# Commission A: GASS 2026 Report

## 1. Elections of Commission Officers

The election results of the new Commission Officers were announced on 19 August, 2026, after due ratification by the Council. Dr Tian Hong Loh (United Kindom) was elected as the new Vice-Chair and Dr Mayra Alejandra Rivera Ruiz (Mexico) was elected as the new (Early Career Representative) ECR for the next triennium 2026-29.

Former Vice-Chair, Dr. José Mauricio López Romero, took over the position of Commission A Chair until GASS 2029. The new Vice-Chair, Dr Tian Hong Loh, will work with the new Chair to organize various activities of the Commission A and will become the Chair at GASS 2029.

Two ECRs work with the Chair and the Vice-Chair to ensure that the Commission is attractive to their early-career peers. Dr. Ricardo Figueiredo will continue his term until GASS 2029. The new ECR, Dr Mayra Alejandra Rivera Ruiz will take over the outgoing ECR of Dr. Giovanna Signorile and continue until GASS 2032.

## 2. Review of Terms of Reference

The Terms of Reference of Commission A were reviewed during the 2nd CCA Meeting on 19 August, 2026 and no changes were proposed and agreed

The Terms of Reference of Commission A (Electromagnetic Metrology) continue to reflect the broad evolution of electromagnetic metrology and its increasing relevance to modern science and technology. During the 2023–2026 triennium, the Commission reaffirmed the importance of maintaining a multidisciplinary framework capable of encompassing both classical metrology and emerging quantum technologies.

The current Terms of Reference were reviewed during the Commission A business meetings held in conjunction with major URSI conferences during the triennium. It was concluded that the existing framework remains appropriate and sufficiently broad to address the rapidly evolving challenges in electromagnetic metrology.

The Commission promotes research and development in the areas of measurement standards and physical constants, calibration and measurement methodologies, improved quantification of accuracy, traceability and uncertainty, and the intercomparison of measurement systems. Areas of emphasis include:

1. Development and refinement of new measurement techniques and calibration standards, including but not limited to antennas, radars and communication-related metrology;
2. Electrical and electronic standards, including quantum-based standards, microwave and optical frequency standards, and the realization and dissemination of time and frequency standards;
3. Characterization of electromagnetic properties of materials, nanomaterials, metamaterials, and engineered electromagnetic structures;
4. Metrology for quantum technologies, quantum sensing, quantum communications, and advanced photonic systems;
5. Space metrology, satellite-based measurements, navigation systems, and lunar and planetary timing infrastructure;
6. Electromagnetic metrology for biomedical, industrial, environmental, and aerospace applications;
7. Artificial intelligence, machine learning, advanced computational and post processing techniques as applied to metrology and measurement science.

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

## 3. Working Group

Following the discussions at Business Meeting in GASS2014, a Working Group for Education and Training has been set up. The name and the Terms of Reference of the Working Group were introduced and new members were solicited. Before the GASS2017, the status of the Working Group was ad-hoc, but it was formally established at the GASS2017.

**Name of the Working Group**
Working Group for Education and Training

**Terms of Reference**
Electromagnetic metrology attracts students and trained specialists from a wide variety of fields, such as biophysics, electrical engineering, health sciences, materials science, physics, radio science, and statistics. The purpose of this Working Group is to promote the education of both students and actively working professionals by collecting information about available training resources on the techniques and fundamental principles involved in the work of Commission A, and to promote education in metrology by disseminating the information gathered and making it available on a public web page. At present the relevant information collected by this Working Group is hosted on the website of the Indian Radio Science Society (InRaSS) on the page https://www.inrass.in/ursi-commission-a-working-group-a-1-home-page/

**Members**
Chair: Demetrios Matsakis (Masterclock, USA), Vice chair: Steven Weiss (The Johns Hopkins School for Professionals, USA), Members: Ashish Agarwal (National Physical Laboratory, India), Carlo F. M. Carobbi (University of Florence, Italy), William A. Davis (Professor Emeritus, Virginia Tech, USA), Yashiro Koyama (NICT, Japan), Tian Hong Loh (National Physical Laboratory, UK), Razvan D. Tamas (Constanta Maritime University, Romania), Amitava Sen Gupta (The NorthCap University, India), Patrizia Tavella (BIPM, France), Congsi Wang (Key Laboratory of Electronic Equipment Structure, China), Parameswar Banerjee (Ex. National Physical Laboratory, India)

## 4. Technical Advisory Committee

The Technical Advisory Committee (TAC) of the Commission A was first created at the time of GASS 2014 (Beijing) following a suggestion by the Board. The mandates for the TAC are to help with comments and advice for the scientific programs for the flagship conferences and for resolutions and recommendations. It has subsequently updated thrice during the GASS 2017 (Montreal) and GASS 2021 (Rome) GASS 2023 (Sapporo) and the recently concluded GASS 2026 (Krakow). The present list of members of the TAC for the triennial term of 2023-2026 is as shown:

Jose Mauricio Lopez, Cinvestav, Mexico (Chair)

Tian Hong Loh, National Physical Laboratory, UK (Vice Chair)

Amitava Sen Gupta, The NorthCap University, India

Ping Jinsong, National Astronomical Observatory, China

Demetrios Matsakis, USA

Dominique Schreurs, KU Leuven, Belgium

Emmanuel Van Lil, KU Leuven, Belgium

Felicitas Arias, France

Liu Min, Beijing Orient Institute of Measurement and Test, China

Ekkehard Peik, PTB, Germany

Nosherwan Shoaib, National University of Sciences and Technology, Pakistan

Nuno Borges Carvalho, Instituto de Telecomunicacoes, Universidade de Aveiro, Portugal

Parmeswar Banerjee, Amity University, India

Patrizia Tavella, BIPM, France

Pedro Miguel Cruz, Bosch Security Systems SA, Portugal

Poonam Arora, NPLI, India

Ricardo Figueiredo, Instituto de Telecomunicacoes, Portugal (ECR)

Rowayda A. Sadek, Helwan University, Egypt

Steven Weiss, The Johns Hopkins School for Professionals, USA

Ilona Piekarz , IA PAS, Poland

Yasuhiro Koyama, NICT, Japan

Mayra Alejandra Rivera Ruiz, Cinvestav, Mexico (ECR)

## 5. Preparation of Future Meetings

The following URSI flagship meetings in this triennium: AT-RASC during 19–24 May, 2024 in Gran Canaria, Spain; AP-RASC during August 2025 in Sydney, Australia; and GASS during 15–22 August, 2026 in Krakow, Poland, were briefly discussed in the CCA meetings. The focus right now is to prepare for the scientific program for the AT-RASC 2027 and is discussed in the next section. For the AP-RASC 2028 and GASS 2029, it is too soon to plan and prepare, but the overall topics will be similar to those for the forthcoming AT-RASC 2027.

Members were informed about the provision for limited amount of funding from the Commission A budget for any regional meeting or workshop. At present however, no proposals were available for support by Commission B budget. But we plan to work on this in the coming months.

## 6. Proposed sessions and conveners for AT-RASC 2027

The following sessions will be organized at AT-RASC 2027. These were decided during GASS 2026 and a few weeks following that.

A01: Antenna and Propagation Measurement Techniques (Conveners: Tian Hong Loh, Nuno Carvalho and Ricardo Figueiredo)

A02: Measurements in Telecommunications and Advanced Communication Systems (Conveners: Tian Hong Loh, Nuno Carvalho and Ricardo Figueiredo)

A03: Metrological Analysis and Characterization of Material Properties (Conveners: Nosherwan Shoaib, Imran Shoaib and Takashi Shimizu)

A04: Measurements in Intelligent IoT System: Development and Applications (Conveners: Rowayda Sadek, Poonam Arora and Pedro Miguel Cruz)

A05: Electrical and Electromagnetic Metrology including Quantum Standards (Conveners: Satyakesh Dubey, Thomas Kleine-Ostmann, You Li and Diego Luna)

A06: Metrology of Electromagnetic Sensors (Conveners: Nuno Carvalho, Carlos Ortiz and Pedro Miguel Cruz)

A07: Applied Metrology in diverse areas including Medical diagnostics, Bio-sensing, Agriculture, Smart Cities etc. (Conveners: Nuno Carvalho, Wojciech Skierucha and Rowayda Sadek)

A08: Space Metrology (Conveners: Liu Min and Wang Qianjuan)

A09: Calibration, Traceability, and Inter Comparisons of Instruments and Measurements (Conveners: Joseph Achkar, Carlo Carobbi, Raul Solis and Demetrios Matsakis)

A10: Microwave and Optical Frequency Standards (Conveners: Michael Kazda, Tekehiko Tanabe, Poonam Arora and Amitava Sen Gupta)

A11: Realization and Dissemination of Time Scales and Standard Frequencies (Conveners: Jose Mauricio Lopez, Dirk Piester, Demetrios Matsakis and Ashish Agarwal)

A12: Time and Frequency Metrology, Phase Noise and Frequency Synthesis (Conveners: Archita Hati, Michael Kazda and Amitava Sen Gupta)

A13: Time & Frequency Transfer Techniques and Precision Geolocation (Conveners: Dirk Piester, Joseph Achkar, Giovanna Signorile and Parameswar Banerjee)

A14: Low-Cost GNSS Modules for Timing Applications (Conveners: Dinesh Manandhar, Anindya Bose and Amitava Sen Gupta)

A15: Precision Metrology – Training, Management, and Prospects (Conveners: Demetrios Matsakis, Steven Weiss, Parameswar Banerjee)

KA01: Methods and novel technologies for absorbed/epithelial power density assessment above 6 GHz (Conveners: Maxim Zhadobov, Paulraj Rajamani and Amitava Sen Gupta)