

Commission Report on GASS Commission Business Meetings

Commission A

prepared by Yasuhiro Koyama (Chairperson 2014–2017)

1. Results of Election of Vice Chair and Early Career Representative

Elections were conducted for the positions of Vice Chair and Early Career Representative during the Business Meeting 1. The ballots (both mail-in and on-site) were counted by Yasuhiro Koyama. As a result, Patrizia Tavella (INRIM, Italy) and Pedro Miguel Duarte Cruz (NSF, Portugal) were elected as candidates for Vice Chair and Early Career Representative. At the Council Meeting on August 19, both of them were formally approved as the Vice Chair and the Early Career Representative.

2. Appointment of Associate Editor for *Radio Science Bulletin*

Since the Past Chair, Vice Chair, and Early Career Representative are expected to become the editors, it was decided to recommend Parameswar Banerjee (Amity University, India), Patrizia Tavella (INRIM, Italy), and Pedro Miguel Duarte Cruz (NSF, Portugal) as commission editors. Luk R. Arnaut (University of Nottingham, UK) volunteered to become an editor and it was also decided to recommend him as a commission editor.

3. Updates/Status of Working Groups

It was proposed to establish a new working group focusing on the education and training for Metrology. There are many institutes providing such education and training, and it will be very helpful if we can share the valuable materials and resources. Since the formal establishment of the new working group will require detailed Terms of Reference and list of membership, it was proposed to start from ad-hoc group with the task of collecting the information on training organized by the various institutes and sharing the information. The name of Bruce Warrington (NMIA, Australia) was suggested as the most appropriate candidate as a chair of the ad-hoc group.

4. Updates to Terms of Reference of Commission

The Terms of Reference of Commission A were reviewed and the necessity of updating was discussed during the Business Meetings 1 and 2. As a result, some changes were proposed and the draft revised Terms of Reference were presented at the Council Meeting. The revisions were approved for the 2014-2017 term. In Business Meeting 3, some additional suggestions were discussed to update the Terms of Reference to reflect the present activities of Commission A. It was understood that the current Terms of Reference are intended to include broader areas, so as to attract more researchers to participate in activities of Commission A. This will be discussed

again in the Business Meetings at the next GASS in 2017 and it was asked that participants come prepared to discuss whether further revisions would be useful at that time.

Terms of Reference for Commission A (2014-2017)

The commission promotes research and development of the field of measurement standards and physical constants, calibration and measurement methodologies, improved quantification of accuracy, traceability, and uncertainty, and the inter-comparison of such. Areas of emphasis are:

1. the development and refinement of new measurement techniques and calibration standards, including antenna techniques
2. primary standards, including those based on quantum phenomena, and the realization and dissemination of time and frequency standards
3. characterization of electromagnetic properties of materials, physical constants, and properties of engineered materials, including nanotechnology
4. methodology of space metrology and electromagnetic dosimetry/measurements for health diagnostics, applications, and biotechnology, including bio-sensing
5. measurements in advanced communication systems and other applications

The commission fosters accurate and consistent measurements needed to support research, development and exploitation of electromagnetic technologies across the spectrum and for all commissions.

5. Proposed sessions for the next GASS

For the GASS2017, following sessions were proposed.

- Complex Isotropic and Anisotropic Magnetodielectrics
- Nonlinear Measurements
- Space Metrology
- SI Units
- Metrology in the THz Region
- Time Scale
- Advanced Time and Frequency Transfer Techniques
- Education and Training in Metrology
- Advances in sensor development and applications
- Mode-Stir Chambers

As one of the themes for General Lectures at GASS2017, a lecture about the SI Units by Terry Quinn, emeritus Director of the BIPM was proposed.

6. Proposed sessions for the AT-RASC

For the AT-RASC2015, following topics have been provided for the Commission A.

Antennas, Bioeffects and medical applications, EM-field metrology, EMC and EM pollution, Impulse radar, Interconnect and packaging, Materials, Microwave to submillimeter measurements/standards, Millimeter-wave and sub-mm wave communications, Noise, Planar structures and microstrip circuits, Quantum metrology and fundamental concepts, Time and frequency, Time domain metrology, Techniques for Remote Sensing:, Measurements and Calibration in Propagation, Space Plasma characterization, Material characterization, RFID, Biological effects, Signal Enhancement for EM Metrology, Scattering calibration, references (bi-static), Noise measurement standards - a review of radiometers

It was recognized that the proposals for special sessions are due by October 17, 2014 and ideas for proposals were encouraged.

7. Other business

The possibility of Commission A again responding to the formal request for opinion from International Telecommunication Union (ITU) to URSI about the redefinition of Coordinated Universal Time (UTC) was discussed. Although it will be late for inclusion in the background document for the World Radio Conference in 2015, the participants of the Business Meeting 3 felt it was a good idea to update the 1999 opinion of Commission A and propose that to the Council Meeting of URSI send it as the opinion of Commission A to ITU. Some participants (Yasuhiro Koyama, Patrizia Tavella, Felicitas Arias, Demetrios Matsakis, and E. Van Lil) volunteered to update the document as a resolution from the Business Meeting of URSI Commission A. The document was then submitted at the Council Meeting on August 23. The Council Meeting decided to forward the document to the Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science (IUCAF) for comments and further action. After some discussion between the representatives of IUCAF and URSI, the document was submitted to ITU-R as an input document.

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