

# **International Union of Theoretical and Applied Mechanics (IUTAM)**

## **Relazione sull'Assemblea Generale 2021 (22 e 25 agosto 2021)**

### **Enrico De Bernardis**

L'ultima Assemblea Generale IUTAM si era tenuta, alla naturale scadenza biennale, nelle date del 25-26 agosto 2020. Avrebbe dovuto, come ogni quattro anni, coincidere con lo svolgimento del congresso ICTAM. L'edizione dello scorso anno, ICTAM 2020 è stata però rinviata a causa della pandemia, e si è svolta – in modalità virtuale – quest'anno, con la denominazione ICTAM 2020+1. Dunque, come era stato deciso nella riunione del 2020, l'Assemblea Generale IUTAM si è riunita – in modalità virtuale (tramite la piattaforma Zoom) – durante il congresso ICTAM 2020+1, nei giorni 22 e 25 agosto 2021. Durante la riunione, con oltre 70 partecipanti, sono state adottate importanti decisioni su una serie di argomenti, seguendo l'agenda qui di seguito riportata.

*Domenica 22 agosto 2021, ore 14:00-17:00 (ora italiana)*

1. Apertura del Presidente
  - Agenda della riunione
  - Relazione sintetica sulla riunione dell'Assemblea Generale tenuta, in modalità virtuale, nei giorni 25-26 agosto 2020 (IUTAM Report 2020, pp. 25-45)
2. Breve rapporto del Segretario Generale
3. Questioni riguardanti le Organizzazioni Aderenti
  - Arabia Saudita
  - Egitto
  - Norvegia
4. Proposta del Comitato Elettorale per l'elezione del Tesoriere
5. Discussione sulla registrazione di IUTAM come associazione
6. Presentazione del Gruppo di Lavoro sulle Diversità e discussione

*Mercoledì 25 agosto 2021, ore 16:15-17:15 (ora italiana)*

7. Risoluzioni riguardanti le Organizzazioni Aderenti
  - Arabia Saudita
  - Egitto
  - Norvegia
8. Elezione del Tesoriere
9. Ripresa della discussione e adozione di risoluzioni sulla registrazione di IUTAM
10. Luogo e data della prossima riunione dell'Assemblea Generale (Cambridge, Regno Unito), 21-24 agosto 2022)
11. Varie ed eventuali

*Domenica 22 agosto 2021, ore 14:00-17:00 (ora italiana)*

Dopo il saluto iniziale e l'illustrazione dell'agenda, il Presidente – Prof. Norman Fleck, Università di Cambridge (Regno Unito) – ha richiamato brevemente i punti salienti della precedente riunione dell'Assemblea Generale, rimandando alla relazione sintetica (Allegato 1) pubblicata nel Rapporto annuale IUTAM 2020.

Il Segretario Generale – Henryk Petryk, Accademia delle Scienze della Polonia – ha elencato gli argomenti in discussione nella giornata (e oggetto di decisioni nella successiva giornata di riunione) e introdotto la presentazione delle attività svolte dal Gruppo di Lavoro sulle diversità (Allegato 2).

*Mercoledì 25 agosto 2021, ore 16:15-17:15 (ora italiana)*

Dopo le discussioni svolte durante la riunione del 22 agosto, sono state adottate le risoluzioni descritte nel seguito.

### ***Questioni riguardanti le Organizzazioni Aderenti***

Considerato il mancato versamento – per diversi ordini di motivi – della tassa di iscrizione, e l’assenza di risposte adeguate alle segnalazioni di inadempienza fornite dal Presidente, l’Assemblea Generale ha deciso di sospendere dalla qualifica di membro IUTAM le organizzazioni che hanno fin qui rappresentato Arabia Saudita, Egitto e Norvegia.

### ***Elezione del Tesoriere***

L’Assemblea Generale ha eletto il nuovo Tesoriere – Prof. Ariza Moreno Pilar, Università di Siviglia (Spagna) – che si insedierà nell’incarico il giorno 1 novembre 2021.

### ***Risoluzione sulla registrazione di IUTAM***

Dopo una lunga discussione circa la registrazione di IUTAM nei Paesi Bassi come nuova associazione ai sensi del diritto civile olandese, allo scopo di dare identità legale a IUTAM in un senso riconosciuto a livello internazionale, l’Assemblea si è divisa esattamente a metà sul voto di una possibile risoluzione che desse mandato di finalizzare l’operazione. Si è optato, quindi, per un supplemento di ricerca e un ritorno all’Assemblea Generale per adottare una risoluzione con il conforto di elementi più chiari circa la prospettiva di una tale configurazione.

### ***Luogo e data della prossima riunione dell’Assemblea Generale***

La prossima riunione dell’Assemblea Generale IUTAM si terrà a Cambridge, Regno Unito, nei giorni 21-24 agosto 2022.

% Allegati



International Union of  
Theoretical and Applied Mechanics

## IUTAM GENERAL ASSEMBLY

### Summary Record of the General Assembly of IUTAM virtual meeting on 25 and 26 August 2020

The General Assembly of IUTAM convened remotely in 2020. The schedule of sessions was as follows:

#### **Tuesday, 25 August 2020**

9:00 – 12:00 (Boston time) *General Assembly: 1<sup>st</sup> session*

#### **Wednesday, 26 August 2020**

9:00 – 12:00 (Boston time) *General Assembly: 2<sup>nd</sup> session*

#### **Attendance:**

##### *Members with voting rights:*

M. Amabili (Canada), P. Ariza (Spain), N. Aubry (USA), M. Avila (Germany), Y. Bai (China, Member-at-Large), K. Behdinan (Canada), D. Bigoni (Italy), A. Bottaro (Italy), F.L. Chernousko (Russia), A. Cocks (UK), E. De Bernardis (Italy), J. Dual (Switzerland), P. Eberhard (Germany), H. Espinosa (USA), D. Fang (China), N.A. Fleck (UK), J.M. Floryan (Canada), S. Forest (France), L. Franzoni (USA), A.P.S. Freire (Brazil), H. Gao (Singapore), M.D. Gilchrist (Ireland), I.G. Goryacheva (Russia), P. Guillaume (Belgium), S. Hartmann (Germany), G.W. He (China), D. Henningson (Sweden), K. Hishida (Japan), M. Hori (Japan), S.-S. Hsiao (China-Taipei), P. Huerre (France), G. Jaiani (Georgia), A. Juel (UK), R. Kerswell (UK), K. Kishimoto (Japan), D. Kondo (France), R. Kouhia (Finland), V.A. Levin (Russia), M. Lightstone (Canada), D. Lohse (Netherlands), J.B.R. Loureiro (Brazil), T.J. Lu (China), F. Lund (Chile), S. Lundström (Sweden), B. McKeon (USA), G. McKinley (USA), R.M. McMeeking (USA), M.A.F. de Medeiros (Brazil), S. Mittal (India), H.K. Moffatt (UK, Member-at-Large), P. Monkewitz (Switzerland), N.F. Morozov (Russia), H. Nguyen-Xuan (Viet Nam), J. Niiranen (Finland), C. Niordson (Denmark), P. Onck (Netherlands), T.J. Pedley (UK, Member-at-Large), H. Petryk (Poland), S. Popinet (France), G.P. Raja Sekhar (India), E. Ramos (Mexico), K. Ravi-Chandar (USA), G. Rega (Italy), M.B. Rubin (Israel), J. Salençon (France, Member-at-Large), A. Salupere (Estonia), O. Sano (Japan), W. Schiehlen (Germany, Member-at-Large), B.A. Schrefler (Italy), J. Schumacher (Germany), R. Segev (Israel), R. Seifried (Germany), S. Skatulla (South Africa), J. Slavič

(Slovenia), J.N. Sørensen (Denmark), P. Stahle (Sweden), G.E. Stavroulakis (Greece), G. Stépán (Hungary), H.J. Sung (Republic of Korea), G. Turkalj (Croatia), V. Tvergaard (Denmark), D.V.H. Vandepitte (Belgium), W.-C. Wang (China-Taipei), L. van Wijngaarden (Netherlands, Member-at-Large), X.J. Zheng (China)

*Non-voting observers:*

L. Banks-Sills (Israel, representative of ICF), A. Ferreras (USA, representative of NAS)

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

**Agenda Tuesday, 25 August 2020, 9:00 – 12:00 (Boston time)**

1. Opening of the meeting by the President  
Summary Record of the General Assembly in Boston, USA, on 23-24/07/2018 (IUTAM Report 2018, pp. 108-128)
2. Brief report by the Secretary-General
3. Brief 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. Report of the Electoral Committee (Bureau candidates)
10. Proposals for election of members of the Congress Committee
11. Proposals for election of Members-at-Large
12. Proposals for election of members of Symposia Panels
13. Preliminary discussion on future IUTAM Symposia and Summer Schools.  
Brief reports from Solids and Fluids Panels
14. Discussion on registration of IUTAM

**Agenda Wednesday, 26 August 2020, 9:00 – 12:00 (Boston time)**

15. Future IUTAM endorsed events
16. Continued discussion and final decision regarding future IUTAM Symposia
17. Continued discussion and final decision regarding future IUTAM Summer Schools on Mechanics
18. Continued discussion and final decision regarding annual dues
19. Election of Officers and members of the Bureau
20. Election of Members-at-Large
21. Election of members of the Congress Committee
22. Election of members of Symposia Panels
23. Date and venue of the next General Assembly meeting
24. Any other business

## **Proceedings of the General Assembly**

### **Item 1 – Opening of the meeting by the President**

The President, Professor Nadine Aubry, welcomed all members and observers. Then the President formally opened the meeting. The Agenda was adopted. The President explained the rules of voting during the meeting being held in a virtual format due to the pandemic.

The President reported with great sadness on the death of three distinguished colleagues who not only made outstanding contributions to the field of mechanics, but also served IUTAM with much dedication:

Professor Jan D. Achenbach, a former member of the Congress Committee (1986-1994), a member of the Symposia Panel for Solid Mechanics (1988-2000) and its Chair (2000-2008), as well as a member (1996-1998) and finally Member-at-Large (2008-2020) of the General Assembly of IUTAM, passed away on 22 August 2020.

Professor Sol R. Bodner, a former member of the Executive Committee of the Congress Committee (1992-2000), member (1980-2003) and Member-at-Large (2004-2008) of the General Assembly of IUTAM, and one of the organizers of the 18th International Congress of Theoretical and Applied Mechanics in Haifa, Israel, in 1992, passed away on 29 October 2019.

Professor Bruno Eckhardt, a member of the Congress Committee (2010-2019), Executive Committee of the Congress Committee (2012-2019) and the General Assembly (2018-2019) of IUTAM, passed away on 7 August 2019.

The memory of Professors Jan D. Achenbach, Sol R. Bodner and Bruno Eckhardt was honored by the General Assembly with a moment of silence.

The Summary Record of the General Assembly held in Boston, USA, in 2018, was approved.

### **Item 2 – Brief 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 last General Assembly in Boston, USA, on 23 and 24 July 2018:

Mrs. President, distinguished Colleagues,

It is a great honor for me to deliver my report in front of the General Assembly. We meet for the first time online, and in this exceptional situation I was asked by the Bureau to make my oral presentation brief. Minor additional details will be provided in the written version of my report.

Two years have passed since our last General Assembly in Boston, USA. As Mrs. President has reported, during that time we had the sad duty of recording

the deaths of our three distinguished colleagues and friends. Summaries of their achievements have been or will soon be posted on the IUTAM website.

#### *IUTAM Reports*

IUTAM Reports 2018 and 2019 have been published both in paper form and on the IUTAM website, as usual in early June each subsequent year.

#### *Adhering Organizations*

There are now 47 adhering organizations. IUTAM is pursuing contacts with several countries, which has resulted so far in the application for admission of a new Adhering Organization representing Singapore. This will be further addressed under item 6 on the Agenda.

#### *Associate Organizations*

There is currently one Associate Organization from Armenia. They have applied for extension of their term by another four years, which will be further addressed under item 7 on the Agenda.

#### *Affiliated Organizations*

There are now 21 Affiliated Organizations. Their reports for the past two years are included in the IUTAM Reports 2018 and 2019. No new affiliation proposal was submitted for consideration to the Bureau during the last two years.

#### *IUTAM Symposia*

In 2018, fifteen IUTAM Symposia were successfully organized with an average attendance of 59, while in 2019 there were seven IUTAM Symposia successfully organized with an average attendance of 70. Reports of these may be found in the IUTAM Reports 2018 and 2019, respectively. Eight IUTAM Symposia and one IUTAM Special Event had been scheduled for 2020. However, the outbreak of COVID-19 and the uncertain worldwide situation have seriously influenced the IUTAM activities in 2020. Not only ICTAM 2020, as we all know, has been postponed by President Alberto Corigliano and his local organizing committee to 2021. Also seven IUTAM Symposia and the IUTAM Special Event, all scheduled for the first half of 2020, have been postponed by their Chairs and local organizers to 2021. One Symposium may still be held in Autumn this year. Overall, twelve IUTAM Symposia and one IUTAM Special Event are currently scheduled for 2021.

The call for Symposia proposals for 2022/23 and the evaluation procedure by the Symposia Panels ran smoothly according to schedule. The evaluation tables and reports have been distributed to the General Assembly members.

#### *IUTAM Summer Schools*

In 2018, there was no IUTAM Summer School, while in 2019 there were two, the IUTAM-BICTAM Summer School in Shanghai, China, with 40 participants, and the IUTAM-CISM Summer School in Udine, Italy, with 35 participants. The IUTAM-CISM Summer School scheduled for the first half of 2020 was postponed until 2021.

#### *IUTAM endorsed events*

Six endorsed events are scheduled for 2020 and 2021, which will be further addressed under item 15 on the Agenda.

#### *IUTAM website*

The IUTAM website is running smoothly and it is the basic source of public information about the history of IUTAM, its current activities and future events. The database is frequently updated, regarding institutions, persons, and events, to ensure that the information displayed is up-to-date. The IUTAM poster was updated in November 2019 and posted on the website. An “In Memoriam” section has been added to the front page, devoted to the memory of recently deceased distinguished colleagues.

#### *IUTAM Newsletter*

The IUTAM Newsletter is published twice a year, and contains information on the current and future IUTAM events.

#### *Publications*

As reported earlier, in November 2017 an agreement with Springer was signed by the Secretary-General for resuming publication of the IUTAM Bookseries, in which 32 volumes had been published in the past. In September 2019, the contract has been extended until the end of 2023.

The basic conditions are very convenient for IUTAM. 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. Symposia organizers, if they wish, may also buy printed or electronic copies of their volumes or purchase open access. Five volumes have already appeared and one more has been contracted. Other acceptable formats for proceedings are special issues of high-quality journals or other forms previously approved by the Bureau of IUTAM.

#### *Registration of IUTAM*

A great deal of effort has recently been made to collect available information on the perspectives to give IUTAM legal identity in an internationally recognized sense. This will be dealt with further under item 14 on the Agenda.

Mrs. President, this concludes my report.

*Henryk Petryk, Secretary-General*

The report by the Secretary-General was unanimously adopted.

### **Item 3 – Brief report by the Treasurer on financial matters**

The Treasurer, Professor Peter Eberhard, submitted the following report to the General Assembly:

The financial audit procedure for the year 2019 was performed without problems and the auditing company UNITreu GmbH in Eschborn / Germany verified all the numbers and transactions on IUTAM's accounts. As of Dec. 31, 2019 IUTAM had

664.796 USD on its accounts,

108.527 USD were collected in 2019,

61.544 USD were spent in 2019.

Compared to the balance of Dec. 31, 2018, which was 620.769 USD, this gives an increase of 44.026 USD for the year 2019 (including a loss of 2.956 USD from changes in the exchange rates).

The money is distributed to three accounts (in USD, EURO, DKK) at Spar Nord Bank in Aalborg/Denmark and two accounts (in DKK) at Nordea Bank Denmark. Unfortunately, the current interest rates are zero or even negative. In the year 2020 the expenses were very low due to the corona crises, but in 2021 this will change greatly. The not sufficient registration of IUTAM is one of the major risks we currently face.

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

Many thanks go to our Assistant Treasurer Niels Olhoff for his ongoing help dealing with Danish authorities.

*Peter Eberhard, Treasurer*

The report by the Treasurer was adopted.

#### **Item 4 – Preliminary discussion on annual dues**

Following his report the Treasurer led a brief discussion on the annual dues. The Bureau proposed to keep for 2021 and 2022 the membership dues constant at 810 USD per year and unit. The Treasurer mentioned that in the future IUTAM would have to increase the dues again according to the rules decided by the GA in the past so that they follow again the UNESCO inflation numbers. The current dues have not been increased since 2013.

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

#### **Item 5 – Report by the Secretary of the Congress Committee**

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



President Aubry, Colleagues

I am pleased to give the following report to the General Assembly concerning the activities in the past 2 years of the Congress Committee and its Executive Committee.

Both committees met in Boston on the 23rd & 24th July 2018, and the Executive Committee met in Rio de Janeiro on the 22nd & 23rd July 2019. All meetings were taken up almost entirely by organizational matters regarding ICTAM2020. The only matter that was considered in Boston independent of ICTAM2020 was the nomination of individuals for election and re-election to the Congress Committee effective 1st November 2018. As that issue was deliberated and resolved by the General Assembly at its meeting on 24th July 2018, there is no need for me to report on it further.

At its meetings in Boston, the Congress Committee selected 16 Sectional Lecturers for ICTAM2020, namely Bala Balachandran, Alessandro Bottaro, Antonio DeSimone, Vikram Deshpande, Frederic Dias, Xi-Qiao Feng, Genta Kawahara, Ellen Kuhl, Eric Lauga, Jean-Baptiste Leblond, Christian Niordson, Clarence Rowley, Miles Rubin, Cameron Tropea, Roberto Verzicco and Emmanuel Villermaux. Subsequently, Vikram Deshpande was awarded the Hill Prize and so will give the Hill Prize Lecture at ICTAM2020. As no individual can give 2 invited talks at an ICTAM, by decision of the Executive Committee he was replaced by Stefanie Reese.

In addition, the Congress Committee identified possible Co-Chairs for Thematic Sessions at ICTAM2020. I am happy to report that 2 Co-Chairs have been invited for each Thematic Session and have accepted the role.

As you are aware, due to the COVID pandemic ICTAM2020 President Alberto Corigliano and his associates decided to postpone the 25th Congress to 2021, and it is now designated ICTAM2020+1. The dates will be 22nd to 27th August, 2021, and the venue, the Milan Congress Centre, is unchanged.

As part of the preparation for ICTAM2020+1, the International Papers Committee (IPC) met online on 26th to 30th March, 2020 to make decisions on the 3,098 papers that had been submitted. This number excludes the opening, closing, prize and sectional lectures, but includes 184 keynote invited lectures for Mini-symposia and Thematic Sessions. The submitted papers numbered 1,351 in fluids, 1,334 in solids plus 413 in fluids-solids. In a heroic effort, the members of the International Papers Committee had read all of the papers in their discipline of fluids or solids during February and March. Thus, they were ready to decide on which papers to accept by the time the online meeting was convened, an important consideration as a decision had to be made on each paper during the meeting within a relatively short time. The Committee's ability to make decisions quickly was aided by the advice provided on the quality of the papers by the Chairs of Mini-Symposia and Thematic Sessions and by the input from the screening committees of 8 larger

nations, China, France, Germany, Italy, Poland, Russia, UK and USA. The International Papers Committee accepted 1,870 papers for 20-minute oral presentations and 1000 for short talks with posters. In addition to the 2,914 contributed papers, the Committee dealt with 4 plenary lectures, i.e. the opening, closing and prize lectures, the 16 Sectional Lectures, and the invited keynote lectures associated with the Mini-Symposia and the Thematic Sessions to ensure that the submitted abstracts were in good shape. On behalf of IUTAM I wish to thank the International Papers Committee for its extraordinary effort that contributes to the success of the Congress. In addition, IUTAM and its Congress Committee are extremely grateful to all those who participated in the paper selection process, such as session co-chairs and members of national screening committees. IUTAM and its Congress Committee are also very grateful to ICTAM2020 President Alberto Corigliano and ICTAM2020 Secretary-General Umberto Perego for their hard work that ensured that the meeting of the International Papers Committee was efficient and ran smoothly.

Authors with abstracts accepted by the International Papers Committee for ICTAM2020+1 will be allowed to update them before the 25th Congress is held. In addition, consideration will be given to allowing additional abstracts to be submitted for ICTAM2020+1 in the Short Talk with Poster category.

I have noted above that participation as a member of the IPC involves an enormous amount of work and a significant commitment of time. The current IPC advises that IUTAM must take steps to lessen the burden on the membership of the IPC, as dealing with upward of 3,000 abstracts is a burdensome undertaking. However, there is also the firm belief among members of the IPC, the Congress Committee and its Executive Committee that comprehensive oversight by the IPC of the entire paper selection procedure for IUTAM Congresses is significant to the quality of the Congresses, their timeliness and to ensuring that they cover all appropriate topics in Theoretical and Applied Mechanics, including those of importance that have recently emerged. The issue of the workload of the IPC will be a matter for the Congress Committee and its Executive Committee prior to the next meeting of the IPC scheduled for 2024.

As was the case for the 24th Congress, all 2-page papers that were accepted for the 25th Congress, and whose presenter pays the registration fee for ICTAM2020, will be included in a pdf representing the complete proceedings. This pdf will be archived and made available at no cost on the IUTAM website. It will be citable and have an ISBN. In addition, the Opening and Closing Lectures, the Sectional Lectures and the Invited Lectures from Mini-Symposia and Thematic Sessions will be included in the pdf as 4-page papers.

I turn now to the meetings of the Congress Committee and its Executive Committee held online last week on Friday 21st August, 2020 and Thursday 20th August, 2020 respectively. The Congress Committee heard presentations on 3 strong bids to host ICTAM2024, from Daegu (Korea), St.

Petersburg (Russia) and Tokyo (Japan). Members of the Committee were able to ask questions of the bidders, and are currently pondering the proposals. The Committee will meet again on Thursday 27th August 2020 to discuss the bids and to make a decision.

The other substantive issue that was addressed by the Congress Committee and its Executive Committee at their online meetings last week is the nomination of individuals to be elected or re-elected to these committees. The Subcommittee formed for this purpose received 36 nominations of individuals to be elected to the Congress Committee, and 8 currently on the committee can be re-elected. In addition, a new Secretary of the Congress Committee will be elected as I retire this year both as Secretary and as a member of the Congress Committee. Furthermore, 3 new members of the Executive Committee will be elected, plus possibly 1 member who is eligible for re-election. Nominations for all of these elections have been made and considered by the Nominations Subcommittee. As Secretary of the Nominations Subcommittee, I will presently give a full report on its recommendations, so I will say no more on this issue and leave it to the General Assembly to decide what should be done once it has heard the report.

On behalf of IUTAM and the Congress Committee, I would like to thank those who are completing their terms of office on the Committee for their hard work and dedication. These individuals, completing their service on the Committee effective 31st October 2020, are Professors Horacio Espinosa, Huajian Gao, Patrick Huerre, Ann Karagozian, Djimedo Kondo, Tianjian Lu, Jacques Magnaudet, Valery Matveenko, Eric Shaqfeh, Gabor Stepan and Jens Walther.

I also wish to mark the sad passing of Bruno Eckhardt, who for many years, was a dedicated and highly effective member of both the Congress Committee and its Executive Committee. His unexpected death last year leaves those of us bereft who counted him as a friend. He is also a very significant loss to the Committees and to IUTAM, and he will be greatly missed.

President Aubry and Colleagues, this concludes my report.

*Robert M. McMeeking, Secretary of the Congress Committee*

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

The President thanked the Secretary for his report.

## **Item 6 – Matters concerning Adhering Organizations**

### *Singapore*

The Council on Theoretical and Applied Mechanics of the Materials Research Society of Singapore, represented by Professor Huajian Gao, requested

admission as a Category II Adhering Organization of IUTAM representing Singapore, with two representatives on the IUTAM General Assembly.

*The General Assembly admitted the Council on Theoretical and Applied Mechanics of the Materials Research Society of Singapore as Adhering Organization of IUTAM.*

#### *Egypt and Saudi Arabia*

The cases of the Adhering Organizations representing Egypt and Saudi Arabia, who have not paid their dues to IUTAM since 2016 and 2014, respectively, were reported and discussed. The Bureau was in contact with persons from these two countries in 2020, without satisfactory conclusion so far but with perspectives regarding future cooperation. It was proposed to continue the talks and to return to the matter at the next General Assembly meeting.

*The General Assembly agreed to give authority to the Bureau to follow up with these countries.*

### **Item 7 – Matters concerning Associate Organizations**

#### *Armenia*

The Secretary-General reported that the Armenian National Committee on Theoretical and Applied Mechanics became the Associate Adhering Organization of IUTAM representing Armenia in 2016 for a four-year term ending in 2020. The President of the Armenian National Committee on Theoretical and Applied Mechanics requested extension of their associate membership for another four years, and the Bureau supported this request.

*The General Assembly approved the extension of the associate membership of the Armenian National Committee on Theoretical and Applied Mechanics for another four years until 2024.*

### **Item 8 – Matters concerning Affiliated Organizations**

The Secretary-General reported that one new representative of IUTAM in Affiliated Organizations and the IUTAM representative in the ISC Committee on Data (CODATA) had been appointed by the Bureau since the last General Assembly.

### **Item 9 – Report of the Electoral Committee (Bureau candidates)**

The President reported that the Electoral Committee, consisting of Professor Nadine Aubry (USA, Chair *ex officio* as President), Professor Timothy Pedley (UK), Professor Werner Schiehlen (Germany) and Professor Wei Yang (China), proposed the candidates for Bureau elections for the next four-year term as follows:

*Officer positions:*

President: Professor Norman Fleck (Solids, UK)

Secretary-General: Professor Henryk Petryk (Solids, Poland)

Treasurer: Professor Dan Henningson (Fluids, Sweden).

The President thanked Professor Peter Eberhard for his outstanding job as Treasurer during two consecutive terms. Professor Nadine Aubry (Fluids, USA) continues *ex officio* as Vice-President in the next term which follows from the Statutes of IUTAM.

*Non-Officer positions* (one for each slot to be chosen by the General Assembly):

W: Professor Samuel Forest (Solids, France) and Professor Irina Goryacheva (Solids, Russia)

X: Professor Haiyan Hu (Solids, China) and Professor Kikuo Kishimoto (Solids, Japan)

Y: Professor Atila Freire (Fluids, Brazil) and Professor Ivan Marusic (Fluids, Australia)

Z: Professor Detlef Lohse (Fluids, Netherlands) and Professor Jens Sørensen (Fluids, Denmark).

Everyone on the above list was willing to accept nomination and provided a short bio distributed to the General Assembly members ahead of the meeting. Professors Norman Fleck, Henryk Petryk, Irina Goryacheva and Atila Freire had served one term on the Bureau.

The President invited the members of the Electoral Committee to add their comments. Professor Werner Schiehlen remarked that the proposal was very well balanced, between solids and fluids on the one hand, and between more experienced Bureau members and new ones on the other. Professor Timothy Pedley added that the Electoral Committee also attempted to arrange geographic balance.

In the discussion that followed several General Assembly members expressed their opinions on geographic diversity, representation of particular countries and representation of females within the Bureau. No other candidate was proposed in addition to the proposal by the Electoral Committee.

*The nominations for each of the positions were put to the vote in the second session of the General Assembly under Item 19.*

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

The Nominations Subcommittee of the Congress Committee (NSCC), consisting of Professors Paul Linden (Chair), Robert McMeeking (*Ex Officio*, Secretary), Davide Bigoni, Anne De Wit, Michael Gilchrist, Ann Karagozian, Valery Matveenko, Sanjay Mittal, Shu Takagi and Jianxiang Wang, provided recommendations regarding the elections to the Congress Committee (CC) for the period 2020 through 2024 to be carried out by the General Assembly. On behalf of the NSCC

Chair Paul Linden, NSCC Secretary Robert McMeeking gave a report on the recommendations of the NSCC.

The NSCC noted that, on 31<sup>st</sup> October 2020, Professor Nadine Aubry would retire as President of IUTAM and the CC, but would be replaced by the new President. Professor Bruno Eckhardt was a member of the Executive Committee of the Congress Committee (XCCC) but sadly passed away in 2019. Professor Alberto Corigliano as President of ICTAM2020 would retire and be replaced by President of ICTAM2024, but could remain as an *ex officio* XCCC member until ICTAM2020+1 was held. The NSCC further noted that on 31<sup>st</sup> October 2020, having served two consecutive 4-year terms,

- Professor Robert McMeeking would retire as Secretary of the CC,
- Professors Jacques Magnaudet and Gabor Stepan would retire from the XCCC and CC,
- Professors Horacio Espinosa, Huajian Gao, Patrick Huerre, Ann Karagozian, Djimedo Kondo, Tianjian Lu, Valery Matveenko, Eric Shaqfeh and Jens Walther would retire from the CC.

Professor Robert McMeeking on behalf of IUTAM thanked these retiring members for their service to the Congress Committee, with appreciation for their effort, dedication and wisdom.

Professor Robert McMeeking reported that the Congress Committee, based on the recommendations of the NSCC, recommended for election

- Professor Leslie Banks-Sills, who served 1 term on the XCCC, to a 2<sup>nd</sup> term on the XCCC,
- Professors Pilar Ariza, Shiyi Chen, Maciej Floryan, Peter Hunter, Henryk Petryk, Maria Vittoria Salvetti and Hiroshi Yabuno, who served 1 term on the CC, to a 2<sup>nd</sup> term on the CC.

To fill the remaining vacant positions in order to maintain the current number 34 of members of the CC, the NSCC worked out a detailed proposal presented to the General Assembly by the Secretary of the NSCC.

*The actual elections were held during the second session of the General Assembly under Item 21.*

### **Item 11 – Proposals for election of Members-at-Large**

There was a call for nominations for Members-at-Large (MaLs) addressed to the General Assembly members and open until 24 May 2020. The Secretary-General had received three proposals for re-election of MaLs and four proposals for election of new MaLs. Four MaLs had decided to retire: Professor Ben Freund, Professor Rodham Narasimha, Professor Tomomasa Tatsumi and Professor Leen van Wijngaarden.

Taking account of the above, the Bureau recommended to the General Assembly to re-elect Professor Yilong Bai, Professor Giulio Maier, Professor Keith Moffatt, Professor Niels Olhoff, Professor Timothy Pedley, Professor Jean Salençon and

Professor Werner Schiehlen as MaLs for the period 2020-2024, and to elect Professor Peter Eberhard, Professor Robert McMeeking, Professor Bernhard Schrefler and Professor Viggo Tvergaard as MaLs for the period 2020-2024.

*It was noted that the final decision regarding this proposal would be made in the second session of the General Assembly, see Item 20 below.*

## **Item 12 – Proposals for election of members of Symposia Panels**

### *Fluid Mechanics Panel*

The Secretary-General reported that Professor Detlef Lohse (Netherlands, Chair of the Panel), Professor Elisabeth Guazzelli (France) and Professor Hua Liu (China) had served their first four-year terms. The Bureau proposed to the General Assembly to reappoint for the second term 2020-2024 Professor Detlef Lohse (Netherlands) as Chair, and Professor Elisabeth Guazzelli (France) and Professor Hua Liu (China) as members of the Fluid Mechanics Panel.

### *Solid Mechanics Panel*

The Secretary-General reported that Professor Huajian Gao (Singapore, Chair of the Panel) and Professor Alexander Belyaev (Russia) had served their first terms. Professor Jean-Baptiste Leblond (France) had served two consecutive terms and should be replaced. The Bureau proposed to the General Assembly to reappoint for the second term 2020-2024 Professor Huajian Gao (Singapore) as Chair and Professor Alexander Belyaev (Russia) as member, and to appoint Professor Davide Bigoni (Italy) as a new member of the Solid Mechanics Panel in 2020-2024.

*It was noted that the final decision regarding these proposals would be made in the second session of the General Assembly, see Item 22 below.*

## **Item 13 – Preliminary discussion on future IUTAM Symposia and Summer Schools. Brief reports from Solids and Fluids Panels**

The call for proposals for IUTAM Symposia in 2022/2023 had resulted in 19 proposals, listed below (FL stands for Fluids, FS for Fluids/Solids and SO for Solids).

- FL.01 *From Stokesian suspension dynamics to particulate flows in turbulence* (Toulouse, France)
- FL.02 *Data-driven modeling and optimization in fluid mechanics* (Aarhus C, Denmark)
- FL.03 *Turbulent/non-turbulent interface in turbulent shear flow* (Beijing, China)
- FL.04 *Interfaces and mixing, and non-equilibrium dynamics* (Perth, Australia)
- FL.05 *Flow and transport in complex biological structures* (Manchester, UK)
- FS.01 Withdrawn
- FS.02 *Advanced workshop on petroleum engineering mechanics* (Qingdao, China)

- FS.03 *Data-driven nonlinear and stochastic dynamics with the control* (Xi'an, China)
- FS.04 *Dynamics of capsules, vesicles and cells in flow* (Compiègne, France)
- FS.05 *Meeting the challenges in soft matter with large-scale particle simulations* (Yokohama, Japan)
- FS.06 *Interfacial effects, gels and cells* (Limerick, Ireland)
- SO.01 *Multiscale architecting of microstructures of solids: mechanics and manufacture* (Beijing, China)
- SO.02 *Soft matter mechanics* (Hangzhou, China)
- SO.03 *Mechanics of advanced materials and structures with multifield couplings* (Nanjing, China)
- SO.04 *Enhancing material performance by exploiting instabilities and damage evolution* (Warsaw, Poland)
- SO.05 *Nonlinear dynamics for design of mechanical systems across different length/time scales* (Tsukuba, Japan)
- SO.06 *Creep in structures* (Magdeburg, Germany)
- SO.07 *The mechanics of additive manufacturing* (Freiberg, Germany)
- SO.08 *Optimal design and control of multibody systems – adjoint methods, alternatives, and beyond* (Hamburg, Germany)

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

- SSFS.01 *Sports physics and technology* (Udine, Italy)
- SSFS.02 *Convection and deformation in porous media: geophysical and biological flows* (Udine, Italy)

The proposals for IUTAM Symposia and Summer Schools had been reviewed by the two Symposia Panels. All proposals, the evaluation tables and the full reports of the Panels were 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.

After a preliminary discussion the proposals for IUTAM Symposia were divided into three groups. The first group consisted of the ten proposals of rating Y and coded FL.01, FL.02, FL.03, FS.03, FS.04, FS.06, SO.01, SO.03, SO.04, SO.06. The second group consisted of three proposals coded SO.02, SO.05, SO.08. The third group consisted of the remaining five proposals of rating N coded FL.04, FL.05, FS.02, FS.05, SO.07.

*It was agreed that the IUTAM Symposia of the first group 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 14 – Discussion on registration of IUTAM**

The Secretary-General presented the Bureau's proposal to consider registration of IUTAM in the Netherlands as a new association under Dutch Civil Law. The aim was to give IUTAM legal identity in an internationally recognized sense, and consequently, to facilitate IUTAM contracts of any kind in the present times of ever stricter financial rules. Several reasons for choosing the Netherlands as the registration country were presented. The Secretary-General asked the General Assembly for support for the Bureau's proposal, after which appropriate resolutions could be prepared and subjected to electronic voting by the General Assembly in due course.

The President opened the discussion in which a number of issues related to the registration were addressed.

The General Assembly agreed to authorize the Bureau to continue working in the direction indicated in the Bureau's proposal.

*The meeting then adjourned.*

#### **The meeting reconvened on 26 August 2020 at 9:00 Boston time.**

#### **Item 15 – Future IUTAM endorsed events**

The Secretary-General presented the list of six endorsed events scheduled for 2020 and 2021, and of several future conferences to be organized by Affiliated Organizations which could be endorsed by IUTAM.

#### **Item 16 – Continued discussion and final decision regarding future IUTAM Symposia**

*The General Assembly decided to accept the ten IUTAM Symposia of rating Y coded FL.01, FL.02, FL.03, FS.03, FS.04, FS.06, SO.01, SO.03, SO.04, SO.06, and reject the five IUTAM Symposia of rating N coded FL.04, FL.05, FS.02, FS.05, SO.07.*

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

*All three IUTAM Symposia coded SO.02, SO.05, SO.08 were finally accepted.*

It was decided that an IUTAM grant would be provided to all accepted Symposia except one (SO.03) for which funding from IUTAM was not requested.

#### **Item 17 – Continued discussion and final decision regarding future IUTAM Summer Schools on Mechanics**

*The General Assembly decided to accept both Summer Schools coded SSFS.01 and SSFS.02 with an IUTAM grant.*

**Item 18 – Continued discussion and final decision regarding annual dues**

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

*US \$ 810 in 2021*

*US \$ 810 in 2022.*

**Item 19 – Election of Officers and members of the Bureau**

*The General Assembly elected by secret ballot the following persons to the three vacant Officer positions P, S and T for the four-year term 2020-2024 effective from 1<sup>st</sup> November 2020:*

President: Professor Norman Fleck (UK)

Secretary-General: Professor Henryk Petryk (Poland)

Treasurer: Professor Dan Henningson (Sweden)

(according to Article XI of the Statutes, the retiring President, Professor Nadine Aubry (USA), will serve as Vice-President)

*The General Assembly elected by secret ballot the following persons to the four vacant non-Officer positions W, X, Y, and Z for the period 2020-2024 effective from 1<sup>st</sup> November 2020:*

Position W: Professor Irina Goryacheva (Russia)

Position X: Professor Kikuo Kishimoto (Japan)

Position Y: Professor Atila Freire (Brazil)

Position Z: Professor Detlef Lohse (Netherlands)

The election was preceded by a discussion on geographic balance and representation of females within the Bureau. It was finally suggested that the new Bureau would consider appointing a special subcommittee to address the diversity issues. After the discussion, the General Assembly decided to carry out votes on the slate of candidates as proposed by the Electoral Committee, with the outcome given above.

**Item 20 – Election of Members-at-Large**

*The General Assembly re-elected Professor Yilong Bai, Professor Giulio Maier, Professor Keith Moffatt, Professor Niels Olhoff, Professor Timothy Pedley, Professor Jean Salençon and Professor Werner Schiehlen as Members-at-Large for the period 2020-2024.*

*The General Assembly elected Professor Peter Eberhard, Professor Robert McMeeking, Professor Bernhard Schrefler and Professor Viggo Tvergaard as Members-at-Large for the period 2020-2024.*

## **Item 21 – 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 Robert McMeeking, presented the candidates for the series of elections. All appointments were for the period 1<sup>st</sup> November 2020 to 31<sup>st</sup> October 2024.

*The General Assembly re-elected to a 2<sup>nd</sup> term as members of the Congress Committee:*

Prof. Pilar Ariza (Spain)  
Prof. Shiyi Chen (China)  
Prof. Maciej Floryan (Canada)  
Prof. Peter Hunter (New Zealand)  
Prof. Henryk Petryk (Poland)  
Prof. Maria Vittoria Salvetti (Italy)  
Prof. Hiroshi Yabuno (Japan)

*The General Assembly re-elected to a 2<sup>nd</sup> term as member of the Executive Committee of the Congress Committee:*

Prof. Leslie Banks-Sills (Israel)

*The General Assembly elected as Secretary of the Congress Committee:*

Prof. Sanjay Mittal (India)

*The General Assembly elected as members of the Executive Committee of the Congress Committee:*

Prof. Shiyi Chen (China)  
Prof. Alberto Corigliano (Italy)  
Prof. Paul Linden (UK)

*The General Assembly elected as members of the Congress Committee:*

Prof. Ellen Arruda (USA)  
Prof. Catherine Brinson (USA)  
Prof. Samuel Forest (France)  
Prof. Peter Frick (Russia)  
Prof. Elisabeth Guazzelli (France)  
Prof. Stefan Hartmann (Germany)  
Prof. Gareth McKinley (USA)  
Prof. Stéphane Popinet (France)  
Prof. Gherhardt Ribatski (Brazil)  
Prof. Alfredo Soldati (Austria)  
Prof. Kathleen Stebe (USA)  
Prof. Xiaojing Zheng (China)

Additionally, Prof. Norman Fleck (UK), as the elected President of IUTAM from 1<sup>st</sup> November 2020 to 31<sup>st</sup> October 2024, also becomes *ex officio* the President of the Congress Committee and Chair of the Executive Committee of the Congress Committee in that period. Prof. Heuy Dong Kim (Korea), as President of

ICTAM2024, is appointed *ex officio* as member of the Congress Committee and the Executive Committee of the Congress Committee.

*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. D. (Davide) Bigoni, Italy, 2022  
Prof. L.C. (Catherine) Brinson, USA, 2024  
Prof. S. (Shiyi) Chen, China, 2024, member of XCCC  
Prof. A. (Alan) Cocks, UK, 2022  
Prof. A. (Alberto) Corigliano, Italy, 2024, member of XCCC  
Prof. A. (Anne) De Wit, Belgium, 2022  
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. M.D. (Michael) Gilchrist, Ireland, 2022  
Prof. E. (Elisabeth) Guazzelli, France, 2024  
Prof. S. (Stefan) Hartmann, Germany, 2024  
Prof. P. (Peter) Hunter, New Zealand, 2024  
Prof. A. (Anne) Juel, UK, 2022  
Prof. H.D. (Heuy Dong) Kim, Korea, 2024, member of XCCC (ex officio)  
Prof. P.F. (Paul) Linden, UK, 2024, member of XCCC  
Prof. D. (Detlef) Lohse, Netherlands, 2022  
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, 2022  
Prof. J.-X. (Jianxiang) Wang, China, 2022  
Prof. W.-C. (Wei-Chung) Wang, China-Taipei, 2022  
Prof. H. (Hiroshi) Yabuno, Japan, 2024  
Prof. X.J. (Xiaoqing) Zheng, China, 2024

## **Item 22 – Election of members of Symposia Panels**

With reference to the discussion under item 12, *the General Assembly elected to the Symposia Panels for the period 2020 to 2024:*

- Professor Detlef Lohse (Netherlands) – reappointed as Chair of the Fluid Mechanics Panel
- Professor Huajian Gao (Singapore) – reappointed as Chair of the Solid Mechanics Panel

- Professor Elisabeth Guazzelli (France) – reappointed to the Fluid Mechanics Panel
- Professor Hua Liu (China) – reappointed to the Fluid Mechanics Panel
- Professor Alexander Belyaev (Russia) – reappointed to the Solid Mechanics Panel
- Professor Davide Bigoni (Italy) – appointed to the Solid Mechanics Panel.

**Item 23 – Date and venue of the next General Assembly meeting**

*The General Assembly agreed to hold its next meeting in Cambridge, UK, in 2022.*

**Item 24 – Any other business**

It was suggested to consider the possibility of a General Assembly meeting at ICTAM 2020+1 in Milan to discuss the diversity issues.

The incoming President Norman Fleck thanked the President Nadine Aubry, the Secretary of the Congress Committee Robert McMeeking and the Treasurer Peter Eberhard for their dedicated work for IUTAM.

Then, the President closed the meeting.

*Henryk Petryk, Secretary-General*

## Report – IUTAM Diversity Working Group

### 1. Introduction

The IUTAM Diversity Working Group (DWG) was established at the instigation of the August 2020 General Assembly. The Bureau was tasked with appointing a special subcommittee to address diversity issues. It was also suggested that a General Assembly meeting at ICTAM 2020+1 in Milan be held to discuss diversity matters.

The principal objectives of the IUTAM are to form a link between persons and organizations engaged in science in all branches of mechanics and related sciences. The DWG believes that this link can also be used to share initiatives and good practices in diversity that can be implemented over the forthcoming years in the IUTAM community.

Different definitions of Diversity can be considered. In particular, the Royal Society of London website defines **Diversity in Science** as: “A diverse and inclusive scientific workforce draws from the widest range of backgrounds, perspectives and experiences thereby maximizing innovation and creativity in science for the benefit of humanity”. A more general definition for Diversity given by Dictionary is: “the practice or quality of including or involving people from a range of different social and ethnic backgrounds and of different genders, sexual orientations, etc.”

### 2. Scope

#### Terms suggested by the Bureau

The following charge was set forth by the Bureau:

1. To consider ways of increasing diversity in the General Assembly (GA).
2. To consider ways of increasing diversity in the Bureau and Officers.
3. To consider ways of increasing diversity in the Congress Committee (CC). Article XIIIc of the IUTAM statutes: *‘It is desired that the composition of the CC be representative of the various mechanics disciplines, and of the diversity of the mechanics community.’*

The DWG does not wish to pre-judge whether it is necessary to increase diversity within the various committees of IUTAM, and so it first assembled relevant data on diversity.

#### Timeline

The DWG was stood up on February 3, 2021 and commissioned for six months. A draft report was requested to be submitted to the Bureau in early May, with the full report submitted in early June.

#### Data

The DWG requested historical data concerning participation in IUTAM committees. The General Secretary of IUTAM provided the Bureau membership since 1948. Aside from the results of the questionnaire administered by the DWG, all other historical data were harvested by hand from online IUTAM resources by the committee members.

Data on the statistics of the broader international mechanics community as represented by participation in recent ICTAM events were not found.

### 3. Overview

Our plan has been to focus on diversity mainly in terms of geography, gender, age, and mechanics disciplines. This report is based on data gathered from two different surveys: historical data on IUTAM

## Report – IUTAM Diversity Working Group

bodies and data provided by the representatives of adhering/affiliated organizations of IUTAM via a questionnaire.

The first set of data has been compiled from the IUTAM web page, the IUTAM annual reports, and the open access book *IUTAM: A Short History* by Peter Eberhardt and Stephen Juhasz. In March 2021, and after the first meeting of the DWG, a survey was sent by e-mail to 72 representatives of adhering/affiliated organizations of IUTAM, and 47 responses have been received. The responses show that the level of significance for diversity varies from country to country, and organization to organization.

At first sight, the former set of data provides a fair diagnosis as to whether the IUTAM community has addressed and/or is addressing diversity matters. The responses to the first question: *“Does your IUTAM-adhering body abide by a pledge or statement on diversity?”* indicate that only half of the IUTAM bodies are aware or have explicitly implemented good practices pertaining to diversity (Figure 1).

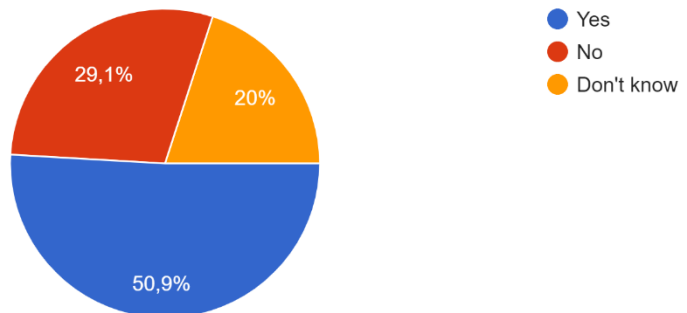


Figure 1. Responses to question 1 of the questionnaire: *“Does your IUTAM-adhering body abide by a pledge or statement on diversity?”*.

This observation is not fully supported by the responses to the second question: *“How important are diversity considerations when selecting members of the IUTAM delegation from your nation or affiliated organization?”* which indicate that the IUTAM delegates are selected accounting for diversity by almost 80% of the IUTAM bodies (Figure 2). Therefore, an examination of the successful outcomes in introducing and advancing diversity from the organizations affiliated to IUTAM may provide a basis for the implementation of diversity policies at the level of IUTAM, by sharing and developing best practices and efficient approaches.

In this regard, the questionnaire included a more specific query: *“Are any of the following (age, gender, mechanics disciplines and geographical area) explicitly taken into consideration when selecting IUTAM representatives?”*, see Figure 3.

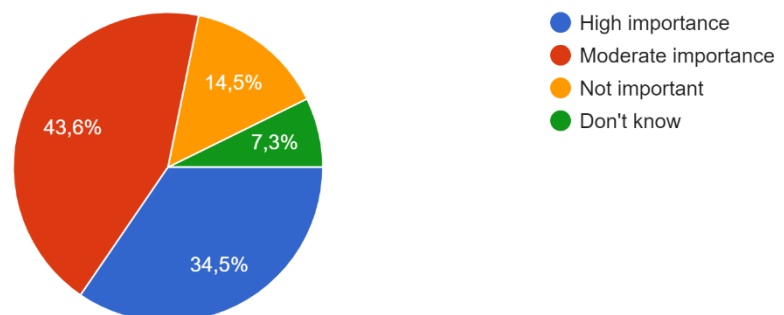


Figure 2. Responses to question 2 of the questionnaire: *“How important are diversity considerations when selecting members of the IUTAM delegation from your nation or affiliated organization?”*.

The responses to question 3 show that diversity in terms of mechanics disciplines has historically been addressed by IUTAM. This conclusion is also supported by the percentages shown in Table 1, which summarize the area of expertise of the members of the General Assembly (GA) during the period 2010 to 2020.

Regrettably, the data on age that we have had access to through the questionnaire are not sufficient to draw conclusions on this aspect of diversity. Figure 4 shows the responses to the fourth question: *“Are demographic statistics gathered for your IUTAM-adhering or IUTAM-affiliated body?”*, and more specifically,

## Report – IUTAM Diversity Working Group

the 9 responses, out of 47 responses, provided when inquired about approximate breakdown by age (see Figure 5).

Table 1. Diversity of fields of Mechanics in the General Assembly (Source: IUTAM annual reports).

Year	Fluids	Solids	S/F
2020	30.4%	63.0%	6.5%
2018	29.4%	60.0%	9.4%
2016	28.4%	64.2%	7.4%
2014	29.9%	62.1%	8.0%
2012	27.8%	62.2%	10%
2010	28.0%	67.7%	4.3%

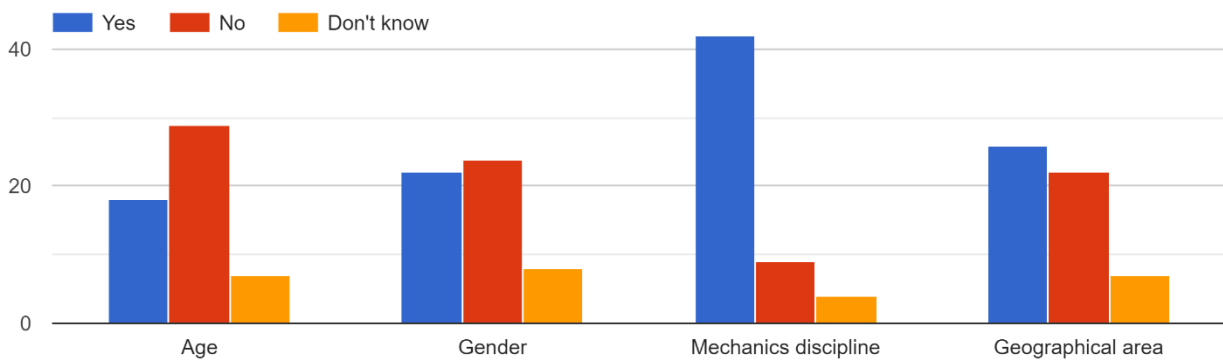


Figure 3. Responses to question 3 of the questionnaire: “Are any of the following (age, gender, mechanics disciplines and geographical area) explicitly taken into consideration when selecting IUTAM representatives?”.

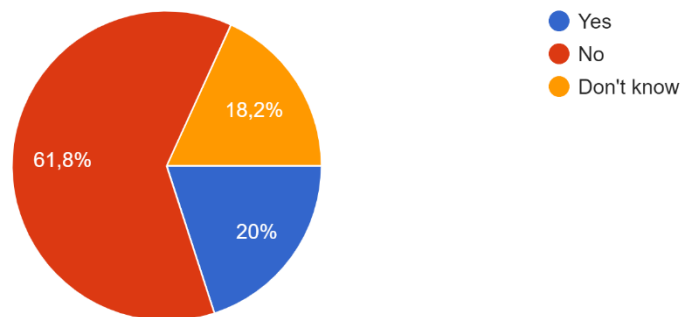


Figure 4. Responses to question 4 of the questionnaire –Are demographic statistics gathered for your IUTAM-adhering or IUTAM-affiliated body?–.



## Report – IUTAM Diversity Working Group

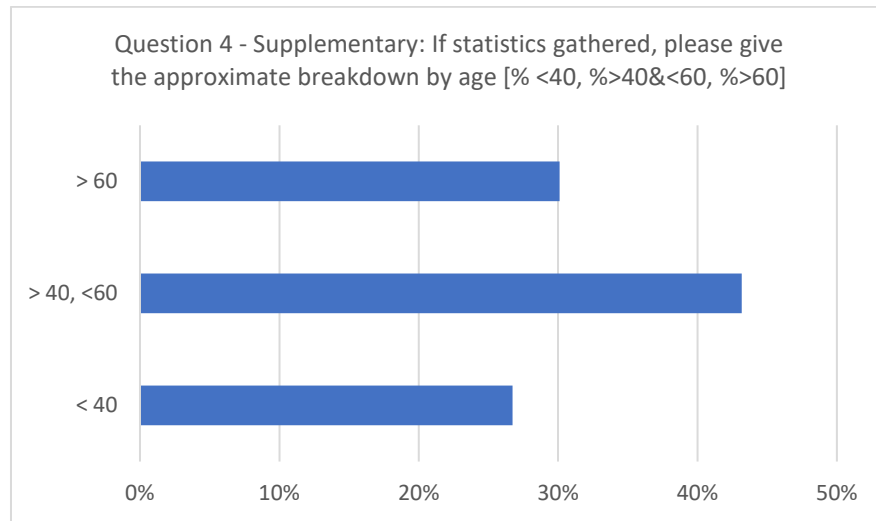


Figure 5. Responses to supplementary query provided in question 4: “Are demographic statistics gathered for your IUTAM-adhering or IUTAM-affiliated body?”. The results are based on 9 responses.

The information summarized in this section supports the following findings:

- Diversity in terms of mechanics disciplines has historically been addressed in IUTAM.
- Table 1 shows that the percentages of representatives in the General Assembly from fluids and solids are consistently 33% and 67%, respectively, during the period 2010 to 2020.
- Figure 2 shows that diversity considerations when selecting members of the IUTAM delegation are highly important for 34.5 % of the respondents, and moderately important for 43.6% of them.
- Diversity in terms of age cannot be assessed from this study due to the limited information that we have been able to gather (9 responses, see Figure 5).

In the following we analyze diversity in terms of geographic and gender balance separately.

### 4. Geographic balance

In this section we present and analyze data on geographical balance within IUTAM. The analysis is mostly based on historical data since most of the adhering and affiliated organizations have indicated that they do not account for this aspect of diversity when selecting their representatives to IUTAM (see Figure 3).

The information compiled from the historical data have been organized in three tables, i.e., i) countries represented in IUTAM (Table 2), ii) nationality of the officers of the Bureau (Table 3), and iii) nationality of other officers of the Bureau (Table 4).

Table 2. Country distribution within IUTAM (Source: IUTAM annual reports). NOTE: The annual subscriptions may change from year to year, but the numbers shown below for year 2020 are fairly representative.

	Asia	Europe	North America	Rest of the World
Number of countries	8 (17%)	31 (63%)	3 (6%)	7 (14%)
Number of members in the GA	19 (20%)	55 (59%)	10 (11%)	9 (10%)
Dues	34 (23%)	83 (56%)	21 (14%)	11 (7%)

Here, we have followed the common classification used in IUTAM, that establishes four geographical regions, i.e., i) **Asia**, including China, China-Hong Kong, China-Taipei, India, Japan, Korea, Singapore and Vietnam; ii) **Europe**, including Armenia, Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Ireland, Israel, Italy, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovenia, Spain, Sweden, Switzerland, Turkey, UK and Ukraine; iii)

## Report – IUTAM Diversity Working Group

North America, including Canada, Mexico and USA; and iv) **Rest of the World**, including Australia, Brazil, Chile, Egypt, New Zealand, Saudi Arabia and South Africa.

Table 3. Officers of the Bureau since 1948 (Source: IUTAM annual reports).

Members of the Bureau	Asia	Europe	North America	Rest of the World
<b>President</b>	0	<b>15 (6 countries:</b> Denmark (2), France (3), Germany (2), Netherlands (2), Sweden (1), UK (5))	4 (USA)	0
<b>General Secretary</b>	0	<b>19 (9 countries:</b> Austria (1), Belgium (1), Denmark (2), France (4), Germany (3), Ireland (1), Netherlands (3), Poland (2), Sweden (2))	0	0
<b>Treasurer</b>	0	<b>13 (6 countries:</b> Denmark (1), Estonia (1), Germany (4), Netherlands (4), Sweden (1), UK (2))	6 (USA)	0
<b>Total</b>	0	<b>47 (9 countries:</b> Austria (1), Belgium (1), Denmark (5), Estonia (1), France (7), Germany (9), Ireland (1), Netherlands (9), Poland (2), Sweden (4), UK (7))	10 (USA)	0

The composition of IUTAM makes sure that, from a geographical point of view, it is intrinsically diverse. IUTAM currently encompasses organizations from 49 countries, roughly distributed as shown in Table 2. Thus, it appears from the displayed numbers that the geographical representation on the administrative bodies of IUTAM follow the simple rule: Europe (50%), Asia (25%), North America and Rest of the World (25%).

Table 4. Other officers of the Bureau since 1948 (Source: IUTAM annual reports).

Members of the Bureau	Asia	Europe	North America	Rest of the World
Non-officer members	<b>12 (3 countries:</b> Japan (7), China (3), India (2))	<b>56 (15 countries:</b> Austria (3), Belgium (1), Denmark (2), Estonia (2), France (5), Germany (5), Israel (2), Italy (5), Netherlands (3), Poland (4), Russia (3), Sweden (2), Switzerland (3), UK (7), USSR (9))	6 (USA)	2 (Brazil)

Table 5. Geographical diversity in the IUTAM symposia panels since 1985 (Source: IUTAM annual reports).

Year	Asia	Europe	North America	Rest of the World
2019	-	57.1%	42.9%	-
2018	33.3%	40.0%	20.0%	6.7%
2017	-	83.3%	16.7%	-
2016	40%	50.0%	10.0%	-
2015 - 1985	19.2%	60.3%	15.9%	4.6%

The information summarized in Tables 3 to 5 supports the following findings:

- a. All General Secretaries have ever been from Europe (from 9 countries).
- b. All Bureau Officers have been connected to either European countries or the USA. Top three countries are USA (10), Netherlands (9) and Germany (9). Asia has never participated with a Bureau Officer.

## Report – IUTAM Diversity Working Group

- c. For the other members of the Bureau, most entries are from Europe (56), followed by Asia (12), USA (6) and RofW (2).
- d. The only country that pays 8 annual subscriptions and has never had a Bureau member (officer or non-officer) is Canada.
- e. China currently pays 12 dues, Japan 8, Italy 8, Russia 8. These four countries have never had a Bureau Officer.
- f. China has had 3 non-officer Bureau members; Japan has had 7 and Russia (+USSR) has had 12.
- g. Austria, Ireland, and Estonia all contribute 1 annual subscription, and all have had one member in the Bureau Officers.

### 5. Gender balance

In this section, we address gender balance within IUTAM using the analysis of historical data and the information provided by the adhering and affiliated organizations. First, as part of question 4 in the questionnaire, 12 respondents have provided an approximate breakdown by gender for their fellows (see Figure 6). It bears mention that only 20% of the organizations participating in the questionnaire acknowledge gathering demographic statistics.

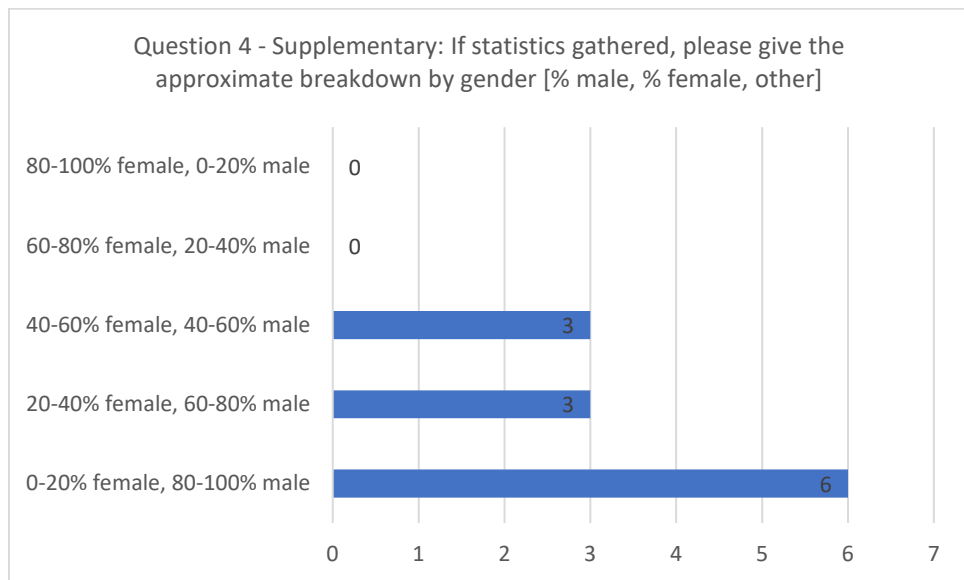


Figure 6. Responses to supplementary query provided in question 4: “Are demographic statistics gathered for your IUTAM-adhering or IUTAM-affiliated body?”. The results are based on 12 responses.

Figure 6 shows that the number of women among the total number of fellows is less than 20% for 6, less than 40% for 3, and is balanced for 3, out of the 12 organizations that have provided an input.

Next, Tables 6 and 7 gather the historical data on gender diversity in the General Assembly and Symposia Panels, respectively, over the period of 2010 to 2020. In Table 6, the data show the number of women per nation and geographical region and corresponding percentages thereof.

Table 6. Gender diversity in the General Assembly. Number of women per geographical group and total percentage (Source: IUTAM annual reports).

Year	Asia	Europe	North America	Rest of the World	Percentage
2020	1 (China)	2 (Spain, UK)	3 (USA (2), Canada (1))	2 (Brazil, New Zealand)	8.6%
2018	1	2	3	2	9.4%

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	(China)	(Spain, UK)	(USA (2), Canada (1))	(Brazil, New Zealand)	
2016	<b>0</b>	<b>1</b> (Spain)	<b>3</b> (USA (2), Canada (1))	<b>1</b> (New Zealand)	6.1%
2014	<b>0</b>	<b>2</b> (Russia, Spain)	<b>2</b> USA, Canada)	<b>0</b>	4.5%
2012	<b>0</b>	<b>1</b> (Russia)	<b>2</b> (USA, Canada)	<b>0</b>	3.3%
2010	<b>0</b>	<b>0</b>	<b>1</b> (Canada)	<b>0</b>	1.1%

Table 7. Gender diversity in the Symposia Panels. Number of women and percentage thereof (Source: IUTAM annual reports).

Year	Solids	Percentage	Fluids	Percentage
2019-2018	<b>1</b> (Israel)	20%	<b>3</b> (France, India, USA)	60%
2016-2017	<b>0</b>	0%	<b>2</b> (France, India)	40%
2014-2015	<b>0</b>	0%	<b>1</b> (India)	20%
2012-2013	<b>0</b>	0%	<b>0</b>	0%
2010-2011	<b>0</b>	0%	<b>0</b>	0%

Table 7 shows that the number of women in the congress committee has increased from 8.6% in 2004 up to 29.4% in 2020, following a clear growing trend since 2016.

Table 8. Gender diversity in past Bureau Officers and Members (Source: IUTAM annual reports).

Year	President	Vice-President	Treasurer	General Secretary	Members	Percentage
2020	<b>0</b>	<b>1</b> (USA)	<b>0</b>	<b>0</b>	<b>1</b> (Russia)	25%
2016	<b>1</b> (USA)	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b> (Russia)	25%
2012	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b> (USA)	12.5%
2008 - 1948	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	0%

Table 8 shows the number of women that have held a position as Bureau Officers or Members since 1948 and corresponding percentages thereof.

Table 9. Gender diversity in the Congress Committee (Source: IUTAM annual reports).

Year	Number of women	Women (%)	Number of members
2021-2020	10	29.4%	34
2019-2018	7	21.2%	33
2017-2016	5	14.7%	34
2015-2014	2	5.8%	34
2013-2012	2	6.1%	33
2011-2010	4	11.1%	36
2009-2008	4	11.8%	34
2007-2006	3	8.6%	35
2005-2004	3	8.6%	35
2003-2002	0	0%	35
2001-2000	0	0%	35

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The information summarized in this section supports the following findings:

- a. The number of women in the GA represents 8.6% of all representatives in 2020. This percentage was 1.1 in 2010 (Table 6).
- b. Historically, the number of women that hold or have held a role in the symposia panels, both fluids and solids is 4 (Table 7).
- c. Historically, the number of women that hold or have held a role in the Bureau is 2 (Table 8).
- d. The number of women in the congress committee shows a clear increasing trend since 2016 (Table 9).

### 6. Other Diversity issues

As already mentioned in the introduction, **Diversity** includes many aspects beyond the four areas that we have initially identified in section 3 as key to IUTAM.

We have seeded this further analysis by compiling information from the adhering and affiliated organizations to IUTAM. To this end, we have allowed as part of question 3 for the possibility of listing any other relevant considerations included in the organization's decision process of selecting IUTAM representatives.

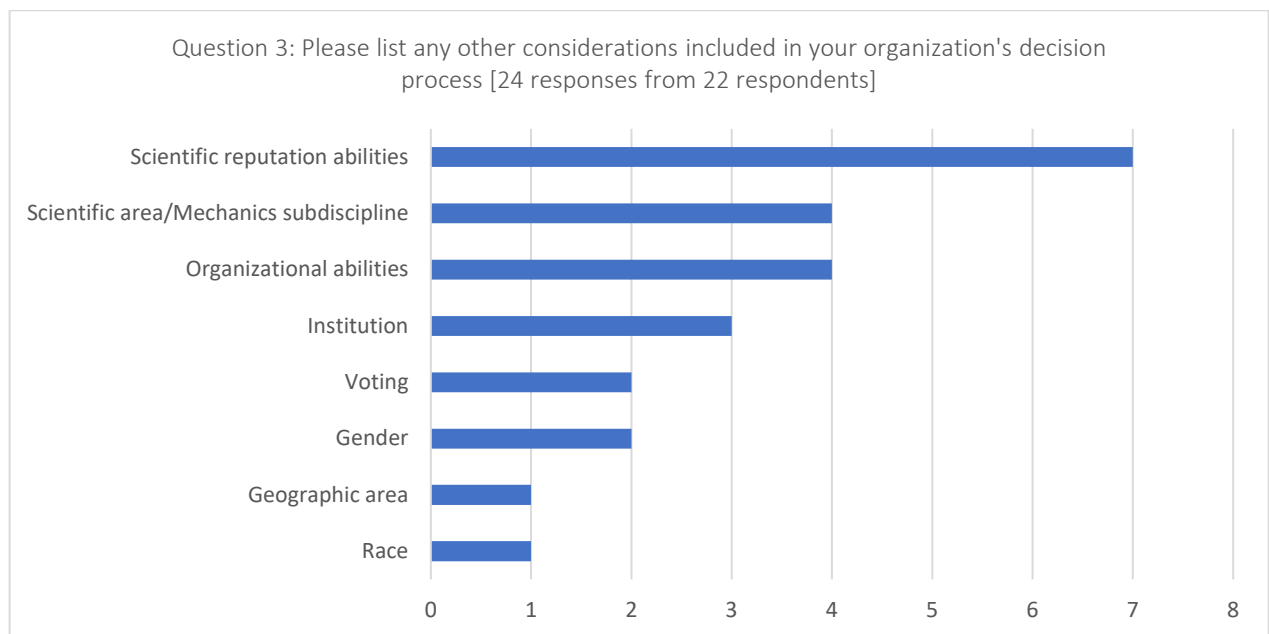


Figure 7. Responses to additional query appended to question 3: “Are any of the following (age, gender, mechanics disciplines and geographical area) explicitly taken into consideration when selecting IUTAM representatives?”.

Figure 7 shows that gender, geographic area, and race have been highlighted in 4 out of 24 responses. Moreover, we have inquired in the questionnaire about the criteria and procedures for selecting IUTAM General Assembly delegates in the adhering or affiliated organizations. The responses are shown in Figure 8, and reveal that gender, age, geography, and race are taken into account for 5, 3, 1 and 1 organizations, respectively.

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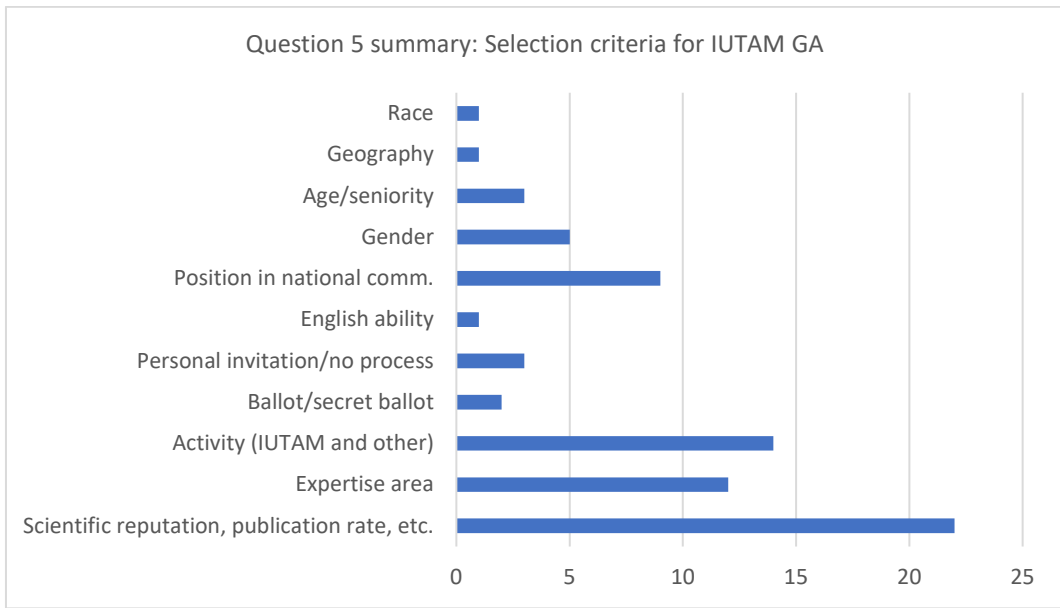


Figure 8. Responses to question 5 of the questionnaire: “What are the selection criteria and procedures for IUTAM General Assembly delegates from your nation or affiliated organization? Please give a brief summary”.

In order to identify what aspects of diversity are pertinent to the IUTAM community, the last question of the questionnaire did ask for your opinion on the matter. Figure 9 summarizes the responses.

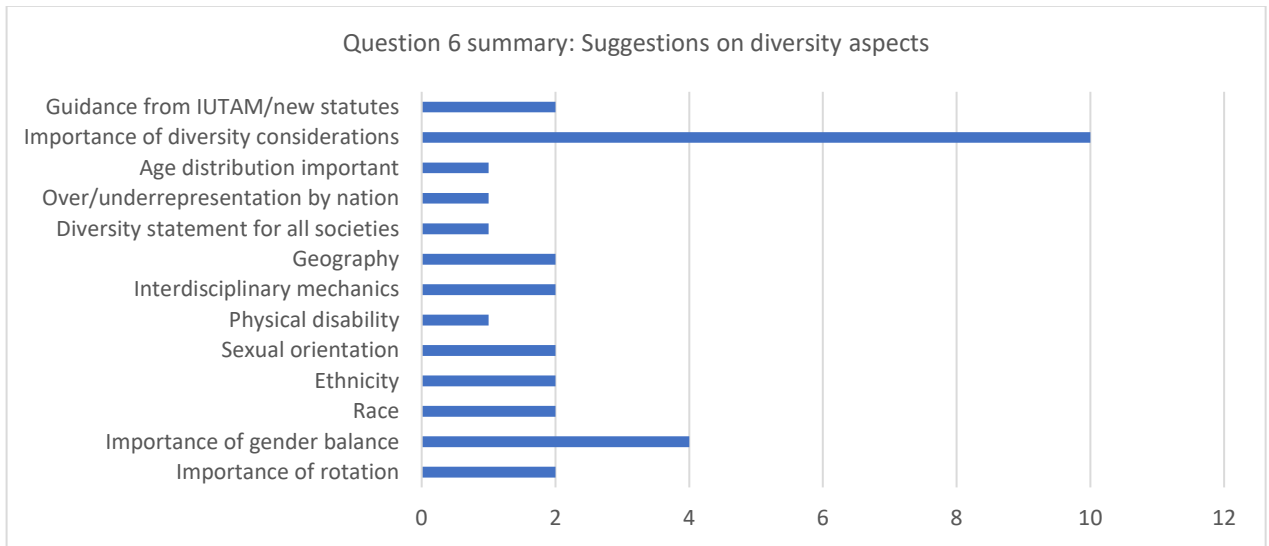


Figure 9. Responses to question 6 of the questionnaire: “Are there any issues pertaining to diversity that you wish to bring to the attention of the IUTAM Working Group on Diversity?”.

The data compiled in this section is intended for consideration as the starting point for further analysis within the IUTAM community.

Recommendations will be presented at the next General Assembly meeting (August, 2021).