

Report on GASS Commission B Business Meetings

Commission B held three business meetings during the Montreal GASS. There were 64 participants present at the Monday meeting, 46 on Wednesday, and 33 on Friday. Ari Sihvola (Chair of Commission B) chaired the meetings, assisted by Kazuya Kobayashi (Vice Chair of Commission B).

1. Results of Election of Vice Chair

Four candidates were running for the position of Commission B Vice Chair (2017-2020). During the voting at the Monday business meeting, Prof. John Volakis received 26 votes, against 19 votes for the runner-up (Prof. Francesco Andriulli). Altogether, 23 Official Members participated in the voting (three ballots were cast onsite). Prof. Volakis was later confirmed on Thursday as the incoming Vice Chair by Council.

2. Results of Election of Early Career Representative

Likewise, two candidates were running for the position of Commission B ECR (2017-2020). During the voting at the Monday business meeting, Dr. Andrea Michel received 35 votes, against 31 votes for the runner-up (Dr. Dimitrios Tzarouchis). Altogether, 22 Official Members participated in the voting (two ballots were cast onsite). Dr. Andrea Michel was later confirmed on Thursday as the incoming Commission B ECR by Council.

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

Both the new Vice Chair, John Volakis, and the new ECR, Andrea Michel, were appointed as Associate Editors for the *Radio Science Bulletin*.

4. List and Status of Working Groups

The list and status of working groups in other Commissions was introduced and discussed. Education and History are important subjects for Commission B and discussion will continue concerning this item.

5. Updates to Terms of Reference of Commission

The Commission B Terms of Reference were discussed. The following amendments were confirmed on Saturday by Council (revision is marked by underlines):

The interests of Commission B are fields and waves, encompassing theory, analysis, computation, modeling, simulation, experiments, validation, and applications. Areas of emphasis are:

- Time-domain and frequency-domain phenomena;

- Scattering and diffraction;
- Propagation and effects, including waves in specialized media;
- Guided waves;
- Antennas and radiation;
- Inverse scattering and imaging.

The Commission fosters the creation, development, and refinement of analytical, numerical, and measurement techniques to understand these phenomena. It encourages innovation and seeks to apply interdisciplinary concepts and methods.

6. Meetings Proposed to be Supported in the Coming Triennium

The main event of Commission B is the triennial Electromagnetic Theory Symposium (EMTS). The next EMTS will be held in San Diego, California, USA, May 27-31, 2019. Commission funds coming from URSI central will be used for supporting young scientists at the EMTS 2019 meeting. Commission B will also contribute actively to the three URSI flagship meetings AT-RASC (Gran Canaria, 2018), AP-RASC (New Delhi, 2019), and GASS (Rome, 2020).

7. Report and Comments on the Scientific Program of the Commission for the Current GASS

Commission B organized 37 oral sessions and 13 poster sessions. In addition, Commission B was the lead Commission in seven oral sessions, and participated in 25 other joint sessions.

The Commission B Tutorial Lecture, “Metasurfaces: Synthesis for Perfect Refraction and Reflection of Waves into Arbitrary Directions,” was given by Prof. Sergei Tretyakov of Aalto University, Finland.

Overall, the sessions organized by Commission B were extremely successful. The quality of the presentations was very high and the sessions attracted a large number of participants, over one hundred at peak.

Among the 10 finalists of the Student Paper Competition in URSI GASS, five were from Commission B. Four of the five finalists from Commission B received the cash awards (First, Second, Third, and Fourth Prizes), and one of them received the Honorable Mention award. The details are given below.

First Prize: Shubhendu Bhardwaj (The Ohio State University, Columbus, OH, USA; Advisers Prof. Niru Nahar and Prof. John Volakis). His paper title: Novel Circularly-Polarized Horn Antennas and Phase-less Characterization Methods for sub-mm-wave and Terahertz Communication and Sensing

Second Prize: Satheesh Bojja Venkatakrishnan (The Ohio State University, Columbus, Ohio, USA; Advisers Prof. Elias Alwan and Prof. John Volakis). His paper title: Multi-band Multi-beam Performance Evaluation of On-Site Coding Digital Beamformer using Ultra-Wideband Antenna Array

Third Prize: Takashi Nagasaka (Chuo University, Tokyo, Japan; Adviser Prof. Kazuya Kobayashi). His paper title: Plane Wave Diffraction by a Thin Material Strip: the Case of E polarization

Fourth Prize: Navid Rezazadeh (University of Manitoba, Winnipeg, MB, Canada; Adviser Prof. Lot Shafai). His paper title: A Planar Controlled Reception Pattern Array with Dual-Mode TM₁₁-TM₂₁ Microstrip Antenna Elements for Increased Angular Coverage

Honorable Mention Award: Prathap V. Prasannakumar (University of Colorado, Boulder, CO, USA; Adviser Prof. Dejan Filipovic). His paper title: Broadband Reflector Antenna for Simultaneous Transmit and Receive (STAR) Applications

Concerning the URSI Awards presented at the Opening Ceremony of the Montreal GASS, two awardees were closely affiliated with Commission B: Prof. Lot Shafai (Booker Gold Medal) and Prof. Yue Li (Issac Koga Gold Medal). Furthermore, research work by the recipient of the John Howard Dellinger Gold Medal, Prof. Sir. John Pendry, is directly linked to the domain of Commission B.

8. Other Business

The Commission B Officials for the 2017-2020 triennium are as follows:

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