



## **Commission GASS 2021 Report**

### **Commission B**

Commission B held three business meetings during the URSI GASS 2021 conference in Rome, chaired by Kazuya Kobayashi (Chair of Commission B) and John Volakis (Vice Chair of Commission B), assisted by Andrea Michel (ECRs of Commission B)

CCA-I Meeting	Monday August 30, 2021	19 in presence, 19 online
CCA-II Meeting	Wednesday September 1, 2021	20 in presence, 17 online
CCA-III Meeting	Friday September 3, 2021	9 in presence, 21 online

### **1. Results of Election of Vice-Chair and ECR**

Three candidates were running for the position of Commission B Vice Chair (2021-2023) and two candidates were running for the position of Commission B ECR (2021-2023). Electronic voting was concluded on Monday at 16:00. Dr. Wallen and D. Tzarouchis were later confirmed on Tuesday by as the incoming Vice Chair and ECR by Council, respectively.

#### Comm B Vice-Chair

- **Henrik Wallén (Finland)** 25
- Debatosh Guha (India) 19
- Ahmed A. Kishk (Canada) 19

#### Comm B ECR

- **Dimitrios Tzarouchis** 38
- Okan Yurduseven (UK) 25

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

Both the new Vice-Chair, Henrik Wallen, and the new ECR, Dimitrios Tzarouchis, were appointed as Associate Editors for the *Radio Science Bulletin*.

### **3. Updates/Status of Working Groups**

At present, there are no Working Group in Comm B.

### **5. Updates to Terms of Reference of Commission**

No revisions have been recommended during the CCA-III held on Friday.

### **6. Meetings proposed to be supported in the coming triennium**

During the Commission B CCA-I meeting on Monday, Prof David Michelson presented a proposal for holding the EMTS 2025 meeting in Vancouver, Canada. After some discussion among the attendees, the proposal was approved. The budget will be reviewed by Profs. Kobayashi (URSI Comm B Past Chair), Volakis (Comm B Chair) and Ross Stone for finalization.

During the Commission B CCA-III meeting on Friday, Prof Shestopalov presented updates on the organization and venue of the EMTS 2023 (May 22-26, 2023). It was proposed and approved to move the venue of the EMTS 2023 conference from Moscow to Sochi.



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### 7. Report and comments on the scientific program of the Commission for the current GASS

Here below a summary of the Comm B papers actually present in the conference Proceedings stored into the USB thumb drive.

In all, the 29 Commission B sessions and 5 sessions joint with other commissions (see below) had 357 papers presented. These were inserted into the conference proceedings. That is, 89.25% of the submitted and accepted papers were presented and inserted in the conference proceedings.

So far, no information about *no shows* is available.

REGULAR SESSIONS							
Session	# Parts	Title	Conveners	# oral papers on proceedings	# FIP papers on proceedings	invited papers	
						#	%
B01	12	Antenna theory, design, and measurement	J. Volakis; D. Guha, A. Michel	36	20	5	9%
B02	2	Memorial session for Prof. Thomas B. A. Senior	J. Volakis, K. Kobayashi, P. Smith	6		6	100%
B03	5	Propag. & scattering: adv., trends & new applic.	Burkholder; Erricolo; Lombardi; Riva	15		5	33%
B04	4	Advanced algorithms in computational electromagnetics	S. Ohnuki, V. Okhmatovski, Q. Liu	12	1	4	31%
B05	2	Memorial session for Prof. Jean Van Bladel	P. Van Daele, G. Uslenghi, A. Sihvola	5	0	5	100%
B06	3	Inverse scattering and imaging	L. Li, M. Pastorino, S. Kidera	9	9	2	11%
B07	3	Integral equation, hybrid, and fast methods	F. Andriulli, T. Eibert	9	4	6	46%
B08	4	Novel mathematical methods in electromagnetics	K. Kobayashi, Y. Shestopalov	12	3	7	47%
B09	3	Mathematical modelling of EM problems	P. Smith, G. Uslenghi	9	2	7	64%
B10	4	Scattering and diffraction	L. Klinkenbusch, G. Manara	11	2	4	31%
B11	4	Electromagnetic theory	D. Sjöberg, H. Wallén	12		8	67%
B12	3	Materials in electromagnetics	A. Osipov, P. Smith	8		1	13%
B13	3	Electromagnetics of time-varying scatterers & materials	S. Tretyakov, A. Díaz-Rubio, V. Asadchy	8	3	7	64%
B14	3	Waves in nonlinear and inhomogeneous media	Y. Shestopalov, E. Smolkin	6		4	67%
B15	2	Forward scattering and propagation	C. Ponti, A. Randazzo	5		2	40%
B16	3	Antennas & microwave devices inspired by electromagn. band gap	Karu. P. Esselle, L. Matekovits	9	4	6	46%
B17	2	Optimization techniques in electromagn.: new trends& novel applic.	S. Rengarajan, A. Hoorfar	6	1	5	71%
B18	3	Millimeter-wave antennas/5G communications	J. Volakis, J. Hirokawa	9	1	2	20%
B19	3	Women's contributions in inverse electromagn. Problems	M. Bevacqua, R. Scapatucci, M. Maisto	8		1	13%
B20	2	High-frequency and hybrid methods	P. Pathak, G. Manara, L. Klinkenbusch	5		3	60%
B21	3	URSI 100 years of history and achievements of Comm.B	Y. Rahmat-Samii, R. Stone, A. Sihvola	6		6	100%
B22	3	Advanced metamaterial concepts for electromagn.	A. Alù, N. Engheta, D. Sounas	9	2	2	18%
B23	2	Spat. corr. estim.& chann. model. for massive MIMO&nearfield communic. syst.	D. Sarkar, S. Mikki, Y. Antar	5			0%
B24	3	Electromag. methods for direct&inverse scatt. involving stratified media	M. Pastorini, Schettini	9		3	33%



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B25	3	Semi-analytical modeling techniques in electromagnetics & photonics	N. Tsitsas, G. Zouros	9	2	9	82%
B26	3	Electromagnetics at the nanoscale and quantum effects	A. Boag, A. Natan	9	4	5	38%
B27	2	Inverse problems in antenna & scattering in complex environm.	R. Solimene; D. Lesselier; A. Randazzo	6	2	3	38%
B28	2	Innovative Electromagn. Solutions for Modern Sensing & Inform. Systems	Canestri, Monorchio	6	1	3	43%
B29	1	Other			6		0%
<b>JOINT SESSIONS</b>							
Session	# Parts	Title	Conveners	# oral papers on proceedings	# FIP papers on proceedings	invited papers	
						#	%
BD	2	Symmetries in artificial materials: theory and applications	G. Valerio, S. Horsley	6	1	4	57%
BE1	2	Near-field coupling in wireless communications	A. Michel, G. Gradoni, P. Nepa	5		3	60%
BE2	1	Reconfigurable Intelligent Surfaces for Wireless Communic. & Sensing	P. del Hougne, G. Gradoni	3	1	1	25%
BG	2	High-frequency wave propagation in highly disturbed ionosphere	N. Zernov, V. Gherm, C. Carrano	5			0%
BK	3	Innovative methods and devices for microwave medical applications - supported by COST MyWAVE	Lorenzo Crocco, Francesca Vipiana, Kosmas	8	2	4	40%
				<b>Total Oral</b>	<b>Total FIP</b>		
				<b>286</b>	<b>71</b>		
			<b>TOTAL</b>	<b>357</b>			

Submissions			On Conference Proceedings			
Number of submitted papers	Rejected	Accepted	Contained into thee conference proceedings		Not registered or withdrawn	
<b>409</b>	<b>9</b>	<b>400</b>	<b>357</b>	<b>89.25 %</b>	<b>43</b>	<b>10.75%</b>



## **8. Proposed sessions for the next GASS**

No discussion.

## **9. Proposed sessions for the AT-AP-RASC (Gran Canaria, Spain, 30 May – 4 June 2022)**

Prof. Volakis (Comm B Chair) proposed the following new topics, but a more detailed discussion will be done among Commission B Officers.

1. As additional topics, the following have been discussed
2. Antennas for CubeSats (Cubesats and applications)
3. Satellite Imaging using CubeSats and NanoSats (Satellite imaging )
4. Imaging of lunar and Mars surfaces
5. Simultaneous transmit receiver front ends
6. Flexible and wearable RF-Front ends
7. Antenna array Beam formers
8. Millimeter and THZ propagation
9. Wide bandgap surface applications
10. Sensor and Sensing links
11. Smart RF front ends for efficient spectrum utilization
12. AI for RF-front end design
13. RF front ends for software radios
14. Antennas and microwave imaging for biomedical applications
15. Addictive Manufacturing, Novel composites and Metastructures
16. Vehicular and automotive RF links

After further discussion following the GASS 2021 meeting, the following topics have been proposed for the AT-AP-RASC 2022 flagship meeting:

- B01: Antenna theory, design, and measurement
- B02: Simultaneous transmit receiver front ends
- B03: Propagation and scattering: advances, trends and new applications
- B04: Advanced algorithms in computational electromagnetics
- B05: Antennas and microwave imaging for biomedical applications
- B06: Inverse scattering and imaging
- B07: Integral equation, hybrid, and fast methods
- B08: Mathematical methods in electromagnetics
- B09: Mathematical modelling of EM problems
- B10: Scattering and diffraction
- B11: Electromagnetic theory
- B12: Materials in electromagnetics
- B13: Electromagnetics of time-varying scatterers and materials
- B14: Waves in nonlinear and inhomogeneous media
- B15: Quantum techniques for Electromagnetics
- B16: Additive Manufacturing, Novel composites and Metastructures
- B17: Optimization techniques in electromagnetics: new trends and novel applications
- B18: Millimeter-wave antennas/5G communications
- B19: Women Radio Science Contributions
- B20: High-frequency and hybrid methods



- B21: Vehicular and automotive RF links
- B22: Metamaterial concepts for electromagnetics
- B23: RF front ends with MIMO
- B24: Electromagnetic methods for direct and inverse scattering involving stratified media
- B25: Innovations in electromagnetics and photonics
- B26 Terahertz Antenna Systems
- B27 Foldable Antennas and Antennas for CubeSats
- B28: Electromagnetic Solutions for Modern Sensing and Information Systems
- B29: Open session

## **10. Other business**

Prof. Kobayashi (Comm B Past Chair) showed the budget of the last 2018-2021 triennial and the total budget proposed for the next 2021-2023 triennial.