

**International Committee  
for Weights and Measures**

Proceedings of Session I

of the 113th meeting

(20 March 2024)

## Executive Summary

### Session I of the 113th meeting of the CIPM (20 March 2024)

#### Changes to the RRI

The CIPM approved the proposed amendments of Staff Rules 10.2.1 (Affordability clause) and Staff Rule 11.8.3 (Education Allowance).

#### New Consultative Committee for Acoustics, Ultrasound and Vibration (CCAUV) observer

The CIPM accepted NIS (Egypt) as an observer of the CCAUV.

#### Pension fund

The CIPM:

- welcomed the report from the Pension Fund Advisory Board (PFAB), which presents the PFAB recommendations on the long-term sustainability of the BIPM Pension Fund.
- requested the BIPM Director to conduct an Asset Liability Management Study to develop an active investment strategy for the Pension Fund assets based on better financial returns.
- decided that the next actuarial study should be conducted in 2028.

#### Forum on Metrology and Digitalization (FORUM-MD)

C. Denz was appointed as the Chair, with G. Macdonald and H. Laiz as Vice-chairs.

#### Joint Committee for Guides in Metrology (JCGM)

H.A. Frøystein was appointed as BIPM representative to the JCGM

#### CODATA General Assembly

V.G. Achanta was appointed as BIPM representative to the CODATA General Assembly

#### Consultative Committee for Units (CCU)

The CIPM will invite expressions of interest for the Presidency of the CCU with the aim to elect a new President by June 2024.

#### 28th meeting of the CGPM

The 28th meeting of the CGPM will be convened during the week beginning 12 October 2026 and will be organized over three days.

**MEMBERS OF THE  
INTERNATIONAL COMMITTEE FOR WEIGHTS AND MEASURES**

As of 20 March 2024

**President**

W. Louw, South Africa.

**Secretary**

T. Usuda, Japan.

**Members**

V.G. Achanta, India.

D. del Campo Maldonado, Spain.

V. Coleman, Australia.

C. Denz, Germany.

N. Dimarcq, France.

H.A. Frøystein, Norway.

J.-T. Janssen, United Kingdom.

H. Laiz, Argentina.

G. Macdonald, Canada.

J. Olthoff, United States of America. *CIPM Vice-President.*

S.-R. Park, Republic of Korea.

J. Qu, China.

M.L. Rastello, Italy.

P. Richard, Switzerland. *CIPM Vice-President.*

G. Rietveld, the Netherlands.

G.P. Ripper, Brazil.

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## 1. WELCOME AND INTRODUCTION OF THE NEW MEMBERS

The International Committee for Weights and Measures (CIPM) held Session I of its 113th meeting on Wednesday 20 March 2024 as a hybrid meeting.

Participating in person: V.G. Achanta, V. Coleman, D. del Campo Maldonado, C. Denz, N. Dimarçq, H.A. Frøystein, J.-T. Janssen, W. Louw, G. Macdonald, M. Milton (Director of the BIPM), J. Olthoff, J. Qu, M.L. Rastello, P. Richard, G. Rietveld, G. Ripper and T. Usuda.

Participating remotely: H. Laiz and S.-R. Park.

Also attending the meeting were: C. Fellag Ariouet (Personal Assistant to the Director and Head of the Executive and Meetings Office), C. Planche (Web and Translation) and R. Sitton (Publications).

The following were in attendance for parts of the meeting: A. Cypionka (Director of the International Liaison and Communication Department), and P. Tavella (Director of the Time Department and Executive Secretary of the CCTF). Y. Duan and J. Ullrich attended remotely at the start of the meeting as guests.

W. Louw opened the meeting and welcomed those members attending in person and those taking part remotely. The three newly elected CIPM members, C. Denz, H.A. Frøystein and J. Qu, introduced themselves. The two outgoing members, Y. Duan and J. Ullrich, thanked the other members for their support and friendship over many years.

## 2. APPROVAL OF THE AGENDA AND THE REPORT OF SESSION III OF THE 112TH MEETING

The CIPM approved the agenda and accepted the report of Session III of its 112th meeting as a true record.

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| <b>Decision CIPM/113-01 (2024)</b> The CIPM accepted the minutes of Session III of the 112th meeting of the CIPM as a true record. |
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## 3. SECRETARY'S REPORT

T. Usuda gave his report, which covered the CIPM bureau meetings held on 7 December 2023, 15 January, 29 February and 19 March 2024 and other activities of the bureau since October 2023. The main topics discussed by the bureau had been to finalize the Director's objectives for 2024 and the election of three new CIPM members. The Secretary was present on-line on 5 February 2024 for the BIPM Quality Management System (QMS) review. This review covered updates to the QMS since the last review, external and internal audits, customer feedback, and the activities of each department. The Secretary added that there is growing demand for the BIPM's services, particularly calibrations in electricity, mass and dosimetry, which is being driven by an increasing number of Member States.

He noted that the CIPM had taken no decisions by correspondence since its last session in October 2023.

The Secretary's report is available as document [CIPM/2024-I-03a](#) and the minutes of the QMS review are available as [CIPM/2024-I-03b](#).

The President thanked the Secretary and invited questions and comments. G. Rietveld complimented the BIPM on its quality system, which he observed is performing above average. The Director and the staff of the BIPM were thanked for operating the quality system so efficiently.

#### 4. **PRESIDENT'S REPORT**

The President presented the progress towards completing the CIPM's 2030+ strategy document, which was initiated in 2019, focusing on the progress made with each of the five themes in the document.

##### **Theme 1: responding to the evolving needs for metrology.**

The CIPM focused on the grand challenges in this area and identified two horizontal challenges: climate change and environment; and digitalization. The CIPM agreed in 2021 that a cross-cutting Sectorial Task Group on Climate Change and Environment should be set up to take advantage of expertise in the Consultative Committees, particularly the Consultative Committee for Amount of Substance: Metrology in Chemistry and Biology (CCQM) and the Consultative Committee for Thermometry (CCT). The President said that the Forum on Metrology and Digitalization has developed a strategy that will allow the CIPM to respond to future metrological challenges, for example artificial intelligence (AI), by creating forums or sectorial task groups that will call upon the knowledge of experts from different communities.

The President was asked if the CIPM carries out foresighting exercises to identify potential new grand challenges that may need to be addressed over the next five to ten years. He replied that the drafting team has listed in the strategy document what it considers to be the next grand challenges. The strategy document will be presented to the CIPM for review and this will be an opportunity to add any other topics that will need to be considered.

##### **Theme 2: addressing key scientific challenges to advance the global measurement system.**

The focus within this theme has been to report on the implementation of the revised SI and possible future definitions of the second and the candela.

##### **Theme 3: strategy for deepening engagement with other international organizations on measurement science issues.**

The drafting team working on this theme recommended a strategy to standardize the Memoranda of Understanding (MoUs) between the BIPM and other IOs and to consolidate the relationships with IOs that are considered to be important.

The President said that this theme is mature, with actions having already been taken. J. Olthoff, the Convenor of the Thematic area, added that the group had focused on the processes. The details of how to deepen engagement with other relevant IOs will be considered during the planning of the cross-cutting areas.

##### **Theme 4: reviewing the strategy for future membership of the organization.**

The President summarized that this thematic area had evaluated the target group of approximately 85 states that do not adhere to the Metre Convention and discussed ways to include them without the existing Member States incurring any additional costs. This work towards establishing a new category of adherence had been mandated by Resolution 6 of the 27th CGPM (2022). The initial proposal was to establish a category of 'Affiliates to the CGPM'. However, following legal advice, it was established that the term 'affiliates' is used in other IOs to designate industrial partners, rather than states, and this could lead to misinterpretations.

The Director said that the adherence models in other IOs, including the United Nations, has been reviewed with the conclusion that the status of 'observer' is used in similar situations. This would equate to the status of 'Observer of the CGPM' if it were to be adopted by the BIPM. The creation of 'Observer of the CGPM' status would have benefits to both the observer and the BIPM. For example, observer status would be equally applicable to both IOs and states. This would have the benefit of allowing organizations such as the World Meteorological Organization (WMO) to attend meetings of the CGPM as official observers. The Director recalled that the motivation behind the plan for universal adherence to the Metre Convention is that the SI and UTC are used globally by all countries, yet there remain 85 countries that do not adhere to the Metre Convention. These countries should be engaged with the BIPM so that they receive updates about changes to the SI and information about UTC. The 85 states could become engaged in the work of the BIPM at meetings of the CGPM, through observer status, with no additional costs to the existing Member States.

P. Richard recalled that the CIPM bureau had discussed the potential for confusion between the use of ‘Observer of the CGPM’ and the other uses of observer status, for example in the Consultative Committees (CCs). The Director replied that he is part of a group, which includes several CIPM members, who will examine the role of observers in the CCs in mid-2024.

The CIPM discussed the possible creation of ‘Observer of the CGPM’ status for the 85 states that do not adhere to the Metre Convention and for IOs and there was general agreement on the proposal.

**Theme 5: modernizing the operations of the organization.**

The President recalled that the CIPM Rules of Procedure and Code of Conduct have been drafted and that P. Richard will give an update on the By-Laws project in §5.

The President finished by presenting the timetable for producing the final strategy document. The first draft will be available for comment at the end of April 2024. The drafting team will begin dealing with the final comments by the end of May. A team will be assembled to start work at the same time to produce a new vision for the BIPM: the new vision is dependent on the strategy and will be presented at the 150th anniversary celebrations in May 2025. The second comprehensive draft of the strategy document will be available in late June 2024. The Young metrologists involved in developing the 2050+ vision will meet at the BIPM Headquarters in July 2024 to provide their input into the vision. The drafting team will present the final draft of the strategy document, along with the By-Laws, at the end of August 2024 and they will be published towards the end of September. It will be available for presentation and discussion at the 23rd meeting of the Partners on 17–18 October to obtain their feedback. The final strategy document and vision will be published at the end of December 2024. The CIPM will start drafting the resolutions for the 28th meeting of the CGPM (2026) during June 2025.

**5. REPORT FROM THE CIPM SUB-COMMITTEE ON GOVERNANCE (SC-G)**

P. Richard said that the report from the SC-G ([CIPM/2024-I-05](#)) is available on the website. He gave an update on the work of the Sub-Committee since the last meeting of the CIPM in October 2023. The SC-G gave a mandate to P. Quayle (an external legal expert) to draft the BIPM By-Laws, based on the updated ‘Position Paper’ in November 2023. He submitted the first draft of the By-Laws and Commentary to the SC-G for consultation in January 2024 and the SC-G produced a consultation report in February. The SC-G gave a further mandate to P. Quayle in February 2024 to update the By-Laws, for presentation to the CIPM, based on the information in the consultation report. The SC-G circulated the updated version of the By-Laws and Commentary to the CIPM, the Committee for CIPM Election (CEC) and the BIPM Legal Adviser, during February-March 2024. The SC-G will produce a consultation report by the end of March 2024.

The next steps for the SC-G are to mandate P. Quayle to draft another iteration of the By-Laws and Commentary, which will be based on the latest SC-G consultation report, for presentation to Member States in March 2024. This ‘Member States version’ will be circulated for consultation among the SC-G and the CIPM in April-May 2024. The Member States will be consulted in May-July 2024. The SC-G will begin drafting the Rules of Procedure for the General Conference at the same time. The next report to the Member States on progress with the By-Laws and Commentary will be made in October 2024.

P. Richard said that the consultation exercise had raised the question of whether CIPM members should have limited or unlimited terms to serve on the committee. He recalled that under the terms of the Metre Convention, CIPM members have indefinite terms. In 2014 the CGPM changed the existing practice of election “by half” with a full and open re-election of all CIPM members. In 2023 the International Labour Organization Administrative Tribunal (ILOAT) declared this practice to be ‘irregular’. He presented three options for the election process to the CIPM for discussion:

- CIPM election according to the Metre Convention (by half) with indefinite terms, which is in the present version of the By-Laws.

- CIPM election according to the Metre Convention (by half) with definite terms, the suggestion being that members must be subject to re-election from the third term onwards.
- Open CIPM election with fixed, renewable terms according to Resolution 2 of the 25th CGPM (2014) despite the ILOAT decision.

P. Richard said that during the consultation exercise there had been a preference for the second option. The CIPM discussed the options and noted that the election process outlined in the Metre Convention for renewal “by half” the CIPM allowed for continuity within the committee. Resolution 2 of the 25th CGPM (2014) effectively limited this continuity. The second option acknowledges the need for continuity by respecting the terms of the Metre Convention, while allowing for the introduction of fixed terms.

G. Macdonald asked if there were any rules in place to remove a CIPM member who does not meet the criteria in the Code of Conduct. The President replied that although there is no procedure to deal with such an eventuality, any breach in the Code of Conduct can be reported to the President and the possibility exists to not re-elect any such members.

## 6. DIRECTOR'S REPORT

The Director reported on events since October 2023. There have been four retirements: P. Imbert on 30 October; P. Lemartrier on 31 October; E. Dominguez on 31 December; and A. Dupire on 31 December. There are two scheduled retirements in 2024: D. Burns from the Ionizing Radiation Department on 30 September and S. Westwood from the Chemistry Department on 31 October. The recruitment process is ongoing for an Engineer in the Time Department and a Site Guardian. Two new staff members have started work since October 2023: F. Aktas (Head of the Human Resources Service) on 13 November 2023 and A. Maina (Liaison Officer, CBKT and KCDB) on 1 February 2024. Three new staff members will join the BIPM in the second quarter of 2024: G. Thiriot (Site Maintenance) on 1 April; A. Villevalde (Ionizing Radiation Department) on 1 April; and C. Robertson (Chemistry Department) on 1 June.

The Director said that retirements from General Services had presented the opportunity to carry out a reorganization of the workshop and site services. J.-L. Pilon has been promoted to Head of the Service and F. Boyer has been transferred to the Physical Metrology Department along with part of B. Vincent's time. In addition to the staff reorganization, a specialist company removed some of the redundant machinery from the workshop on 6 November 2023.

The number of complementary staff (secondees and consultants) reached a peak of 31 individuals, equivalent to 13 full time staff, in 2018. The numbers were significantly reduced during the Covid-19 pandemic but there has been a steady recovery over the last few years. In 2023 there were 31 individual complementary staff, equivalent to nine full time staff and, so far in 2024, there have been 24 individual complementary staff, equivalent to ten full time positions.

The Director gave an update on outstanding payments by Member States and Associates. The BIPM has received payments from Argentina, which avoided suspension at the end of 2023. In addition, Pakistan made a partial payment towards its arrears in 2021. At the end of 2024, Argentina, Iran, Pakistan and Tunisia are at risk of suspension unless they settle their arrears for 2022.

The BIPM budget outturn for 2023 showed an overall underspend of 9 %. There was an overspend for site expenses of 153 thousand euros due to a 42 % increase in electricity costs and IT maintenance contracts. An overspend of 22 thousand euros was recorded for laboratory expenses as a result of the late delivery of two large items of equipment from 2022. These two overspends were offset by an underspend on staff costs, resulting in a surplus.

Some of the budget headings have been re-balanced for the budget cycle 2024–2027 to respond to the fact that IT costs are now mainly operational rather than investments. The audited financial accounts for 2023 will be

available in June 2024 and will be presented to the CIPM to sign off.

The Director said that during 2023, the Executive and Meetings Office organized a meeting on average on two out of every three working days. There were 91 on-line meetings and 44 hybrid meetings, with 5 249 on-line participants and 1 118 on-site (6 547 in total). It is anticipated that there will be a 35 % increase in participations in 2024. He noted that there is nearly as much work involved in organizing on-line meetings as there is in organizing those held at the BIPM Headquarters.

The BIPM launched the SI Reference Point in October 2024. This new service provides digital access to information in the SI brochure and is available for beta-testing. The Director said that the project was undertaken as part of the BIPM's Work Programme on Digital Transformation, with contributions from seconding NMIs. The development of the SI Reference Point involved the following colleagues (listed alphabetically), who all made invaluable contributions: A. Ben Abdallah, S. Chalk (UNF), G. Dudle (METAS, now OST), M. Gruber (PTB), J.-L. Hippolyte (NPL), F. Meynadier (BIPM) and J. Miles (BIPM).

The President thanked the Director and invited questions and comments. P. Richard noted, for the benefit of the new CIPM members, that as Chair of the CIPM Sub-Committee on Finance (FSC), he meets with the Director and the Head of the Finance Office, four times a year to get an update on the BIPM's financial situation. These meetings are in addition to the scheduled FSC meetings.

## 7. CIPM DECISIONS ON THE BIPM STAFF RULES

The President said that notes to the CIPM regarding proposed amendments to Staff Rules 10.2.1 (Affordability clause) and Staff Rule 11.8.3 (Education Allowance) are available on the website as documents [CIPM/2024-1-08-a](#) and [CIPM/2024-1-08-b](#). The CCE and the BIPM management had discussed both proposals and a consensus reached, which is the basis for the proposals in the documents. The Director gave a summary of each of the amendments and the CIPM discussed the proposals, which were accepted with a minor editorial change and to make them gender neutral.

**Decision CIPM/113-02** The CIPM approved the proposed amendments of Staff Rules 10.2.1 (Affordability clause) and Staff Rule 11.8.3 (Education Allowance).

## 8. UPDATES FROM THE BIPM

### International Liaison and Communication Department

A. Cypionka, Director of the ILC Department, reminded the CIPM that World Metrology Day 2024 will be the first to be celebrated as an official "world day", following ratification of the proposal at the 42nd session of the United Nations Educational, Scientific and Cultural Organization (UNESCO) General Conference in November 2023. She recalled that ten states out of the 85 UN Member States that do not adhere to the Metre Convention supported the proposal, indicating broad interest in the BIPM's activities among these states. The World Metrology Day (WMD) theme for 2024 is "sustainability" and the poster is the first to include the UNESCO logo. The BIPM's success in obtaining permission from the UNESCO secretariat to use the logo required a considerable amount of work. UNESCO has included a page on its website with information about WMD. A launch event for WMD as an official "world day" will be held at the UNESCO headquarters on 14 May 2024. Brief details of this event were given.

A. Cypionka said that cooperation with the United Nations Framework Convention on Climate Change (UNFCCC) is progressing following the BIPM's success in gaining observer status to the Conference of the Parties (COP) meetings in 2022. A delegation from the BIPM, consisting of A. Cypionka and E. Flores

(Executive Secretary of the CIPM Sectorial Task Group on Climate Change and Environment (CIPM-STG-CENV)), attended COP28 in Dubai (United Arab Emirates) in November 2023 as a fact-finding mission and to demonstrate the BIPM's commitment to promoting the importance of metrology with key stakeholders. The focus of COP28 had been on finance, with less attention given to scientific matters. The COP is advised on scientific matters by the Intergovernmental Panel on Climate Change (IPCC) and the Subsidiary Body for Scientific and Technological Advice (SBSTA). Following the fact-finding mission, it was agreed that the BIPM should apply to obtain observer status at the IPCC and an application letter has been submitted. She added that it will be necessary to have more than the three or four delegates present in order to run significant events at future COP conferences, which are large and complex. This can be achieved by making use of additional personnel that attend COP meetings as part of their national delegations. She asked CIPM members to help identify coordinating bodies in climate science in their home countries, so that NMI representatives can be included in national delegations. (See §10 for additional information).

Ongoing collaborations between the BIPM and other Intergovernmental Organizations (IOs) include the study on *Highlighting the Interrelations in Quality Infrastructure and Regulation* with the Organisation for Economic Co-operation and Development (OECD). This study involves a loan arrangement, whereby R. Guliyeva has worked at the OECD headquarters for two days each week over a seven month period. The study will be launched later in 2024. The BIPM has collaborated with the United Nations Economic Commission for Europe (UNECE) Working Party on Regulatory Cooperation and Standardization Policies (WP.6) to Recommendation K on "Metrological traceability of Conformity Assessment and Testing". In addition, the BIPM authored a chapter on metrology in the UNECE WP.6 publication *The Basics of Quality Infrastructure for Trade*. The BIPM is considering holding a workshop at the United Nations Industrial Development Organization (UNIDO) General Assembly in 2025, which could be used to 'reach out' to the 85 states that do not adhere to the Metre Convention as part of the universal adherence initiative. A national representative to the World Trade Organization (WTO) Technical Barriers to Trade (TBT) committee has approached the BIPM to host a workshop at the WTO TBT meeting in November 2025. This will focus on the needs of developing countries in metrology.

A. Cypionka gave an update on the "Young Metrologists" programme. The BIPM launched an on-line questionnaire in July 2023 to determine the views of young metrologists on where metrology will be in 2050+. A series of six RMO virtual workshops have been held to discuss the same questions. The questionnaire will remain open until 30 June 2024 and a consolidation workshop will be held in-person, with the RMO Coordinators, at the BIPM Headquarters in July 2024 to collate and discuss the responses. These responses will be summarized in a report, that will be presented to the CIPM and the NMI Directors at their meetings in October 2024.

Highlights of the Capacity Building and Knowledge Transfer (CBKT) programme were presented. A "round table" has been set up with the CBKT officers from the RMO secretariats to meet to discuss relevant activities. In addition, the BIPM-TÜBİTAK UME joint initiative for onsite training in TÜBİTAK's laboratories has been extended for a seventh cycle. The "technical exchanges" on the KCDB have proven to be very successful, with more than 400 applicants for the latest on-line training on comparison reports. These courses will now be held twice each year and the successful model for technical exchanges will be extended to other topics such as training for TC Chairs.

A. Cypionka concluded her presentation by mentioning that a new digital service, the SI Reference Point 1.0, is now on-line. The BIPM will collect feedback to make any necessary improvements and version 2.0 will be developed for launch in 2025. This work will be aligned with the work of the Forum on Metrology and Digitalization (FORUM-MD).

The President thanked A. Cypionka and invited questions and comments. It was noted that the UNECE is focused on Europe and it was asked if there are any plans to approach UN bodies that represent other regions. A. Cypionka replied that name of the United Nations Economic Commission for Europe (UNECE) can be misleading; the BIPM liaises with the UNECE as it offers technical support to developing countries. The BIPM is not working specifically for Europe; it is working in the context of technical assistance for other regions. The

BIPM will check the activities and missions of the five other UN economic commissions.

### **Liaison with the ITU and progress towards continuous UTC**

P. Tavella gave a presentation to describe the outcomes on continuous UTC from the International Telecommunication Union (ITU) World Radiocommunication Conference 2023 (WRC-23), held in Dubai (United Arab Emirates) in November and December 2023. She said the outcomes were the culmination of 24 years of work; time and frequency users having started discussions on continuous UTC in 2000. She noted that in terms of liaisons, the BIPM and NMI time experts participate in the ITU Radiocommunication Sector (ITU-R) WP 7A - *Time signals and frequency standard emissions*. The ITU is a liaison to the CCTF and the BIPM is a Sector Member of the ITU-R.

P. Tavella gave a brief history of the leap second, from the introduction of the practice of inserting a leap second, as described in the International Radio Consultative Committee (CCIR) Recommendation of 1972.

She gave a summary of the work undertaken by the BIPM over recent years to support the proposal for continuous UTC, including the considerable efforts devoted to networking with national and regional ITU delegations to explain Resolution 4 of the 27th CGPM (2022) to ensure that all delegates were fully prepared and informed about the need for continuous UTC before the WRC-23. In November 2023, immediately before WRC-23, three ITU regional groups, CITELE in the Americas, APT in Asia Pacific and CEPT in Europe, prepared documents to support the development of continuous UTC for presentation at WRC-23. Each document was different, but the core message was the same: that the CGPM is responsible for UTC definition and rules, the ITU is responsible for the broadcast of UTC, and the BIPM and ITU work together with the common goal of realizing and distribution to the users of the most adapted and useful international time scale. To this aim, the BIPM and ITU signed a memorandum of understanding in 2020. The United Arab Emirates drafted a similar document to support continuous UTC. The Russian Federation and the Regional Commonwealth in the Field of Communications (RCC) declared a common position which did not mention the BIPM or CGPM, but proposed the revision of UTC as a continuous time scale at the WRC 2027 with an implementation not earlier than 2040.

Eventually, after three weeks of discussions, WRC-23 agreed Resolution 665 (REV.WRC-23) *Definition of time scale and dissemination of time signals via radiocommunication systems*. The full text of Resolution 665 (REV.WRC-23) is available on the CIPM webpage as document [CIPM/2024-I-09.b](#).

P. Tavella thanked the many NMIs that had contacted their ITU national delegations in 2022 and 2023 in advance of WRC-23. She gave special thanks to M. Sené and G. Rietveld and other international organizations such as the International Union of Radio Science (URSI), ITU Telecommunication Standardization Sector (ITU-T) and International GNSS Service (IGS). She said she had also worked to build support from digital companies including Google, Facebook and timing manufacturers. She concluded by saying that the next stage is for the CCTF Task Group to decide on the new tolerance, how it will be applied and when the change to UTC will be implemented. These outcomes will form the basis of a Draft Resolution for the 28th meeting of the CGPM (2026).

The President thanked P. Tavella and asked for comments and questions. The CIPM asked if the implementation date for continuous UTC appearing in Resolution 665 (REV.WRC-23) of “possibly in 2035” had been left deliberately vague. P. Tavella replied that Resolution 4 calls for implementation of continuous UTC “in or before 2035”, and that the preference from WRC is “possibly in 2035”. Conversely, the transmission of the value (UT1 – UTC), which is a separate issue, could be implemented later, although not later than 2040, if additional time is needed to update the systems. The Secretary said that the decision at the WRC-23 had been reported in some newspapers in Japan. He suggested that the news media should be monitored for other such stories and that information in the press is useful to keep the general public informed about the progress with continuous UTC and the reasons for the proposal. P. Tavella suggested that information in the news media could be collected to demonstrate the value of the work. The President suggested that a short summary of the outcomes of WRC-23

could be produced to send to NMIs. G. Macdonald asked if there is a communications strategy at the BIPM Headquarters to collect news stories in the world-wide media that illustrate metrological achievements, for example the positive outcome from WRC-23 and other successes. It was recalled that before the redefinition of the SI, a communications working group was established to coordinate the global communications efforts to maximize the impact. A similar group could be considered to look into major metrology stories and to produce a unified message. The Director said that the group of communications experts that was formed in advance of the redefinitions still exists. A. Cypionka added that the BIPM Principal Communications Officer, is in contact with communications officers in the RMO secretariats and this group could be extended to include the communications departments of the major NMIs. The “Impact and case studies related to metrology” webpage on the BIPM website could also be used to host news stories to support the impact of metrology.

### **Plans for the celebration of the 150th Anniversary**

The Director said that the celebrations to mark the 150th anniversary of the signing of the Metre Convention on 20 May 2025 will take place from 19 to 23 May. The aim of the celebrations will be to celebrate the achievements of 150 years of metrology by the BIPM since the signature of the Metre Convention; to promote metrology to the widest possible global audience; and to increase the profile of metrology and the work of the BIPM among Member State delegations at UNESCO and with Embassies in Paris.

The events during the anniversary week will start with a VIP reception in the BIPM Headquarters’ garden, which will have a focus on French stakeholders in the BIPM, for example the Heads of local organizations and authorities including the Mayor and the Prefect. In addition, the reception will include representatives from Member State Embassies in Paris, the CIPM, and senior staff from the NMIs and BIPM.

A one-day event “150 years of the BIPM and celebration of World Metrology Day” is being planned to be held at the UNESCO headquarters in Paris on 20 May 2025 to mark the anniversary of the signing of the Metre Convention. This event will include VIP speakers, video tributes, a panel discussion on the future of “scientific multilateralism” and the launch of an anniversary book. The BIPM has approached the French Ministry of Foreign Affairs to enquire whether it is possible to hold a reception in the Salle d’horloges in the Quai d’Orsay building of the Ministry of Foreign Affairs, which is where the Metre Convention was signed in 1875.

A two-day conference “From units to the universe – future revolutions in metrology” will be held at the Palais des Congrès de Versailles on 21–22 May. The first day of the conference will highlight the main themes from the CIPM Strategy: climate and environment; standards for quantum technologies; and digital transformation. The second day will cover the new definition of the second and metrology for future revolutions in science. There will also be a poster competition for NMI staff.

A garden party for staff will be held at the BIPM Headquarters during the same week.

The Director said that the BIPM has signed a contract with the publisher *Gallimard* to publish a book to mark the anniversary. The book will cover the history of the BIPM in 150 photographs, including a series of previously unpublished photographs by Robert Doisneau and newly commissioned photographs by Raphaël Dallaporta. Other celebrations during 2025 will include the issuing of a celebratory stamp by *La Poste*. A Focus session will be held at the International Metrology Congress (CIM 2025) in Lyon on 11–14 March and an end-of-year event or workshop will be held in December 2025.

## 9. REPORTS FROM THE CONSULTATIVE COMMITTEES

### Consultative Committee for Acoustics, Ultrasound and Vibration (CCAUV)

H. Laiz, President of the CCAUV, presented report [CIPM/2024-1-10-a](#) and thanked G. Panfilo for her work as the Executive Secretary. The CCAUV held its 14th meeting on 25–26 October 2023, preceded by a half-day workshop on “The contribution of CCAUV to the Evolving needs in Metrology”. All three of the CCAUV’s Working Groups had held meetings between 23–24 October. He presented a list of the talks and scientific contributions given at the workshop. A brief summary of the progress made at the Working Group meetings was given, along with the decisions and actions from the CCAUV meeting.

The CCAUV has set up a Task Group on Digitalization (CCAUV-TG-DIG), with T. Bruns as the Chair. The Terms of Reference of the Task Group are to support the development of the SI Reference Point and BIPM digital services in the field of AUV and to support the activities of the CIPM Forum on Metrology and Digitalization in AUV.

H. Laiz said that NIS (Egypt) had applied for observership of the CCAUV at its meeting in October 2023. This application had been discussed and was supported by the CCAUV.

The President thanked H. Laiz and asked the CIPM if they approved the application of NIS (Egypt) to become an observer of the CCAUV. The CIPM adopted the following decision.

**Decision CIPM/113-3 (2024)** The CIPM accepted NIS (Egypt) as an observer of the Consultative Committee for Acoustics, Ultrasound and Vibration (CCAUV).

### Consultative Committee for Time and Frequency (CCTF)

N. Dimarcq, President of the CCTF, presented report [CIPM/2024-1-10-b](#) and thanked P. Tavella for her work as the Executive Secretary. He recalled that the CCTF had held an on-line information meeting on 16 November 2023 with the aim of informing and engaging the time and frequency community on its current activities and strategy, particularly the four ‘hot topics’ and the work plan towards the 28th meeting of the CGPM (2026).

N. Dimarcq presented an action plan for the *Roadmap towards the redefinition of the second*. The Task Force has identified four urgent actions from the Roadmap. There needs to be a shared understanding of Option 2 for the redefinition of the second (ensemble of species) and its impacts; identification of potential candidates for the redefinition (whether by Option 1 (a single transition) or Option 2); identification of critical steps for the fulfilment of criteria by 2030; and an increased emphasis on NMI’s progress and the results obtained. In order to maintain the momentum on the work towards the redefinition of the second, there will be meetings of the Task Force sub-group co-chairs in March, June and October 2024 and a meeting of the whole Task Force in October 2024. In addition, there will be a special open session at the 37th European Frequency and Time Forum (EFTF) in Switzerland in June 2024, with at least 400 participants expected.

N. Dimarcq said that the CCTF’s work towards the ‘hot topic’ of promoting the mutual benefit of Coordinated Universal Time (UTC) and Global Navigation Satellite Systems (GNSS), including traceability to UTC from GNSS measurement has included interactions with the International Committee on Global Navigation Satellite Systems (ICG) for GNSS interoperability. These interactions resulted in the ICG adopting the following CCTF recommendation in October 2023: “*GNSS providers continue their efforts to improve the prediction of UTC broadcast in the navigation message with the help of time laboratories, with the aim to improve their time dissemination service and also the GNSS interoperability.*” In addition, the CCTF continued with its work on improving traceability to UTC through GNSS measurements, which is described in a paper in *Metrologia*<sup>1</sup>. The

<sup>1</sup> Defraigne P et al., Achieving traceability to UTC through GNSS measurements, 2022, *Metrologia*, 59(6), 064001. <https://doi.org/10.1088/1681-7575/ac98cb>

CCTF Working Group on GNSS Time Transfer (CCTF-WGGNSS) has created a Task Group that will contact the RMO TCTFs to obtain feedback on the applicability of traceability to UTC through GNSS measurements in the different RMOs and to get feedback on the experience in NMI's countries about user needs and requirements from accreditation bodies.

The 'hot topic' on sharing resources for capacity building to improve (inter)national timekeeping is under way, and has attracted support from the IEEE Ultrasonics, Ferroelectrics and Frequency Control Society (IEEE UFFC). The initiative started with a secondee from NPLI (India) at the BIPM and the first course in time and frequency is now available on the BIPM e-learning platform.

The President thanked N. Dimarcq and invited questions and comments. H.A. Frøystein asked if the CCTF is looking into the vulnerabilities and challenges of GNSS in the calculation of timescales. N. Dimarcq replied that the CCTF Working Group on GNSS Time Transfer (CCTF-WGGNSS) addresses all the applications of GNSS in sectors where there is a direct interest to improve signals and traceability. The Director said that the decision to divide the work of the CCTF into the four 'hot topics' had been very successful by focusing its work and allowing the community to have clearly defined targets. Framing the work of the CCTF in terms of the grand challenges has brought the community together and created great dynamism. He added that the *Roadmap towards the redefinition of the second* calls for a resolution at the 28th meeting of the CGPM to provide a framework for the preferred possibilities for the redefinition. He asked if there is a need for any published technical results to underpin the redefinition that are not yet available or if the CCTF is working towards gaining consensus among the delegates at the CGPM. N. Dimarcq said that papers are available that give basic information about the different options, however papers are missing that compare the different possibilities on the shortlist. Papers which give details of the differences between the possibilities will be required for the redefinition and the situation will be addressed during 2024 with the help of the CCTF Working Group on Strategic Planning (CCTF-WGSP). The aim is to have two or three preferred possibilities for the redefinition to present to the 28th meeting of the CGPM.

## 10. OTHER REPORTS

### Forum on Metrology and Digitalization (FORUM-MD)

G. Macdonald, Vice-chair of the FORUM-MD, said that its first meeting had been held at the BIPM, with the option to participate on-line, on 7–8 March 2024. A workshop "Towards digital quality infrastructure" was held on 5–6 March, which had been organized following a meeting of the signatories of the *Joint Statement of Intent on the digital transformation in the international scientific and quality infrastructure* (the Joint Statement Signatory Round Table). Discussions at the Round Table meeting resulted in the NCSL International (NCSLI) and the International Measurement Confederation (IMEKO) volunteering to host future events.

The major outcomes of the FORUM-MD meeting included a decision to establish eight *Ad hoc* Working Groups to progress the individual topics and a Chair was nominated for each Group. The *Ad hoc* Working Groups have been asked to draft Terms of Reference and to review membership so that work can start as soon as possible. The FORUM-MD meeting was attended by digitalization representatives from each of the Consultative Committees with the intention to consolidate their work.

G. Macdonald commented that the *Ad hoc* Strategy Group for the Forum will need to meet in the near future to maintain momentum and to draft and circulate a report of the FORUM-MD meeting so that it is ready for presentation to the CIPM in June 2024. The second meeting of the FORUM-MD and its working groups will take place from 17 to 21 February 2025. The signatories of the *Joint Statement of Intent* will hold their next on-line meeting in September 2024.

The President thanked G. Macdonald and asked if the other CIPM members that had attended the FORUM-MD

meeting had any input. C. Denz added that there had been significant interest among the attendees to contribute to the work of the Forum, which highlights the importance of this work. The FORUM-MD agreed to organize two workshops: Complex networks and how they are involved in digitalization; and Metrological traceability, the latter to be Chaired by F. Härtig (PTB).

### **CIPM Sectorial Task Group on Climate Change and Environment (CIPM-STG-CENV)**

D. del Campo Maldonado, Chair of the CIPM-STG-CENV, presented a report on the activities of the Group, which is available on the CIPM webpages as document [CIPM/2024-I-11-b](#). She began by thanking R. Wielgosz, Director of the BIPM Chemistry Department, and E. Flores, Executive Secretary of the Group, for their commitment to ensuring its success. The Core group of interdisciplinary participants, which includes representatives from the CIPM, BIPM, RMOs and the World Meteorological Organization (WMO) and Global Climate Observing System (GCOS), has been holding short meetings at two-monthly intervals since the publication of the BIPM-WMO “Metrology for climate action” workshop report in June 2023.

The Core group acts as a facilitator to bring together the many groups that exist inside and outside the metrology community to work on the different recommendations that came out of the BIPM-WMO workshop. Of the 128 recommendations from the workshop, around 70 % have now been forwarded to existing groups that are well placed to address the individual needs. For some of the topics, particularly biosphere monitoring and cryosphere monitoring, additional liaisons with the metrology community would need to be established before the associated recommendations can be tackled. One aim of the Core group is to avoid duplication of work by focusing first on identifying existing groups that work in these areas.

D. del Campo Maldonado said that the first Stakeholder meeting of the CIPM-STG-CENV is scheduled for 16-18 September 2024. The meeting will focus on progress on the recommendations from the “Metrology for climate action” workshop and new initiatives and areas of interest. The stakeholder meeting will have two themes, which mirror those of the BIPM-WMO workshop: metrology in support of the physical science basis of climate change and climate observations; and metrology as an integral component of operational systems to estimate greenhouse gas emissions based on accurate measurements and analyses.

D. del Campo Maldonado expanded on and reiterated the information about the fact-finding mission to the COP28 meeting in Dubai (United Arab Emirates) in November 2023 given by A. Cypionka in §8. She noted that preparation of the exhibition and side events at COP meetings is organized at short notice (eight weeks before) and depends on the organizing country. However, opportunities to participate may arise while on-site. The BIPM has access to high-level state representative meetings with high-level negotiations focusing on climate finance, support mechanisms, adaptation and mitigation. Scientific discussions are carried out before the COP meetings, for example at the Subsidiary Body for Scientific and Technological Advice (SBSTA), Intergovernmental Panel on Climate Change (IPCC) and the Earth Information Day, organized by the WMO. In addition to the recommendations from the fact finding mission mentioned in §8, it was noted that the BIPM should engage with established liaison organizations such as the WMO, International Organization for Standardization (ISO), International Atomic Energy Agency (IAEA) and United Nations Industrial Development Organization (UNIDO) to capitalize on pavilion events and side events at future COP meetings.

The President thanked D. del Campo Maldonado and asked if there were any questions. The Director said that the recommendations from the BIPM-WMO workshop that have not found groups to address the individual needs has highlighted areas where there may only be limited NMI activity, for example biosphere monitoring and cryosphere monitoring. This represents a challenge to the NMI community; there are existing issues, however some NMIs may not necessarily have a mandate to tackle them. D. del Campo Maldonado said that EURAMET has a project to develop a roadmap on cryosphere monitoring that will be presented at its next meeting in September 2024. She commented that additional interaction between NMIs and those making observations needs to be encouraged for work to get under way.

### Pension Fund Advisory Board (PFAB)

G. Macdonald, Chair of the PFAB, reported on the activities of the Board by referring to document “PFAB report to the CIPM and annexed documents” dated 8 December 2023, which is available on the CIPM website as document [CIPM/2024-I-11-c](#), and presented the PFAB’s findings and recommendations to the CIPM. The recommendations are given here in full.

These were that following the Actuarial Study conducted by Mercer in 2023, the PFAB:

- a. NOTES Mercer’s conclusion related to staff movement from the “Pre-2010” or “Post-2010” sections of the Pension Scheme to the “Post-2017” section and sees no reason to prevent staff from making such a change if they choose.
- b. RECOMMENDS that the CIPM endorses the conclusions and recommendations formulated in the 2023 Actuarial Study as a valid expert analysis.
- c. RECOMMENDS increasing the Fund’s resources by authorizing exceptional contributions or voluntary injections of liquidity in the future, whenever possible.
- d. RECOMMENDS that the CIPM considers the intergenerational measures suggested by Mercer. However, the PFAB recommends that the effects and consequences of such measures, be further assessed before any final decision is taken in this regard. Specifically, the PFAB considers it is prudent to wait until inflation rates become stable, (for example at a level lower than the one of 2022 or 2023), before considering any recommendation consisting in freezing or limiting the increase of the value of the point applicable to pensions.
- e. RECOMMENDS that the Organization conducts an Asset Liability Management (“ALM”) study to develop an active investment strategy based on better financial returns.
- f. RECOMMENDS that a new actuarial study is commissioned in five years to monitor the evolution of the assets and the liabilities to ensure the long-term financial balance of the Pension Scheme.

G. Macdonald reported that Recommendation b was noted by the CIPM; no decision was required. Recommendation c was carried out in 2023 (Decision CIPM/112-31 (2023)) and required no further action. Recommendation d does not require immediate action, the PFAB will give due consideration to any proposal to freeze or limit the value of the point applicable to pensions and its effects on pensioners and staff; the recommendation outlines what the PFAB will do under the circumstances given.

G. Macdonald said that Recommendations e and f will require decisions from the CIPM. The recommendation from the Chair of the PFAB is that the CIPM endorses the BIPM Director to conduct an Asset Liability Management (“ALM”) study for the Pension Fund and to report back to the FSC, PFAB and CIPM.

The CIPM discussed recommendations e and f and noted that an Asset Liability Management Study, which takes advice from external experts, is good governance practice. The President asked the CIPM if they accepted the PFAB report dated 8 December 2023. The report was accepted unanimously. He asked if the CIPM agreed that an Asset Liability Management Study should be commissioned and if the next actuarial study should be carried out in 2028. Both points were agreed unanimously and the CIPM adopted the following decision.

#### **Decision CIPM/113-4 (2024)** The CIPM:

- welcomed the report from the Pension Fund Advisory Board (PFAB), dated 8 December 2023, presenting the PFAB recommendations on the long-term sustainability of the BIPM Pension Fund. Following the recommendations of the PFAB;
- endorsed the conclusions and recommendations formulated in the 2023 Actuarial Study and considered such a document as a valid expert actuarial analysis;
- requested the BIPM Director to conduct an Asset Liability Management (“ALM”) Study to develop an active investment strategy for the Pension Fund assets based on better financial returns; and
- decided that the next actuarial study should be conducted in 2028 to monitor the evolution of the assets and the liabilities of the pension scheme as well as to ensure its long-term financial stability.

## 11. ELECTIONS

### FORUM-MD

The President said that G. Macdonald had agreed to remain as a Vice-chair of the FORUM-MD and there were two candidates for the positions of Chair and second Vice-chair: C. Denz and H. Laiz. Following a brief discussion and show of hands, the CIPM unanimously appointed C. Denz as Chair and H. Laiz as the second Vice-chair.

**Decision CIPM/113-5 (2024)** The CIPM appointed C. Denz as the Chair of the Forum on Metrology and Digitalization, confirmed G. Macdonald as the Vice-chair and appointed H. Laiz as a second Vice-chair.

### Delegate to the JCGM

The President called for volunteers to become the CIPM delegate to the Joint Committee for Guides in Metrology (JCGM). H.A. Frøystein was the only volunteer and, following a show of hands, was unanimously appointed.

**Decision CIPM/113-6 (2024)** The CIPM appointed H.A. Frøystein as the BIPM representative to the Joint Committee for Guides in Metrology (JCGM).

### Delegate to the CODATA General Assembly

The President called for volunteers to become the CIPM delegate to the CODATA General Assembly. V.G. Achanta was the only volunteer and, following a show of hands, was unanimously appointed.

**Decision CIPM/113-7 (2024)** The CIPM appointed V.G. Achanta as the BIPM representative to CODATA.

### CIPM Sub-Committees

The President said that there were vacancies to serve on the CIPM Sub-Committee on Finance (FSC) and CIPM Sub-Committee on Strategy in the Universal adherence and Vision sub-groups. He asked for volunteers and the CIPM members shown in Decision CIPM/113-8 (2024) were appointed.

**Decision CIPM/113-8 (2024)** The CIPM appointed the following CIPM members to serve on the CIPM Sub-Committees:

- CIPM Sub-Committee on Finance (FSC): J. Qu.
- CIPM Sub-Committee on Strategy – Universal adherence to the Metre Convention: H.A. Frøystein, J. Qu.
- CIPM Sub-Committee on Strategy – Vision: V.G. Achanta (Coordinator), V. Coleman, C. Denz, J.-T. Janssen, G. Macdonald, M. Milton (Director of the BIPM), H. Laiz, J. Olthoff, M.L. Rastello, G. Rietveld.

### CCU President

The President recalled that the CIPM had already asked R. Brown (NPL) to Chair the CCU meeting in April 2024. The CIPM agreed that the election of the next President of the Consultative Committee for Units (CCU) will be deferred to the June 2024 session of the CIPM meeting. The President said that the CIPM will invite expressions of interest for the Presidency.

**Decision CIPM/113-9 (2024)** The CIPM decided to invite expressions of interest for the Presidency of the Consultative Committee for Units (CCU) with the aim to elect a new President by June 2024, and confirmed that R. Brown (NPL) will oversee the implementation of the actions from the April 2024 meeting.

## 12. ANY OTHER BUSINESS

The following meeting dates for the CIPM in 2024 were confirmed:

- Session II of the 113th meeting (online) 19–21 June
- Session III of the 113th meeting (in person with a hybrid option) 14–16 October

The October meeting will include visits to the BIPM laboratories.

The Director gave an update on the plans for the 28th meeting of the CGPM (2026). He proposed that the meeting will be held in October 2026 (week 42). The CIPM bureau has discussed the plans for the meeting and agreed that it should be held over three days. There will be a one-day briefing meeting at the BIPM Headquarters on the day before the opening of the General Conference. The CIPM discussed the possibility of holding an informal orientation meeting for the newly elected members after the General Conference. The first meeting of the newly elected CIPM will take place in March 2027.

**Decision CIPM/113-10 (2024)** The CIPM decided that the 28th meeting of the CGPM will be convened during the week beginning 12 October 2026 and that it will be organized over three days.

M.L. Rastello reminded the CIPM that the CCPR and CIE joint Workshop “100 Years of  $V(\lambda)$  and the Future of Photometry” will be held at the BIPM Headquarters on 3 June 2024, with an on-line option. The workshop will be held in conjunction with 26th meeting of the CCPR and CCPR Working Group meetings on 4–7 June and the CIE Division 1 and Division 2 annual meetings in Paris on 31 May–1 June. The CCPR will hold an internal workshop on 4 June to discuss the future of the candela. She invited CIPM members to attend both workshops.

J.-T. Janssen said that the Consultative Committee for Ionizing Radiation (CCRI) has started negotiations with the International Atomic Energy Agency (IAEA) regarding the future delivery of the BIPM work programme and how they can best collaborate. The initial discussions have been positive.

The President thanked the CIPM and closed the meeting.