volume 38) <https://www.springer.com/series/7695>

Springer Cham, 2022.

IUTAM Symposium on Physics and Mechanics of Sea Ice.

Proceedings of the IUTAM Symposium, Espoo, Finland, 3-9 June, 2019.

Edited by: Jukka Tuhkuri and Arttu Polojärvi

IUTAM Bookseries (IUTAMBOOK, Volume 39) <https://www.springer.com/series/7695>

Springer Cham, 2022.

14. Summary of IUTAM Symposia Held in 2022

Symposia are listed by number as designated at the General Assembly that gave its approval; *i.e.*, those listed as 20-XX were approved at the General Assembly in 2020.

18-01 *IUTAM Symposium on Particles Drops and Bubbles in Stratified Environments*

Chairperson: Jacques Magnaudet. Location: Toulouse, France. 4-7 July, 2022.

Proceedings:

SPEAKERS and TITLES

(keynote speakers underlined)

Arezoo Ardekani (Purdue Univ., West Lafayette, USA)

Settling and swimming in density stratified fluids

Francois Blanchette (UC Merced, Merced, USA)

Modeling and Simulations of Marine Aggregates

Marco Boetti (Tel Aviv Univ., Tel Aviv, Israel)

Inertial particles crossing a stratified turbulent/non-turbulent interface

Guido Boffetta (Univ. Torino, Torino, Italy)

Dusty Rayleigh-Taylor turbulence: inertial effects in unstable stratified flows

Herman Clercx (TU Eindhoven, Eindhoven, The Netherlands)

On dispersion, preferential concentration and settling of inertial particles in stratified turbulence

Sarah Christin (IRPHE, Marseille, France)

Fluid-structure interaction of a cylinder in a stratified fluid

Abigaël Darvenne (IMFT, Toulouse, France)

Generation of impulse waves by a granular flow

Ratul Dasgupta (IIT Bombay, Mumbai, India)

Dimples, jets and drops from capillary-gravity waves at a density interface

Lingyun Ding (Univ. North Carolina, Chapel Hill, USA)

Critical density triplets for the arrestment of a sphere falling in a sharply stratified fluid

Hideshi Hanazaki (Univ. Tokyo, Tokyo, Japan)

Jets and wakes of a sphere moving vertically in a stratified fluid

Quentin Kriaa (IRPHE, Marseille, France)

Iron snow in planetary interiors: inert and reactive particle clouds settling in still and rotating environments

Raman Kuppa Ashoke (Otto-von-Guericke Univ., Magdeburg, Germany)

Fluid mechanics of emulsification through cavitation in a water-in-oil system

Detlef Lohse (Univ. Twente, Enschede, The Netherlands)

Bouncing oil droplet in a stratified liquid and its sudden death

Maylis Landeau (IPGP, Paris, France)

Instability, mixing and drop fragmentation during a giant planetary impact

Patrice Le Gal (IRPHE, Marseille, France)

Swimming of a ludion in a stratified sea

Yanshen Li (Univ. Twente, Enschede, The Netherlands)

Marangoni instabilities of drops of different viscosities in stratified liquids

Richard McLaughlin (Univ. North Carolina, Chapel Hill, USA)

A first-principle mechanism for particulate aggregation and self-assembly in stratified fluids

Rabah Mehaddi (LEMETA, Nancy, France)

Theoretical study of a particle moving in a stratified rotating fluid

Matthieu Mercier (IMFT, Toulouse, France)

Mixing induced by settling objects in a stratified fluid

Nicola Mingotti (Univ. Cambridge, Cambridge, UK)

Particle-laden plumes in the ocean: implications for deep-sea mining

Magdalena Mrokowska (Polish Acad. Sci., Warsaw, Poland)

Dynamics of disk settling in two-layered liquid with non-linear density transition

Ragavendiran Muniyammal (IIT Kanpur, Kanpur, India)

An oscillating bubble passing through the liquid-liquid interface

Ramana Patibandla (IIT Madras, Chennai, India)
Fluid drift of a sphere settling in a stratified medium

Jennifer Prairie (UC San Diego, San Diego, USA)
Delayed settling of marine aggregates at sharp density gradients and implications for the ocean carbon cycle

Anubhab Roy (IIT Madras, Chennai, India)
Drag and deformation of a drop settling in a linearly stratified fluid

Aadil Saifi (IISc Bhopal, Bhopal, India)
Effect of outer viscosity and surface tension gradients on coalescence of a drop

Pramodt Srinivasula (IIT Bombay, Mumbai, India)
Coupled nonlinear deformation oscillations of a pair of anchored water droplets under an electric field

Tadd Truscott (KAUST, Jeddah, Saudi Arabia)
Reducing the forces of water entry

Bruno Voisin (LEGI, Grenoble, France)
Added mass in the presence of density stratification

Jie Zhang (Xi'an Jiaotong Univ., Xi'an, China)
Jet instability of a vertically moving sphere in a highly stratified fluid

Xinchen Zhang (TU Wien, Vienna, Austria)
Dynamics of neutrally buoyant particles in thermally stratified turbulent channel flows

18-12 *IUTAM Symposium on Data-Driven Mechanics*

Chairperson: Francisco Chinesta
Proceedings were not published.

Location: Paris, France

26-28 October, 2022.

Programme:

OCTOBER 26th: MORNING

| | |
|----------------------|---|
| 08:30 - 09:15 | Plenary Lecture #1 Eleni CHATZI, ETH, Switzerland Robust Dynamical Systems Monitoring: Learning by Modeling |
| 09:15 - 09:45 | Data-driven harmonic analysis for multi-scale construction of arbitrary anisotropic damage models with minimal number of internal variables. J. Yvonnet, Qi-Chang HE, Pengfei LI |

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|----------------------|---|
| 09:45 - 10:15 | Convolutional neural network for computational homogenization of heterogeneous materials. F. Aldakheel, P. Wriggers |
| 10:15 - 10:45 | Physics knowledge as an inductive bias in scientific machine learning. Q. Hernandez, B. Moya, A. Badias, F. Chinesta, E. Cueto. |
| 11:15 - 11:45 | Combination of an adaptive FFT-based model order reduction technique and a clustered description of the microstructure J. Waimann, C. Gierden, A. Schmidt, B. Svendsen, S. Reese |
| 11:45 - 12:15 | Data-Driven methods for computational homogenization: Microstructure reconstruction and accelerated multiscale schemes. K.A. Kalina, P. Seibert, L. Linden, A. Raßloff, M. Kästner |
| 12:15 - 12:45 | Generative models approach on TFM data based on variational inference for multi-fidelity data generation. G.E. Granados, G. Colomera, F. Gatti, S. Robert, R. Miorelli, D. Clouteau. |

OCTOBER 26th: AFTERNOON

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|----------------------|--|
| 13:45 – 14:15 | A nonparametric probabilistic method for physics-based data-driven modeling, uncertainty quantification, and digital twinning. C. Farhat, M.J. Azzi, C. Ghnatios |
| 14:15-14:45 | Dimensional and parameter space reduction in computational mechanics. G. Rozza |
| 14:45 - 15:15 | Hybrid modelling for decision making in critical systems. V. Champany, D. Di Lorenzo, A. Pasquale, A. Ammar, M. Kazemzadehparsi, D. Baillargeat, E. Cueto, F. Chinesta. |
| 15:15 - 15:45 | Hybrid twins based on optimal transport. S. Torregrosa, V. Champany, A. Ammar, V. Herbert, F. Chinesta |
| 16:15 - 16:45 | Explainability of data-driven turbulence models based on sparse Bayesian learning. S. Cherroud, X. Merle, P. Cinnella, X. Gloerfelt |
| 16:45 - 17:15 | Deep reinforcement learning for fluid mechanics. E. Hachem, P. Meliga, H. Ghraieb, R. Nemer, A. Goetz, R. Valette, P.J. Rico, J. Viquerat, A. Larcher |
| 17:15 - 19:15 | Express Presentations (3-minute videos pertaining to poster presentations) |

OCTOBER 27th: MORNING

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|----------------------|---|
| 08:30 - 09:15 | Plenary Lecture #2 Yannis KEVREKIDIS, Johns Hopkins University, USA No equations, no variables, no parameters, no space, no time. Data and the modeling of complex systems |
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|-----------------------|---|
| 09:15 - 09:45 | Discrete and continuous symmetry reduction for chaotic fluid flow in two dimensions. S. Kneer, G. Rigas, N.B. Budanur |
| 09:45 - 10:15 | PGD framework for non-linear beam dynamics. S. Rishmawi, F.P. Gosselin |
| 10:15 - 10:45 | Accelerating inverse analyses with non-local model order reduction via projection-tree reduced order modeling. S.N. Rodriguez, N.A. Apetre, A.P. Iliopoulos, J.C. Steuben, A.J. Birnbaum, J.G. Michopoulos |
| 11: 15 - 11:45 | Quasi real time optimization of turbulent mixed convection flows by using a POD surrogate genetic algorithm. M. Oulghelou, C. Béghein, C. Allery, A. Hamdouni, D. Razafindralandy |
| 11: 45 - 12:15 | Locally-reduced FETI for the efficient solution of transient problems with local nonlinearities. B. Nijhuis, J. Havinga, H.J.M. Geijselaers, A.H. van den Boogaard |
| 12:15 - 12:45 | Piecewise-quadratic approximation manifold for delaying the Kolmogorov barrier in nonlinear projection-based model order reduction. J. Barnett, C. Farhat |

OCTOBER 27th: AFTERNOON

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|----------------------|---|
| 14:00 - 14:30 | Multi-fidelity physics-constrained neural network with minimax. D. Liu, Y. Wang |
| 14:30 - 15:00 | Unifying framework for data-driven linear modeling. J.C. Loiseau, S.L. Brunton |
| 15:00 - 15:30 | Integrating catalog data with topology optimization using neural networks. S. Sridhara, A. Chandrasekhar, K. Suresh |
| 15:30 - 16:00 | Overcoming non-locality in model order reduction of smoothed particle hydrodynamics with graph neural networks. L.K. Magargal, S.N. Rodriguez, J.W. Jaworski, A.P. Iliopoulos, J.G. Michopoulos |
| 16:30 - 17:00 | Higher order invariant manifolds parameterization of geometrically nonlinear structures modelled with large finite element models. A. Vizzaccaro, A. Opreni, A. Martin, L. Salles, A. Frangi, C. Touzé |
| 17:00 - 17:30 | Data-oriented constitutive modeling. R. Shoghi, J. Schmidt, A. Hartmaier |
| 17:30 - 18:00 | Thermodynamically admissible reinforcement learning in the development of cognitive digital twins. B. Moya, A. Badías, D. González, F. Chinesta, E. Cueto |

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| 18:00 – 18:30 | Data-driven multiscale methods for the design of short fiber reinforced polymer components: An industrial perspective. F. Welschinger |
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OCTOBER 28th: MORNING

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|------------------------|--|
| 08:30 - 09:15 | Plenary Lecture #3 George KARNIADAKIS, Brown University, USA The next generation of neural operators |
| 09:15 - 09:45 | Hybrid machine learning approach to exploit process-structure linkages of friction surfacing driven by experimental and numerical data. F.E. Bock, Z. Kallien, N. Huber, B. Klusemann |
| 09:45 - 10:15 | Clustering-based hyper-reduced order solver for contact mechanics. S. Le Berre, I. Ramière, D. Ryckelynck |
| 10:15 - 10:45 | On the Development of Minimal State-Space Neural Networks to Model History Dependent Material Behavior. C. Bonatti, J. Heidenreich, D. Mohr |
| 11: 15 - 11: 45 | Data-driven material modeling employing the theory of representations for tensor functions. J.N. Fuhg, D. Peters, N. Bouklas |
| 11: 45 - 12: 15 | Physics-informed neural networks derived from a mCRE functional for constitutive modelling. A. Benady, L. Chamoin, E. Baranger |
| 12:15 - 12:45 | A deep learning approach for phase-field fracture modeling. Manav, R. Molinaro, S. Mishra, L. De Lorenzis |

OCTOBER 28th: AFTERNOON

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|----------------------|---|
| 14:00 - 14:30 | A mechanics-informed data-driven framework for learning the constitutive modeling of nonlinear elastic and viscoelastic materials. F. As'ad, C. Farhat |
| 14:30 - 15:00 | A model-free data-driven paradigm for multi-scale mechanics. F.F. Rocha, A. Platzer, A. Leygue, M. Ortiz, L. Stainier |
| 15:00- 15:30 | A thermodynamically compatible, data-driven computational approach for history-dependent materials. P. Ladeveze, D. Neron, P.W. Gerbaud |
| 16h00 - 16h30 | Model-free data-driven mechanics. M. Ortiz |
| 16h30-17h00 | Robotic multiaxial testing and multiphysics data driven modeling for Digital Twins relevant to naval sustainment applications. J. Michopoulos |

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| 17h00 - 17h30 | Convolution hierarchical deep learning neural network (C-HiDeNN)-FEM for process design and performance prediction of material systems. W.K. Liu, Y. Lu, C. Park |
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POSTERS

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| Data-driven kinematics-consistent model order reduction of fluid-structure interaction problems: application to microcapsules in flow. A.V. Salsac, C. Dupont, F. De Vuyst |
| Inverse design of 2D auxetic porous metamaterials using deep learning. C. Zhang, J. Xie, Y.F. Zhao, A. Shanian, M. Kibesy |
| Machine learning methods to predict invariant surface elastic properties in FCC metals. X. Chen, R. Dingreville, T. Richeton, S. Berbenni |
| Data-driven space-dependent mixtures of RANS models for uncertainty quantification in turbulent flow predictions. C. Roques, M. De Zordo-Banliat, G. Dergham, X. Merle, P. Cinnella |
| Parsimonious shape-parametrized reduced order model for aerodynamic optimization. K. Naffer-Chevassier, F. De Vuyst, Y. Goardou, Y. Tourbier |
| Transfer learning from a data-driven melt pool dynamics model for improved defect detection in laser powder bed fusion. S. Larsen, P.A. Hooper |
| Digital twins of defects for artifact-free tomographic reconstruction and improved life span estimation of layered materials. J.C. Steuben, B.D. Graber, A.P. Iliopoulos, J.G. Michopoulos |
| A meta-framework for machine learning reconstruction of multi-physics datasets with gaps. J.C. Steuben, S.N. Rodriguez, J.G. Michopoulos |
| Higher order and non-linear dynamic mode decomposition. A.P. Iliopoulos, S.N. Rodriguez, J.G. Michopoulos |
| Discovery of mechanics laws by proper orthogonal decomposition reduction of ensembles of experimental force-acceleration data (time series) acquired in continuum flexible structures. I.T. Georgiou |
| Data-driven process modeling of stretch broken carbon fiber composites. D.S. Cairns, R. Amendola, D. Bajwa, M. Egloff, C. Ridgard, C. Ryan |
| Experimental study of chip formation during orthogonal cutting in titanium alloy: Contribution of machine learning to large scale image analysis. A. Pouliquen, L. Gallegos-Mayorga, C. Mareau, Y. Ayed, G. Germain |

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| Data-driven surrogate modeling for design exploration: Prototyping challenges and review. O. Bettinotti, J. Bi, V. Oancea |
| A deep learning framework for the mechanical analysis of fibre composite adhesive. A. Khan, C. Balzani |
| Using microstructural data to inform multi-physics modeling of pitting corrosion. P.T. Brewick |
| Predicting the transient dynamics of multistory buildings under earthquake load via deep adversarial network. G. Colombera, F. Gatti |
| Learning simulators with thermodynamics and geometry. Q. Hernández, A. Badías, F. Chinesta, E. Cueto |
| Metal additive manufacturing process-structure-property relational linkages using Gaussian process surrogates. R. Saunders, A. Elwany, J. Michopoulos, D. Lagoudas |
| Topology optimization for heat and mass transfer systems using adjoint and reinforcement learning methods. W.A. Nour, J. Jabbour, D. Serret, P. Meliga, E. Hachem |
| Deep learning strategies for predictive modeling of turbulent multiphase flows. A. Patil, J. Viquerat, E. Hachem |
| Exploiting deep graphical models for multiphase flow problems. G. El Haber, J. Viquerat, A. Larcher, D. Ryckelynck, E. Hachem |
| Hybrid elastoplasticity with data-driven yielding and model-based hardening. J.N. Fuhg, N. Bouklas |
| On the best (constructive) approximation of square matrices in Laplacian-like form. J.A. Conejero, A. Falcó, M. Mora Jiménez |
| Learning the flow around arbitrary obstacles by convolutional autoencoders. C. Bermejo, A. Badías, D. González, F. Chinesta, E. Cueto |
| Data-driven modeling of the plastic yield behaviour of nanoporous metals under multiaxial loading L. Dyckhoff, N. Huber |
| Data-driven determination of heterogenous CTE via spatially-resolved, diffraction-based sensing. A. Birnbaum, N. Apetre, B.A. Rawlings, B. Graber, J.C. Steuben, A. Iliopoulos, S. Rodriguez, J. Michopoulos |

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| A data-driven approach using neural network for real-time modeling of spot-welded patches under impact. A. Pulikkathodi, E. Lacazedieu, L. Chamoin, J.P. Berro Ramirez, L. Rota, M. Zarroug. |
| Modeling systems from partial observations. L. Irastorza-Valera, A. Runacher, E. Cueto, L. Saucedo-Mora, F. Chinesta |
| Data-driven modelling of the filament shape evolution in fused filament fabrication process. A. Runacher, A. Pasquale, M. Kazemdeh-Parsi, A. Ammar, T. Joffre, C. Salvan, C. Ghnatios, E. Cueto, F. Chinesta |
| Smart sampling design methods for classification and regression in high dimensional problems. C. Guilhaumon, M. Lavarde, N. Hascoët, F. Chinesta |
| Data-driven 1D site response. J. Garcia-Suarez, A. Cornet, S. Wattel, J.F. Molinari |
| Coupling of regular FEM and data-driven elements. by J. Garcia-Suarez, S. Wattel, J.F. Molinari |
| Learning the microstructure-property relation: a comparison of forward and inverse approaches P. Potapenko, A. Demirci, S. Bompas, B.D. Nguyen, K. Govind, S. Sandfeld. |
| On the use of manifold learning tools for coherent object interpolation based on geometrical and topological descriptors. E. Nadal, D. Muñoz, F. Chinesta, O. Allix, J.J. Ródenas. |
| Designing recurrent cells to enforce stability in real-time dynamical simulations L. Pottier, A. Thorin. |
| Geometric deep learning of structure-property relationships. P. Meyer, J. Heidenreich, C. Bonatti, T. Tancogne-Dejean, D. Mohr. |

20-01 *IUTAM Symposium: From Stokesian Suspension Dynamics to Particulate Flows in Turbulence*

Chairperson: Martin Maxey Location: Toulouse, France 29 August – 2 September, 2022.
Proceedings were not published.

Programme:

Tuesday, August 30th

9:00 -9:30 Welcome address by **E. Climent**, **M. Abbas** and **E. Keaveny**

9:30 -10:00 Opening session by **M.R. Maxey**

10:00 -10:45 **Invited Lecture: George Em Karniadakis** -Discovering Hidden Fluid Mechanics via Physics-Informed Neural Networks: 11:15 -11:55: Particle capture by large deformable drops in turbulent flow - **Cristian Marchioli**; A stochastic model for the drag force acting on a

suspension of particles - **Jesse Capecelatro**: 11:55 -12:25 Session 2: Developing Ultrasound Techniques to Characterize Fluid-Particle Flows - **Fria Hossein**; Modelling turbulent dispersion using neural stochastic differential equations - **Josh Williams**: 14:00 -14:30 **Keynote Lecture: Marco Ellero** - Fluid dynamics of coffee extraction: 14:30 -15:20: Smoothed Particle Hydrodynamics and Discrete Element Method coupling for suspensions of extremely deformable particles - **Francisco Goio**; Implementing a hybrid immersed boundary/fictitious domain (HFD-IB) method coupled with Discrete Element Method (DEM) to consider lubrication effects between the particles in the fluid domain - **Sina Hassanzadeh**; Collision interactions in bidispersed mixture of particles in a vertical channel flow - **Karan Anand**; Near-wall swimming of helical ribbons - **Serhat Yesilyurt**: 16:00 - 16:50: Droplet dynamic in an uniform oscillatory flow, expression and impact of the Basset-Boussinesq history force - **Hadrien Godé**; Accurate advection of particle with history force at fixed numerical cost - **Divya Jaganathan**; Numerical Simulations of Sediment Transport in Transition Between Stokes and Bagnoldian Regimes - **Sudarshan Konidena**; Effect of particle inertia on turbulent fluid flows dispersing particles in a channel - **Yoichi Mito**: 16:50 - 17:10: Grain-resolving simulations of submerged cohesive granular collapse – **Eckart Meiburg**

Wednesday, August 31st

09:00 -09:45 **Keynote Lecture: E. Lemaire** - The role of contact forces in the shear-thinning behavior of non-Brownian suspensions: 9:45 -10:30: Wall-impact breakage of agglomerates in particle-laden flows: Advanced modeling based on artificial neural networks - **Ali Khalifa**; 3D, adaptive octree-grid and conservative numerical simulation of the unbounded flow past a non-spherical obstacle - **Layal Jbara**; Experimental lock-release turbidity currents: slope, volume fraction and settling velocity - **Cyril Gadal**: 11:00 -11:40: Microstructure-informed models of hydrodynamic force and torque in a static random array of spheres - **Anthony Wachs**; Data-driven spatial decomposition algorithm for particle agglomeration in hybrid Euler-Lagrange approaches - **Christophe Henry**: 11:40 -12:30: A fully Eulerian, conservative and adaptive framework for the simulation of biological capsules - **Damien Huet**; Simulation of particulate suspensions in non-linear flows: formulation of frame invariant sub-grid corrections to the Fictitious Domain Method - **Michel Orsi**; Direct numerical simulation of fluid-solid particles flows using front-tracking approach - **Edouard Butaye**; Simulation of low-speed micro-scale particulate motion in gases - **Duncan Lockerby**: 14:00-14:30 **Invited Lecture: S. Balachandar** - A statistical framework for examining well-mixedness in turbulent dispersion of particles – application to room-scale airborne viral contagion: 14:30 -15:10: Rheology of dense suspension in plane Couette flow: influence of solid friction - **Wim-Paul Breugem**; Low-Reynolds number suspensions of plate-like particles with slip - **Lorenzo Botto**: 15:10 -16:00: Particle wall deposition in turbulent natural convection flows in enclosed cavities with thermally active walls. - **Akim Lavrinenko**; Modelling particle deposition of non-spherical particle mixtures in a channel flow by a fully-resolved CFD-DEM method - **Leonie Walter**; Lagrangian statistics in a turbulent round jet - **Thomas Basset**; Capturing the mechanisms for gravitational settling of inertial particles in turbulence using the kinetic PDF approach - **Christopher Stafford**: 16:30 -17:10: Dynamics and Structure in Sheared Suspensions of Fibers at High Concentration - **Jason E. Butler**; Particle-resolved simulations of sedimenting suspensions of finite-length cylinders - **Olivier Simonin**

Thursday, September 1st

9:00 -9:45 **Invited Lecture: Jeffrey Morris** - Inertial flows of suspensions: 9:45 -10:35: Bubbles rising in laterally-confined granular suspensions - **Sylvain Joubaud**; Particle velocity field structuration in oscillatory channel flow of a suspension - **Alejandro Garcia**; Interaction between turbulence and bubble-induced agitation - **Gabriel Ramirez**; Two-way coupling effects in the dusty Kolmogorov flow - **Alessandro Sozza**: 11:00 - 11:40: Caustics in turbulent aerosols - **Bernhard Mehlig**; Vertical Distribution of Microplastics in Upper-Ocean Turbulence: Laboratory Modelling - **Matthieu Mercier**: 11:40 -12:30 Session: Sedimentation of bidisperse

and polydisperse suspensions: A Stokesian dynamics study - **Heng Li**; Study of the mobile granular layer in bedload transport by laminar shearing flow in the tilted channel - **Chong-Wei Hong**; On the settling of inert and reactive particle clouds in still and rotating environments: modeling iron snow in planetary interiors - **Quentin Kriaa**; Nonlinear waves in particle-laden free surface flows - **Darish Jeswin Dhas**: 14:00 -14:30 **Keynote Lecture: Mickael Bourgoin** - Settling of particles in quiescent fluids and turbulent flows: 14:30 -15:10: Resuspension of large inertial particles in a turbulent swirling flow - **Romain Volk**; Two-way coupling of falling particles in homogenous turbulence - **Filippo Coletti**: 15:10 -16:00: Development of Echo-LPT for the study of particle-wall interactions in dense suspensions - **David Rival**; Experimental Study of Liquid-liquid jet fragmentation: Eulerian and Lagrangian approach - **Bowen Ji**; Particulate elasto-inertial Taylor-Couette flow - **Tom Lacassagne**; Fully resolved simulations of a particle-laden jet - **Thede Kiwitt**: 16:30 -17:30: Small-scale topologies anisotropy and energy transfer in turbulent fluidization - **Simon Schneiderbauer**; Statistics of velocity fluctuations in a finite Reynold-number concentrated fluidized suspension - **Frédéric Risso**; Spectral analysis of bubble induced turbulence from coarse-grained simulations - **Rémi Zamansky**

Friday, September 2nd

9:00 -9:30 **Keynote Lecture: Blaise Delmotte** - Large scale simulations of active and reactive suspensions: 9:30 -10:30: Settling turbulent suspensions and exact coherent structures - **Jake Langham**; Breakup of inertial particles due to viscous shear and drag stress in turbulence - **Graziano Frungeri**; A spectral force coupling method for doubly-periodic geometries - **Raul Pelaez**: 11:00 -11:50: The dynamics of filaments driven slip flows- **Bethany Clarke**; Accelerating the force-coupling method - **Hang Su**; Collective motion of diffusion-phoretic suspensions - **Francisco Rojas-Pérez**; Continuum model for the transport of active Brownian particles in arbitrary flow field - **Lloyd Fung**

20.02 IUTAM Symposium on Data-Driven Modeling and Optimization in Fluid Mechanics

Chairperson: Jens Sørensen

Location: Aarhus, Denmark

15-17 June, 2022.

Proceedings were not published.

Programme:

Day 1 - June 15, 2022

09:00-09:20: Welcome

- [Anders Brandt](#): Head of Department, Mechanical and Production Engineering, Aarhus University (AU), Denmark
- [Jens N. Sørensen](#) & [Mahdi Abkar](#): Symposium Chairs, DTU & AU, Denmark

09:20-10:30: Session 1.1

- 09:20-10:10: Keynote. [Paola Cinnella](#), Sorbonne Université, France. Title: Bayesian machine learning for turbulence model discovery and uncertainty quantification
- 10:10-10:30: Michele Quattromini, Politecnico di Bari, Italy. Title: Graph neural network models as compliant RANS closure

10:50-12:10: Session 1.2

- 10:50-11:10: Aurélien Vadrot, Ecole centrale de Lyon, France. Title: Compressible turbulence modeling in dense gas flows with supervised machine learning
- 11:10-11:30: Kai Fukami, University of California, USA. Title: Time-varying broadcast mode analysis for airfoil wake dynamics
- 11:30-11:50: Richard Semaan, Technische Universität Braunschweig, Germany. Title: Control-oriented cluster-based network modeling

- 11:50-12:10: Soufiane Cherroud, Arts et Métiers ParisTech, France. Title: Sparse Bayesian learning of explicit algebraic Reynolds stress models

13:30-15:00: Session 1.3

- 13:30-14:20: Keynote. [Steven L. Brunton](#), University of Washington, USA. Title: Machine learning for scientific discovery, with examples in fluid mechanics
- 14:20-14:40: Tamon Nakano, Université Paris-Saclay, France. Title: Machine learning model for gas-liquid interface reconstruction in CFD numerical simulations
- 14:40-15:00: Christoffer Hansen, Aarhus University, Denmark. Title: Data-driven dynamical system models of roughness-induced secondary flows in thermally stratified turbulent boundary layers

15:20-16:20: Session 1.4

- 15:20-15:40: Emmanuel Menier, IRT- SystemX, France. Title: Complementary deep - reduced order model
- 15:40-16:00: Onofrio Semeraro, Université Paris-Saclay, France. Title: Optimal control for shear flows using reinforcement learning
- 16:00-16:20: Alasdair Roy, University of Leeds, UK. Title: Nonlinear reduced-order models for magnetoconvection in 2D

Day 2 - June 16, 2022

09:00-10:30: Session 2.1

- 09:00-09:50: Keynote. [Richard Dwight](#), Delft University of Technology, Netherlands. Title: Customized RANS turbulence closures for application in wind energy
- 09:50-10:10: Marion Coquelet, Université catholique de Louvain, Belgium. Title: Tackling control and modeling challenges in wind energy with data-driven tools
- 10:10-10:30: Navid Zehtabiyani-Rezaie, Aarhus University, Denmark. Title: Data-driven quantification of model-form uncertainty in Reynolds-averaged simulation of wind farms

10:50-12:10: Session 2.2

- 10:50-11:10: Søren Juhl Andersen, Technical University of Denmark, Denmark. Title: Stochastic and predictive reduced order modelling of wind turbine wake dynamics using proper orthogonal decomposition
- 11:10-11:30: Daniel Fernex, École Polytechnique Fédérale de Lausanne, Switzerland. Title: Cluster-based feedback blade pitch control for dynamic stall mitigation in a vertical axis wind turbine
- 11:30-11:50: Robert Braunbehrens, Technical University of Munich, Germany. Title: Learning and explaining orographic flow heterogeneities from operational data
- 11:50-12:10: Andreas Vad, Technical University of Munich, Germany. Title: Learning and explaining intra-plant flow features from operational data - Application to the offshore wind farm Anholt

13:30-15:00: Session 2.3

- 13:30-14:20: Keynote. [Luca Magri](#), Imperial College London, UK. Title: Marrying physics with data-driven methods for chaotic and extreme flows
- 14:20-14:40: Matthieu Nastorg, Université Paris-Saclay, France. Title: Accelerating mesh-based CFD simulations with deep learning
- 14:40-15:00: Ettore Saetta, University of Naples Federico II, Italy. Title: Can autoencoders predict airfoil stall?

Day 3 - June 17, 2022

09:00-10:20: Session 3.1

- 09:00-09:20: Fateme Darlik, University of Luxembourg, Luxembourg. Title: Evaluation and prediction of the biomass combustion simulation through the recurrent neural network algorithm
- 09:20-09:40: Yusuf Patel, Imperial College London, UK. Title: Mean-flow reconstruction of unsteady flows via data assimilation
- 09:40-10:00: Rupert Pache, Hamburg University of Technology, Germany. Title: Data-driven surrogate modelling of aerodynamic forces on the superstructure of container vessels
- 10:00-10:20: Joan Calafell, Barcelona Supercomputing Center, Spain. Title: Graph neural networks for wall modeling applications

10:40-11:40: Session 3.2

- 10:40-11:00: Sébastien Le Fouest, École Polytechnique Fédérale de Lausanne, Switzerland. Title: Optimal pitching kinematics for a VAWT blade
- 11:00-11:20: Ali Amarloo, Aarhus University, Denmark. Title: LES and LES-informed RANS simulations of large-scale roughness-induced secondary flows
- 11:20-11:40: Daniel Hilger, RWTH Aachen University, Germany. Title: Implementation of physically informed neural networks as a reduced order model in the free-form optimization of plastic prole extrusion dies

11:40-12:00: Closing

- [Jens N. Sørensen](#): Symposium Chair, Technical University of Denmark (DTU), Denmark
- [Mahdi Abkar](#), Symposium Co-Chair and Main Organizer, Aarhus University (AU), Denmark

20-07 IUTAM Symposium on Multiscale Architecting of Solids: Mechanics and Manufacture
Chairperson: Yujie Wei Location: Beijing, China 26-28 June, 2022.

Proceedings were not published.

Programme:

Day 1: Monday, 27 June

| No. | Venue Time | Information | Speaker Time |
|--|---------------|--|------------------------------------|
| Hosted by <i>Yujie Wei, Institute of Mechanics, Chinese Academy of Sciences, China</i> | | | |
| S-I-1 | 08:45 – 09:15 | “The mechanics of bio-inspired material intelligence” <i>Markus J. Buehler, Massachusetts Institute of Technology, United States</i> | 20:45 – 21:15 EST (UTC/GMT - 5) |
| S-I-2 | 09:20 – 09:50 | “Mechanics of extremely heterogeneous materials” <i>Ting Zhu, Georgia Institute of Technology, United States</i> | 21:20 – 21:50 EST (UTC/GMT - 5) |
| Hosted by <i>Hang Jerry Qi, Georgia Institute of Technology, United States</i> | | | |
| S-I-3 | 09:55 – 10:25 | “Architected biomaterials manufactured by living cells” <i>Taher Saif, University of Illinois at Urbana-Champaign, United States</i> | 20:55 – 21:25 CST (UTC/GMT - 6) |
| S-I-4 | 10:30 – 11:00 | “Solids in Nano-Scales-Extreme Strength and Elasticity” <i>Wei Yang, Zhejiang University, China</i> | 10:30 – 11:00 UTC/GMT +8 |
| Hosted by <i>Xiaoyan Li, Tsinghua University, China</i> | | | |

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|-------|---------------|---|-----------------------------------|
| S-I-5 | 11:05 – 11:35 | “Pushing and Pulling on Ropes: Energy Dissipation and Reconfiguration in Hierarchical Woven and Knotted Micro-Architectures” <i>Julia R. Greer, California Institute of Technology, United States</i> | 20:00 – 20:30 PT (UTC/GMT - 8) |
| S-I-6 | 11:40 – 12:10 | “Lightweight, strong and deformable micro/nanoarchitected materials” <i>Huajian Gao, Nanyang Technological University, Singapore</i> | 11:40 – 12:10 UTC/GMT +8 |

Day 2: Tuesday, 28 June

| No. | Venue Time | Information | Speaker Time |
|---|---------------|--|------------------------------------|
| Hosted by <i>Hang Jerry Qi, Georgia Institute of Technology, United States</i> | | | |
| S-III-1 | 08:30 – 09:00 | “Mechanics of Metamaterials – Origami and Kirigami” <i>Horacio D. Espinosa, Northwestern University, United States</i> | 19:30 – 20:00 CST (UTC/GMT - 6) |
| S-III-2 | 09:05 – 09:35 | “Architected Materials Beyond the Laboratory: mechanics across length and time scales” <i>Carlos M. Portela, Massachusetts Institute of Technology, United States</i> | 21:05 – 21:35 EST (UTC/GMT - 5) |
| Hosted by <i>Xiaoming Liu, Institute of Mechanics, Chinese Academy of Sciences, China</i> | | | |
| S-III-3 | 09:40 – 10:10 | “Multiscale Architected Design of Cellulose-based Materials: A Sustainable Solution to High Performance Engineering Materials” <i>Teng Li, University of Maryland, United States</i> | 21:40 – 22:10 EST (UTC/GMT - 5) |
| S-III-4 | 10:15 – 10:45 | “Friction and wear behavior depending on the microstructure of the interface” <i>Yueguang Wei, Peking University, China</i> | 10:15 – 10:45 UTC/GMT +8 |
| Hosted by <i>Fuping Yuan, Institute of Mechanics, Chinese Academy of Sciences, China</i> | | | |
| S-III-5 | 10:50 – 11:20 | “Magnetically Actuated Metamaterials for Tunable Mechanical, Acoustic, and Electromagnetic Properties” <i>Ruike Renee Zhao, Stanford University, United States</i> | 19:50 – 20:20 PT (UTC/GMT - 8) |
| S-III-6 | 11:25 – 11:55 | “Multiscale mechanics of materials via additive manufacturing” <i>Jian Lu, City University of Hong Kong, Hong Kong, China</i> | 11:25 – 11:55 UTC/GMT +8 |

| No. | Venue Time | Information | Speaker Time |
|---|---------------|---|-----------------------------|
| Hosted by <i>Xinghua Shi, The National Center for Nanoscience and Technology, China</i> | | | |
| S-IV-1 | 14:00 – 14:30 | “Abnomal elasticity in highly distorted high entropy alloys” <i>Yong Yang, City University of Hong Kong, Hong Kong, China</i> | 14:00 – 14:30 UTC/GMT +8 |
| S-IV-2 | 14:35 – 15:05 | “Fatigue of Tough Hydrogels” <i>Tongqing Lu, Xi’an Jiaotong University, China</i> | 14:35 – 15:05 UTC/GMT +8 |
| Hosted by <i>Xiaolei Wu, Institute of Mechanics, Chinese Academy of Sciences, China</i> | | | |

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|--|---------------|--|---------------------------------|
| S-IV-3 | 15:10 – 15:40 | “Heterostructured Material: New Science Produces Superior Properties” <i>Yuntian Zhu, City University of Hong Kong, Hong Kong, China</i> | 15:10 – 15:40 UTC/GMT +8 |
| S-IV-4 | 15:45 – 16:15 | “Mechanical behaviors of polymer materials in powder bed fusion additive manufacturing” <i>Kun Zhou, Nanyang Technological University, Singapore</i> | 15:45 – 16:15 UTC/GMT +8 |
| Hosted by <i>Yujie Wei, Institute of Mechanics, Chinese Academy of Sciences, China</i> | | | |
| S-IV-5 | 16:20 – 16:50 | “The finite strain in-plane response of a filled hexagonal honeycomb” <i>Norman A. Fleck, Cambridge University, United Kingdom</i> | 09:20 – 09:50 BST(UTC/GMT+1) |
| S-IV-6 | 16:55 – 17:25 | Sound bite 3 min video presentation with 5 ppt slides per author | Recorded in advance |

20-10 IUTAM Symposium on Enhancing Material Performance by Exploiting Instabilities and Damage Evolution

Chairpersons: Katarzyna Kowalczyk-Gajewska, Ankit Srivastava

Location: Warsaw, Poland

5-10 June, 2022.

Proceedings were not published.

Programme:

Monday, June 6, 2022

11:00–11:35 Welcome Remarks and Opening Session

Session 01 Chair: J.A. Rodríguez-Martínez

11:35–12:10 G. Subhash* and A.A. Cheenady – Shock-Induced Spallation in Monocrystalline Boron Carbide, University of Florida (USA)

12:10–12:45 S.M. Keralavarma – Constitutive Effects on Failure by Strain Localization in Ductile Materials, Indian Institute of Technology Madras (India)

Session 02 Chair: B. Revil-Baudard

14:00–14:35 B. Schroeders, T. Oudes, O. Rokoš, R. Peerlings, M. Geers, O. Faltus, M. Horák, M. Doškář, M. Jirásek and J. Zeman – Harnessing Microscale Buckling Instabilities to Control Macroscale Stiffness, Eindhoven University of Technology (Netherlands)

14:35–15:10 P. Taylor, J. Londono, P.B. Woelke and J.W. Hutchinson – Investigation of Effect of Plate Thickness on Ductility for Engineering Applications, Thornton Tomasetti (UK)

Session 03 Chair: K.L. Nielsen

15:30–16:05 M. Rezaee-Hajidehi, P. Sadowski and S. Stupkiewicz – Phase-Field Model for Spatially Resolved Deformation Twinning Coupled with Crystal Plasticity, IPPT PAN (Poland)

16:05–16:40 N. Hosseini, J.C. Nieto-Fuentes, M. Dakshinamurthy, J.A. Rodríguez-Martínez and G. Vadillo – The Effect of Material Orientation on Void Growth, University Carlos III of Madrid (Spain)

16:40–17:15 O. Cazacu and B. Revil-Baudard – Size of the Plastic Zone Near a Crack: New Exact Solutions, University of Florida (USA)

17:30–20:00 **Poster Session**

List of Posters:

- J. Dobrzański, K. Wojtacki and S. Stupkiewicz – Lamination-Based Efficient Treatment of Weak Discontinuities for Non-Conforming Finite-Element Meshes
- V.P. Dubey, M. Kopec and Z.L. Kowalewski – The Effect of Predeformation History Under Complex Loading on the Yield Surface Evolution of Titanium Alloy: An Experimental Investigation
- K. Frydrych and S. Papanikolaou – Structure-Based Optimization of Crystal Plasticity Parameters in Metals and

Alloys

- M. Majewski, M. Wichrowski, P. Hołobut and K. Kowalczyk-Gajewska – Micromechanical and Numerical Analysis of Shape and Packing Effects
- in Elastic-Plastic Particulate Composites
- S. Musiał, M. Maj, L. Urbański and M. Nowak – Field Analysis of Energy Conversion During Plastic Deformation Process
- M. Nabavian Kalat, M. Staszczak, Y. Ziai, L. Urbański and E. Pieczyska – Effect of Shape Recovery and Cyclic Loading on the Evolution of Micro-Cracks in Shape Memory Polymers
- M. Rezaee-Hajidehi, K. Tůma and S. Stupkiewicz – Stress-Induced Martensitic Transformation in Shape Memory Alloys During Nano-Indentation: Insights From Phase-Field Simulations
- M. Ryś, S. Stupkiewicz and H. Petryk – Gradient-Enhanced Crystal Plasticity Model with Micropolar Regularization: Prediction of the Indentation Size Effects
- S. Virupakshi, K. Frydrych and K. Kowalczyk-Gajewska – Effect of Boundary Conditions and Crystallographic Orientation on the Cylindrical Void Growth in FCC Single Crystals Using CPFEM

Tuesday July, 6 2022

Session 04 Chair: R. Zhao

9:30–10:05 C. Combescure – Prediction of Instabilities in Periodic Architected Materials to Actively Modify Wave Propagation Properties, Université Bretagne Sud (France)

10:05–10:40 J.J. Rimoli and J.A. Kraus – Discontinuous Compression Structures: From Tensegrity Planetary Landers to High-Performing Metamaterials, Georgia Tech (USA)

10:40–11:15 A.F. Arrieta – Multistable Metastructures from Local Bistable Units: Actuation Simplification and Information Processing, Purdue University (USA)

Session 05 Chair: C. Czarnota

11:35–12:10 T. Cohen – Nonlinear Inclusion Theory with Application to the Growth and Morphogenesis of a Confined Body, Massachusetts Institute of Technology (USA)

12:10–12:45 W. Sumelka and P. Stempin – On Selected Space-Fractional Structural Models, Poznań University of Technology (Poland)

Session 06 Chair: N. Lu

14:00–14:35 V.S. Deshpande – Micro-Architected Solids: Does Toughness Characterise Fracture?, University of Cambridge (UK)

14:35–15:10 S. Gaitanaros – Strength and Toughness of Lattice Materials, Johns Hopkins University (USA)

Session 07 Chair: R. Peerlings

15:30–16:05 A.A. Benzerga – On the Effects of the Third Stress Invariant in Ductile Failure, Texas A&M University (USA)

16:05–16:40 H. Petryk – Path Instability Criterion for Non-Potential Problems in Rate-Independent Plasticity, IPPT PAN (Poland)

Wednesday June 8, 2022

Session 08 Chair: C. Combescure

9:30–10:05 N. Lu – Poking and Bulging of 2D Crystals, University of Texas Austin (USA)

10:05–10:40 R. Zhao – Functional Buckling and Folding of Ring Origami, Stanford University (USA)

10:40–11:15 S. Basu – Sensitivity of Very Soft Solids to Stimuli and Surface Effects, Indian Institute of Technology Kanpur (India)

Session 09 Chair: T. Cohen

11:35–12:10 W.A. Curtin – Exploiting the Randomness of High Entropy Alloys, EPFL (Switzerland)

12:10–12:45 M.J. Demkowicz – The Effect of Hydrogen on Localized Plasticity and Crack Initiation in Nickel-Base Alloy 725, Texas A&M University (USA)

Session 10 Chair: S.M. Keralavarma

14:00–14:35 J. Xie and K. Ravi-Chandar – Exploration of Ductile Failure Processes in an Aluminum Alloy Through X-Ray CT Scan and Microscopy, University of Texas Austin (USA)

14:35–15:10 M. Radovic and A. Srivastava – Enhancing Damage Tolerance and Crack Healing in Ceramics by Kinking: The Case of MAX Phases, Texas A&M University (USA)

Session 11 Chair: A.F. Arrieta
 15:30–16:05 W.J. Meng, X. Zhang, B. Zhang, A.C. Meng, R. Namakian, D. Moldovan and K.L. Nielsen – Understanding Mechanical Integrity of Metal/Ceramic Interfacial Regions and Mechanical Response of Plastic Deformation at the Micro/Meso Scales, Louisiana State University (USA)
 16:05–16:40 S. Osovski and S. Tsopanidis – Extracting Grain Boundary Toughness from Macro-Scale Experiments, Technion- Israel Institute of Technology (Israel)

Thursday, July 9, 2022

Session 12 Chair: S. Stupkiewicz
 9:30–10:05 S. Forest, J.-M. Scherer, V. Phalke and J. Besson – Grain Boundaries as Barriers Against Shear Banding and Crack Propagation in Ductile Polycrystals: A Gradient Crystal Plasticity Approach, Mines ParisTech (France)
 10:05–10:40 K.L. Nielsen, J.E. Simon, R.G. Andersen and C. Tekoglu – Plate Bending: Localization and Fracture Triggered by Heterogeneities, Technical University of Denmark (Denmark)
 10:40–11:15 J.A. Rodríguez-Martínez – The Effect of Actual Porous Microstructure on the Formation of Dynamic Necks, Adiabatic Shear Bands and Plastic Shock Waves, University Carlos III of Madrid (Spain)

Session 13 Chair: S. Gaitanaros
 11:35–12:10 C.F. Niordson – On Effects of Void Clustering on Yield Surfaces, Technical University of Denmark (Denmark)
 12:10–12:45 E. Chiu, A. Needleman, S. Osovski and A. Srivastava – Mitigating Spall Fracture of Ductile Materials by Introducing Porosity, Texas A&M University

Session 14 Chair: S. Basu
 14:00–14:35 C. Czarnota, A. Molinari and S. Mercier – Steady Shock Wave in Porous Metals: Viscous & Micro-Inertia Effects Interplay, Université de Lorraine (France)
 14:35–15:10 B. Revil-Baudard – Multi-Scale Modeling of Energetic Materials Under High Strain Rate Loadings, University of Florida (USA)

Session 15 Chair: G. Vadillo
 15:30–16:05 K. Kowalczyk-Gajewska and S. Virupakshi – Evolution of Lattice Orientation Heterogeneity in HCP Single Crystals Due to Void Growth, IPPT PAN (Poland)
 16:05–16:40 A. Srivastava – Defects, Crack Path and Crack Growth Resistance, Texas A&M University (USA)

20-13 *IUTAM Symposium on Optimal Design and Control of Multibody Systems: Adjoint Methods, Alternatives and Beyond*

Chairperson: Alexander Held Location: Hamburg, Germany 18-21 July, 2022

The Proceedings are published in the IUTAM Bookseries as IUTAMBOOK Volume 42 to be found at : <https://link.springer.com/book/10.1007/978-3-031-50000-8>

Programme:

Monday, July 18, 2022

Session 1: Optimal Control

Chair: Wolfgang Steiner

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| 11:00 | <i>On generalized momentum maps in the optimal control of multibody systems</i> <u>Simeon Schneider</u> , Peter Betsch Karlsruhe Institute of Technology, Germany |
| 11:30 | <i>High-fidelity Multibody Systems in Model-based Control Applications</i> <u>Grzegorz Orzechowski</u> , Aki Mikkola LUT University, Finland |
| 12:00 | <i>Linearization approach for the state transition model in a discrete extended Kalman filter</i> <u>Lauri Pyrhönen</u> , Suraj Jaiswal, Aki Mikkola LUT University, Finland |

Keynote 1

Chair: Alexander Held

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| 13:30 | <i>Structural design optimization of dynamic systems</i> <u>Erich Wehrle</u> Free University Bozen-Bolzano, Italy |
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Session 2: Optimal Design

Chair: Dieter Bestle

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| 14:30 | <i>Automated Analysis and Optimization of Flexible Bodies in Multibody Systems</i> <u>Alexander Held</u> , Tobias Rückwald, Ali Azari-Nejat Hamburg University of Technology, Germany |
| 15:00 | <i>Topology Optimization in Multibody Systems Using The Adjoint Variable Method And The Flexible Natural Coordinates Formulation</i> <u>Simon Vanpaemel</u> , Martijn Vermaut, Wim Desmet, Frank Naets KU Leuven, DMMS Core Lab, Belgium |

Session 3: Optimal Design

Chair: Timo Schmidt

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| 16:00 | <i>Derivation of Geometrically Parameterized Shell Elements in the Context of Shape Optimization</i> <u>Manuel Vierneisel</u> , Florian Geiger, Manfred Bischoff, Peter Eberhard University of Stuttgart, Germany |
| 16:30 | <i>Kinematic and dynamic optimization of the steering of a tilting tricycle</i> <u>Daniel Dopico Dopico</u> , Álvaro López Varela, Alberto Luaces Fernández, Emilio Sanjurjo Maroño Universidade da Coruña, Spain |
| 17:00 | <i>Topology Optimization for Eigenfrequencies of a Flexible Multibody System</i> <u>Jialiang Sun</u> ¹ , Qiang Tian ² , Haiyan Hu ^{1,2} 1: Nanjing University of Aeronautics and Astronautics, China 2: Beijing Institute of Technology, China |

Tuesday, July 20, 2022

Session 4: Optimal Control

Chair: Jorge Ambrosio

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| 09:00 | <i>Funnel control of multi-body systems under input constraints</i> <u>Thomas Berger</u> Paderborn University, Germany |
| 09:30 | <i>Exact tracking in prescribed finite time via funnel control</i> <u>Lukas Lanza</u> Paderborn University, Germany |
| 10:00 | <i>An Optimized Control Framework for the Flight Energy-saving of a Flock of Flapping Wing Robots</i> <u>Yuanzhe Cui</u> ¹ , Wei Zhu ¹ , Yichao Shen ^{1,2} , Peter Eberhard ² , Qirong Tang ¹ 1: Tongji University, China 2: University of Stuttgart, Germany |

Session 5: Optimal Control

Chair: Karin Nachbagauer

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| 11:00 | <i>An Adjoint Method for Time Optimal Control Problems with General End Conditions for Multibody Systems</i> <u>Wolfgang Steiner</u> , Philipp Eichmeir, Karin Nachbagauer University of Applied Sciences Upper Austria, Austria |
| 11:30 | <i>The Adjoint Method for Optimal Control Problems Involving Inequality Constraints</i> <u>Philipp Eichmeir</u> , Karin Nachbagauer, Wolfgang Steiner |

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| | University of Applied Sciences Upper Austria, Austria |
| 12:00 | <i>Discrete Adjoint Variable Method Applied to Semi-recursive Augmented Lagrangian Index-3 formulations with projections</i> <u>Álvaro López Varela</u> , Daniel Dopico Dopico, Alberto Luaces Fernández Universidade da Coruña, Spain |

Keynote 2

Chair: Karin Nachbagauer

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| 13:30 | <i>Optimization Processes for Automated Design of Industrial Systems</i> <u>Dieter Bestle</u> BTU Cottbus-Senftenberg, Germany |
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Session 6: Optimal Design

Chair: Ali Azari Nejat

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| 14:30 | <i>Dynamics of Rotating Systems : A Two-Field Formulation</i> <u>Michel Géradin</u> ^{1,2} , Valentin Sonneville ² 1: University of Liège, Belgium 2: Technical University of Munich, Germany |
| 15:00 | <i>Direct Differentiation of the Floating Frame of Reference Formulation for Gradient-Based Design Optimization</i> <u>Veit Gufler</u> ^{1,2} , Andreas Zwölfer ² , Erich Wehrle ^{1,3} 1: Free University of Bozen-Bolzano, Italy 2: Technical University of Munich, Germany 3: Collins Aerospace, Munich, Germany |

Session 7: Optimal Control

Chair: Robert Seifried

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| 16:00 | <i>Development of a Mechatronic Pantograph for Improved Contact with Overhead Catenary</i> Pedro Ramalho ¹ , Pedro Antunes ^{1,2} , Paulo Oliveira ¹ , <u>Jorge Ambrósio</u> ¹ 1: University of Lisbon, Portugal 2: University of Huddersfield, United Kingdom |
| 16:30 | <i>Feedforward control for a manipulator with flexure joints using a Lagrangian Neural Network</i> Eline Heerze, <u>Ronald Aarts</u> , Bojana Rosic University of Twente, The Netherlands |
| 17:00 | <i>Optimal Control of Open-Loop Multibody Systems Recovered from Data</i> <u>Maciej Pikulinski</u> , Paweł Malczyk Warsaw University of Technology, Poland |

=Wednesday, July 20, 2022

Session 8: Optimal Control

Chair: Paweł Malczyk

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| 09:00 | <i>On the Usage of Analytically Computed Adjoint Gradients in a Direct Optimization for Time-Optimal Control Problems</i> <u>Daniel Lichtenecker</u> ¹ , Philipp Eichmeier ^{2,3} , Karin Nachbagauer ^{1,2} 1: Technical University of Munich, Germany 2: University of Applied Sciences Upper Austria, Austria 3: Vienna University of Technology, Austria |
| 09:30 | <i>Iterative solution of nonlinear optimal control problems for underactuated mechanical system</i> <u>Bálint Bodor</u> ¹ , László Bencsik ² 1: Budapest University of Technology and Economics, Hungary 2: MTA-BME Research Group on Dynamics of Machines and Vehicles, Hungary |
| 10:00 | <i>Preserving Adjoint based Optimal Control of Mechanical System</i> <u>Ashutosh Bijalwan</u> ^{1,2} , José J Muñoz ^{1,2,3} 1: Universitat Politècnica de Catalunya, Spain |

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| | 2: Centre Internacional de Mètodes Numèrics en Enginyeria (CMNE), Spain 3: BarcelonaTech (IMTech), Spain |
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Session 9: Optimal Control

Chair: Ronald Aarts

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| 11:00 | <i>Controlling the equations of motion for the classical form of Cosserat rods</i> <u>Timo Ströhle</u> , Peter Betsch Karlsruhe Institute of Technology, Germany |
| 11:30 | <i>On the optimal control of an upswinging geometrically exact beam</i> <u>Matthias Schubert</u> , Johann Penner, Rodrigo T. Sato Martin de Almagro, Sigrid Leyendecker Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany |
| 12:00 | <i>Optimal Control of a Human Driver Model including the Interaction with a Flexible Seat</i> Michael Roller ¹ , Daniel Niklas Fahse ² , <u>Monika Harant</u> ¹ , Marius Obentheuer ¹ , Jörg Fehr ² , Joachim Linn ¹ 1: Fraunhofer Institute for Industrial Mathematics, Kaiserslautern, Germany 2: University of Stuttgart, Germany |

Thursday, July 21, 2022

Session 10: Optimal Design

Chair: Alexander Held

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| 09:00 | <i>Gradient-based robust design optimization for eigenfrequencies using the first-order second-moment method</i> <u>Jan Christoph Krüger</u> , Benedikt Kriegesmann, Julian Kajo Lüdeker Hamburg University of Technology, Germany |
| 09:30 | <i>Implementation and numerical aspects in level set-based topology optimization of flexible multibody systems</i> <u>Ali Azari Nejat</u> , Alexander Held Hamburg University of Technology, Germany |
| 10:00 | <i>Comparison of continuous and discrete Adjoint Methods for Topology Optimization in Structural Dynamics</i> <u>Timo Schmidt</u> , Justus Karnath, Robert Seifried Hamburg University of Technology |

Session 11: Optimal Control

Chair: Katrin Ellermann

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| 11:00 | <i>Adjoint method for control optimisation of 3D body sliding locomotion</i> <u>José J. Muñoz</u> ^{1,2,3} , Ashutosh Bijalwan ^{1,2} , Nima Rabiei ⁴ 1: Universitat Politècnica de Catalunya, Spain 2: Centre Internacional de Mètodes Numèrics en Enginyeria (CIMNE), Spain 3: BarcelonaTech, Spain 4: International University of Sarajevo, Bosnia and Herzegovina |
| 11:30 | <i>Optimal Control of Multibody Systems in Reduced Space ODE Formulation</i> <u>Adwait Verulkar</u> ¹ , Corina Sandu ¹ , Adrian Sandu ¹ and Daniel Dopico ² 1: Virginia Tech, USA 2: University of A Coruña, Spain |
| 12:00 | <i>Control Design of Machine Tool Feed Drives using Mechatronic System Simulation</i> <u>Roman Binder</u> ¹ , Katrin Ellermann ² , Harald Sehrs Schön ¹ 1: Fill Gesellschaft m.b.H., Gurten, Austria 2: Graz University of Technology, Austria |
| 12:30 | <i>Model Predictive Control of Wind Turbines - Steps to the Industrial Practice and Perspectives</i> <u>János Zierath</u> ¹ , Thorben Wintermeyer-Kallen ² , Sebastian Dickler ^{2,3} , Dirk Machost ¹ , Reik Bockhahn ¹ , Thomas Konrad ² , Dirk Abel ² 1: W2E Wind to Energy GmbH, Rostock, Germany 2: RWTH Aachen University, Germany |

15. Summary of IUTAM Summer Schools Held in 2022.

All IUTAM Summer Schools in 2022 were held at CISM in Udine, Italy.

IUTAM-CISM Summer School on Instability and Bifurcation of Solids Including Coupled Field Phenomena, 13-17 June, 2022

Chairpersons: Ray Ogden and Luis Dorfmann

Course Description: The purpose of this course is to provide a carefully crafted state-of-the-art overview of the fundamental theories, established models and ongoing research related to instability and bifurcation phenomena in solids undergoing finite deformations, including the effects of electric fields and growth.

Instructors: **Martine Ben Amar** (Ecole Normale Supérieure, Paris, France)
Davide Bigoni (Università di Trento, Trento, Italy)
Michel Destrade (National University of Ireland, Galway, Ireland)
Luis Dorfmann (Tufts University, Medford, MN, USA)
Yibin Fu (Keele University, Staffordshire, United Kingdom)
Raymond W. Ogden (University of Glasgow, Glasgow, United Kingdom)

IUTAM-CISM Summer School on Convection and Deformation in Porous Media: Geophysical and Biological Flows, 11-15 July, 2022

Chairpersons: Christopher MacMinn and Marco De Paoli

Course Description: Flow and transport in porous media are relevant for many geophysical, industrial, and biological applications. This course will provide an overview of the most up-to-date modelling approaches, numerical simulations, and experimental methods used to study the dynamics and properties of porous media flows characterized by convection and deformation.

Instructors: **Pietro de Anna** (University of Lausanne, Switzerland)
Marco De Paoli (Vienna University of Technology, Austria)
Xiaojing Fu (California Institute of Technology, Pasadena, USA)
Duncan Hewitt (University College London, United Kingdom)
Matteo Icardi (University of Nottingham, United Kingdom)
Sylvie Lorthois (Institut de Mécanique des Fluides de Toulouse, France)
Chris MacMinn (University of Oxford, United Kingdom)

IUTAM-CISM Summer School on Sports Physics and Technology, 19-23 September, 2022

Chairpersons: Anette Peko Hosoi and Christophe Clanet

Course Description: The purpose of the school is to explore the territory of sports physics at the intersection of sports, biomechanics, physiology and physics, and to illustrate its diversity and research potential.

Instructors: **Christophe Clanet** (CNRS and Ecole Normale Supérieure, Paris, France)
Carolin Cohen (Ecole Polytechnique, Paris, France)
Pietro Enrico di Prampero (University of Udine, Italy)
Andy Harland (Loughborough University, UK)
Anette Hosoi (Massachusetts Institute of Technology, Cambridge, USA)
Guillaume Millet (UJM St-Etienne & Institut Universitaire de France)