

International Union of Theoretical and Applied Mechanics (IUTAM)

Activities' Report - Year 2022

Enrico De Bernardis

1. Introduction

IUTAM became a fully incorporated Association on 4 November 2022, registered in Amsterdam, Netherlands. The Statutes and Rules of procedure of the old IUTAM Union have now been replaced by our new Articles of Association (contained within the Deed of Incorporation) and Internal Regulations.

The proof of registration is the IUTAM chamber of commerce number 88085457 at the Netherlands Chamber of Commerce KVK, as can be seen at the website <https://www.kvk.nl> searching for “International Union of Theoretical and Applied Mechanics”.

The IUTAM (virtual) office address is the International Union of Theoretical and Applied Mechanics, Stardock Keizersgracht B.V., Keizersgracht 482, Amsterdam, 1017EG, Netherlands.

The Association now has a Board of Directors (BoD) that replaces the Bureau, and a General Meeting of Members (GMM) that replaces the General Assembly (GA). IUTAM Adhering Organisations are now members of the IUTAM Association and the representatives of the adhering organisations can vote at the GMM just as they could vote at the GA. Additional voting members of the GMM, such as the Directors and the Members-at-Large, do not pay dues, just as they could vote at the GA without paying dues. Affiliated Organisations can attend the GMM but cannot vote, as was the case for the GA. The GMM meets at least annually, and the GMM can meet either in-person or in hybrid mode (but not fully online). Due to Dutch law, there must be at least one GMM each year, in contrast to the GA that was held once every two years, so this is a significant change in IUTAM procedures.

The first IUTAM General Meeting of Members (GMM) took place in-person in Amsterdam on 12 December 2022, and was attended by the 3 initial members (President, Secretary-General and Treasurer). The 3 members voted (unanimously) to transition the membership of the IUTAM Union into the new IUTAM Association in a seamless manner. For example, all adhering organizations of the IUTAM Union became member organizations of the IUTAM Association. Certain individuals were made members of the IUTAM Association, namely the Bureau, some Members-at-Large of the General Assembly, the Secretary of the Congress Committee and the Chairs of the Fluids and Solids Symposia Panels. The Internal Regulations of IUTAM were also adopted.

2. Main activities carried on by IUTAM during 2022 relevant for Italy and for CNR

Due to the breadth of disciplinary interests of CNR and the involvement on topics of Mechanics, the whole body of the activities (Symposia and Summer Schools) carried out, or sponsored, annually by IUTAM, is the object of potential interest for this part of the Italian scientific community. The initiatives carried out during 2022 are listed, in chronological order, grouped by type.

IUTAM Symposia

IUTAM Symposium on Enhancing material performance by exploiting instabilities and damage evolution

Place: Warsaw, Poland. Date: June 5 – June 10, 2022.

Chair: Prof. K. Kowalczyk-Gajewska, Institute of Fundamental Technological Research, Polish Academy of Sciences, Warsaw, Poland

Email: kkowalcz@ippt.pan.pl

Co-Chair: Prof. A. Srivastava, Texas A&M University, College Station, USA

Email: ankit.sri@tamu.edu

Website: <http://iutam2022warsaw.ippt.pan.pl/>

IUTAM Representative on Scientific Committee: Prof. H. Petryk

IUTAM Symposium on Data-driven modeling and optimization in fluid mechanics

Place: Aarhus, Denmark. Date: June 15 – June 17, 2022.

Chair: Prof. J.N. Sørensen, Technical University of Denmark (DTU)

Email: jnso@dtu.dk

co-Chair: Prof. M. Abkar, Aarhus University, Aarhus, Denmark

Email: abkar@mpe.au.dk

Website: <https://conferences.au.dk/iutam/>

IUTAM Symposium on Multiscale architecting of microstructures of solids: mechanics and manufacture

Place: Beijing, China. Date: June 26 – June 28, 2022.

Chair: Prof. Y. Wei, Institute of Mechanics Chinese Academy of Sciences, Beijing, China

Email: yujie_wei@lnm.imech.ac.cn

Website: <http://iutam2022-mams-mm.csp.escience.cn/>

IUTAM Representative on Scientific Committee: Prof. N.A. Fleck

IUTAM Symposium on Particles, drops and bubbles in stratified environments

Place: Toulouse, France. Date: July 4 – July 7, 2022.

Chair: Prof. J. Magnaudet, CNRS & Toulouse University, Institut de Mécanique des Fluides de Toulouse, Toulouse, France

Email: magnau@imft.fr

Website: <https://iutam-imft-2020.sciencesconf.org/>

IUTAM Representative on Scientific Committee: Prof. A.P.S. Freire

IUTAM Symposium on Optimal design and control of multibody systems – Adjoint methods, alternatives, and beyond

Place: Hamburg, Germany. Date: July 18 – July 21, 2022.

Chair: Prof. A. Held, Hamburg University of Technology (TUHH), Institute of Mechanics and Ocean Engineering, Hamburg, Germany

Email: alexander.held@tuhh.de

Website: <https://www.tuhh.de/mum/iutam-symposium-2022>

IUTAM Representative on Scientific Committee: Prof. P. Eberhard

IUTAM Symposium: From Stokesian suspension dynamics to particulate flows in turbulence

Place: Toulouse, France. Date: August 29 – September 2, 2022.

Chair: Prof. M. Maxey, Brown University, Providence, RI, USA

Email: martin_maxey@brown.edu

Website: <https://www.imft.fr/from-stokesian-suspension-dynamics-to-particulate-flows-in-turbulence/>

IUTAM Representative on Scientific Committee: Prof. D. Lohse

IUTAM Symposium on Data-driven mechanics

Place: Paris, France. Date: October 26 – October 28, 2022.

Chair: F. Chinesta, Arts et Metiers, Paris, France

Email: Francisco.Chinesta@ensam.eu

Website: <https://iutamddmech.i3a.es/>

IUTAM Representative on Scientific Committee: N.A. Fleck

IUTAM Summer Schools

IUTAM-CISM Summer School on Instability and bifurcation of solids including coupled field phenomena

Place: Udine, Italy. Date: June 13 – June 17, 2022

Coordinators: Prof. R. Ogden, University of Glasgow, School of Mathematics and Statistics, Glasgow, UK,

Email: Raymond.Ogden@glasgow.ac.uk

Prof. L. Dorfmann, Tufts University, Department of Civil and Environmental Engineering, Medford, MA 02155, USA,

Email: Luis.Dorfmann@tufts.edu

Website: <https://www.cism.it/en/activities/courses/C2204/>

IUTAM-CISM Summer School on Convection and deformation in porous media: geophysical and biological flows

Place: Udine, Italy. Date: July 11 – July 15, 2022

Coordinators: Prof. C. MacMinn, University of Oxford, Department of Engineering Science, Oxford, UK,

Email: christopher.macminn@eng.ox.ac.uk

Prof. M. De Paoli, TU Wien, Institute of Fluid Mechanics and Heat Transfer, Wien, Austria,

Email: marco.de.paoli@tuwien.ac.at

Website: <https://www.cism.it/en/activities/courses/C2207/>

IUTAM-CISM Summer School on Sports physics and technology

Place: Udine, Italy. Date: September 23 – September 23, 2022

Coordinators: Prof. A. Hosoi, Massachusetts Institute of Technology, Department of Mechanical

Engineering, Cambridge, MA, USA,

Email: peko@MIT.EDU

Prof. C. Clanet, LadHyX, Ecole Polytechnique, Palaiseau, France,

Email: clanet@ladhyx.polytechnique.fr

Website: <https://www.cism.it/en/activities/courses/C2211/>

IUTAM Endorsed Events

International Conference on Nonlinear Solid Mechanics

Place: Alghero, Sardinia, Italy. Date: June 13 – June 16, 2022

Co-Chair: Prof. Marco Amabili, Email: marco.amabili@mcgill.ca

Co-Chair: Prof. Francesco Dell'Isola, Email: francesco.dellisola.aquila@gmail.com

Website: <http://www.memocsevents.eu/iconsom2022/>

1st International Conference on Mechanics for Global Challenges

Place: Singapore. Date: June 19 – June 24, 2022

Chair: Huajian Gao, Email: huajian.gao@ntu.edu.sg

Website: <https://icmat2023.mrs.org.sg/docs/ICMGC-Flyer-2022.pdf>

11th European Solid Mechanics Conference

Place: Galway, Ireland. Date: July 4 – July 8, 2022

Chair: Peter E. McHugh, Email: peter.mchugh@nuigalway.ie

Website: <http://www.esmc2022.org/>

6th Joint International Conference on Multibody System Dynamics and 10th Asian Conference on Multibody Dynamics

Place: New Delhi, India. Date: October 16 – October 20, 2022

Chair: Prof. Subir Kumar Saha, Email: saha@mech.iitd.ac.in

Co.Chair: Prof. Rama Krishna K, Email: rkk@mech.iitd.ac.in

Website: <http://imsdacmd2020.iitd.ac.in/>

44th Scientific Assembly of the Committee on Space Research (COSPAR) and Associated Events "COSPAR 2022"

Place: Athens, Greece. Date: July 16 – July 24, 2022

Contact: cospar@cosparhq.cnes.fr

Website: <https://www.cospar-assembly.org>

3. Activities carried on by Enrico De Bernardis within the Union during 2022 and impact on the Italian scientific community

In order to stimulate participation of CNR people in IUTAM initiatives, diffusion was given to the call for IUTAM Symposia and summer school to be held in 2024-2025 whose proposals had to be presented within the deadline of 31st March 2022.

The second activity carried out within the frame of institutional commitments was the participation in the two General Assembly meetings held in 2022. These were the last two meetings of this body, now replaced by the General Meeting of Members, as illustrated above.

The first General Assembly was held in Cambridge, UK, on 22 and 23 August 2022.

Monday 22 August 2022, 2.00 – 6.00 pm (local time)

After the welcome address and the illustration of the agenda, the President – Prof. Norman Fleck, University of Cambridge, United Kingdom – briefly recalled the main points of the previous General Assembly meeting, referring to the summary report published in the IUTAM Annual Report 2021.

The Secretary General – Henryk Petryk, Academy of Sciences of Poland – listed the topics under discussion during the day (and subject to decisions in the following meeting day). Then he briefly presented the contents of his periodic report.

Finally, before starting the discussions on topics in the agenda, the new Treasurer (who took office in November 2021) – Prof. Ariza Moreno Pilar, University of Seville, Spain – gave an account of the financial situation of the organisation, concluding her intervention with the proposal to leave the annual IUTAM membership fee unchanged for the years 2023 and 2024.

Questions concerning Member Organizations

The Assembly approved the request of the Norwegian Academy of Technological Sciences to achieve the status of Member Organization representing Norway.

The Assembly approved the request of the Adherent Organization representing Korea (KCTAM) to update – also in consideration of the role of organizer of the next ICTAM 2024 congress – the qualification of IUTAM member from Category I to Category II.

Due to the non-payment – for various reasons – of the registration fee, and the absence of adequate responses to the reports of non-compliance provided by the President, the General Assembly has decided to suspend from the status of IUTAM member the organizations that have so far represented Mexico, Romania and Turkey.

Tuesday 23 August 2022, 2.00 pm – 4.15pm (local time)

Following the discussions held at its meeting on 22 August, the Assembly adopted the relevant resolutions, the most important of which are described below.

Election of Congress Committee members

As a consequence of the vacancy created by the exit of members who have reached the end of their second term (therefore with a non-renewable office), three new members were elected. Among these Prof. Stefano Lenci, of the Polytechnic University of Marche, Vice President (former President) of AIMETA.

Decisions regarding Symposia and future IUTAM Summer Schools for the years 2024 and 2025

Following the scheme proposed by the relevant Committees, the Symposia and Summer Schools were approved for the years 2024 and 2025.

Decisions regarding the annual IUTAM membership fee

The Treasurer's proposal to leave the annual fee unchanged for the years 2023 and 2024 was approved.

Decisions regarding resolution on diversity

After a short discussion, the main resolution – together with the most important clauses – proposed by the Bureau was approved on the basis of the activity carried out in the last year by the Working Group on Diversity.

Decision on the draft memorandum and rules of procedure for the registration of IUTAM as an association under the civil law of the Netherlands

After a long discussion about the registration of IUTAM in the Netherlands as a new association under the civil law of the Netherlands, in order to give legal identity to IUTAM in an internationally recognized sense, the Assembly approved – with an almost unanimous vote – the core of the proposal.

Then, the President closed the meeting.

The second (extraordinary) General Assembly meeting was held in two sessions on 10 and 11 October 2022 by electronic means.

Monday 10 October 2022, 1.00 – 3.00 pm (London time)

After the welcome address by the President, Prof. Norman Fleck, University of Cambridge, UK, The Summary Record of the General Assembly meeting held in Cambridge, UK on 22 and 23 August 2022 was adopted.

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

The Electoral Committee had unanimously agreed to nominate Professor Robert McMeeking 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.

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 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.

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.

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.

Tuesday 11 October 2022, 1.00 – 3.00 pm (London time)

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.

Decision regarding acceptance of the draft Internal Regulations of the IUTAM association in the Netherlands

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.”

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):

Prof. Helen Wilson (UK) as the chair of the DAG;
Prof. Horacio Espinosa (USA) as a member of the DAG.

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):

Prof. Timothy Pedley (fluids, UK);
Prof. Wei Yang (solids, China);
Prof. Bernhard Schrefler (solids/fluids, Italy).

Any other business

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.

Then, the President closed the meeting.

4. Evaluation of the participation in terms of benefits and membership cost

Such an assessment is difficult to achieve. Certainly, the quality and size of Italian participation to IUTAM initiative is an issue to be seriously considered by CNR.

5. Evaluation of Italians' attendance and how to improve interest and involvement

Scientific initiatives mentioned above, organized or sponsored by IUTAM in 2022, have seen an overall significant attendance by the Italian scientific community.

6. Italian experts with important roles within the Union or within related Commissions and Programs (if known)

- Maria Vittoria Salvetti, Congress Committee member, appointed by the General Assembly at ICTAM 2016 (see page 7 of the Newsletter N-2016-2);
- Stefano Lenci, Congress Committee Member, appointed by the General Assembly in 2022;
- Davide Bigoni, Congress Committee member, appointed by the General Assembly in 2014 (see page 8 of the Newsletter N-2014-2), confirmed in office in 2018 (see page 8 of the Newsletter N-2018-2); member of the Symposia Panel for Solid Mechanics, appointed by the General Assembly in 2020 (see page 6 of the Newsletter N-2020-2);
- Alberto Corigliano, President of ICTAM 2020, member of the Executive Committee of the Congress Committee, appointed by the General Assembly in 2020 (see page 9 of the Newsletter N-2020-2);
- Umberto Perego, Secretary-General of ICTAM 2020, will be invited at the meetings of the Executive Committee, as guest and observer (see page 8 of the Newsletter N-2016-2).
- Giulio Maier, Member-at-Large for the period 2020-2024, appointed by the General Assembly in 2020 (see page 5 of the Newsletter N-2020-2);
- Bernhard Schrefler, Member-at-Large for the period 2020-2024, appointed by the General Assembly in 2020 (see page 5 of the Newsletter N-2020-2).

7. If Union with CNR Commission, short summary about the 2022 CNR Commission activities

There is no Commission for IUTAM.

8. Conclusions

It is hoped that 2023 will see the expression of interest by CNR people toward initiatives planned for the following years. To this aim, diffusion will be given to for IUTAM Symposia and summer school to be held in 2024-2025.

