



International Union of Radio Science U.S. Commission B

J. Simpson, Chair
R. Baktur, Secretary
S. Sharma, Technical Activities Chair

B. Notaros, Vice-Chair
S. Weiss, Membership Chair

Please reply to: Reyhan Baktur, reyhan.baktur@usu.edu, phone: (435) 797-2955, fax: (435) 797-3054

MINUTES USNC-URSI Commission B Business Meeting 2020 USNC-URSI Radio Science Meeting Montreal Canada July 7, 2020

1. The meeting was conducted virtually using Zoom.
2. Chair Jamesina Simpson called the meeting to order at 5:00 p.m. EDT.
3. Welcome to members and guests.
4. The Chair invited members to sign in using the Zoom chat box.
5. Approval of minutes of the Atlanta meeting, July 2019.
6. **Chair Report**
 - We have a new website.
 - Introduction of URSI, USNC, and USNC Commission B officers.
 - Discussion items presented (details are included in the chair report that is attached to the minutes).
7. **Chair Report— Discussion Items**
 - Starting in USNC-URSI leadership has agreed to join with IEEE AP-S for the August 2021 ICEAA-APWC conference in Honolulu, HI. Would we like to participate? It is two months after the AP-S/URSI meeting in Singapore and a few weeks after the 2021 URSI GASS in Rome, Italy.
 - After discussions, Ross Stone made a motion for USNC Commission B to join the 2021 ICEAA-APWC. The motion was seconded and passed.
 - USNC-URSI is considering whether to continue printing programs for the NRSM and distribute only PDF programs. Do you want printed programs? If so, would you be willing to pay a \$5-10 fee to cover the printing cost?

- Discussion were made, and some members still prefer a printed program and are willing to pay extra for it.
- Sembiam Rengarajan explained that ideally the printed program would be phased out.
- Yahya Rahat-Samii suggested that the printed program should be organized in terms of commissions (for example, listing all commission B papers together).
- Jamesina Simpson summarized that the consent appears to be to continue to print if the meeting is of in-person format (as opposed to virtual meeting), and have those wanting a printed program pay for it.
- This year we received only 7 Student Paper Competition entries, and from those only 5 were qualified to be judged. Typically, at least 15 entries are received. Do you have any feedback as to what may be the reasons?
 - Yahya Rahmat-Samii and Erdem Topsakal explained that it could have been due to the confusion of the paper deadline because it was different from the winter meetings, and the virtual conference format, which might have confused or discouraged some students.
 - Jamesina Simpson said perhaps we should announce the deadlines more clearly in the year immediately prior to when there is no winter NRSM.
- USNC-URSI is making plans to hold the 2021 NRSM either entirely online, or (if COVID restrictions relax) in person at Boulder with a partial online program. Any comments on this? If we do decide to hold an in-person meeting, what percentage of members will travel to attend?
 - Discussions were made and Ross Stone conducted a poll to see how many members at attendance would travel to attend. Three members said yes.
- John Volakis has a proposal to move the NRSM to Miami, FL, beginning in 2022. After a site visit and further discussion, we may vote on this proposal during the 2021 NRSM. Are there any comments about the proposal?
 - Discussions were made with regards to the cost, ease of travel, and possibility of attracting more (maybe even international) attendances. Flights would be cheaper for people from the East coast, but the hotel costs may be higher.
 - Members would like to see more details about the costs and budget in comparison with a typical NRSM in Boulder.
 - The majority of members do not have a big objection, maybe we could try having it one year in Miami and then decide.
 - Jamesina Simpson asked if there are people local to Florida whom we might have an easier time attracting to our conference, just as we have many local attendees from Boulder.

8. Chair Report

- We are seeking nominations for USNC-URSI Secretary and Chair Elect (due by December 15, 2020 to Sembiam Rengarajan and Mike Newkirk).

- Future meetings.
 - USNC-URSI Commission B Logo Competition (details in the Chair Report slides).
9. **Technical Activities Report:** presented by Satish Sharma (slides from Satish Sharma is attached at the end of the minutes)
 10. **Membership Committee Report:** presented by Steve Weiss (please see Steve Weiss' slides attached at the end of the minutes for details).
 - Two nominations for associate members.
 - Motion to accept the committee recommendation. It was seconded and approved.
 11. Old business
 - No.
 12. New business (no).
 - No.
 13. Meeting adjourned at 6:00 EDT.

Minutes taken and respectfully submitted by Reyhan Baktur, Secretary.

Guests in Attendance

Sayan Roy (Dakota School of Mines & Technology).

Members in Attendance

George Uslenghi, Ahmed Kishk, Jamesina Simpson, Shira Broschat, John Volakis, Any Peterson, Ross Stone, Mahta Moghaddam, Satish Sharma, Joel Johnson, Jim Breakall, Ronald J. Pogorzelski, David R. Jackson, Sembiam Rengarajan, George Hanson, Jeffrey Nanzer, Shira Broschat, John Young, Branislav Notaros, Jiming Song, Maria Pour, Ron Marhefka, Niru K Nahar, George Trichopoulos, Kubilay Sertel, Goutam Chattopadhyay, Kurt Oughstun, Alexander Yakovlev, Andy Peterson, John Volakis, Seckin Sahin, Steven Weiss, Bob Nevels, Don Wilton, Susan Hagness, Salvatore Campione, Ahmad Hoorfar, Filippo Capolino, Michael Havrilla, Sima Noghianian, Rick Ziolkowski, Weng Chew, Karl Warnick, Danilo Erricolo, Bob Burkholder, Leung Tsang, Dimitrios Sounas, Kurt E. Oughstun

USNC-URSI Commission-B Business Meeting

Tuesday, 7 July 2020
5:00 – 6:00 p.m.

2020 IEEE International Symposium on Antennas and
Propagation and North American Radio Science Meeting
Montreal, Canada



- Welcome to members and guests
- Approval of the minutes of the Atlanta, GA meeting, July 2019
- CHAIR REPORT
- COMMITTEE REPORTS
 - Technical Activities Report (Satish Sharma)
 - Membership Committee (Steven Weiss)
- Old business
- New business
- Adjourn



Approval of the minutes of the Atlanta, GA meeting, July 2019

- Minutes posted on the new website (scroll down to “past events”):

<https://www.nationalacademies.org/our-work/usnc-ursi-commission-b-fields-and-waves>



International Union of Radio Science

Founded in 1919, the International Union of Radio Science (URSI) coordinates studies, research, applications, scientific exchange, and communication in all fields of radio science from telecommunications and radio astronomy to medicine (www.ursi.org).

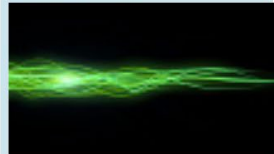
SCIENTIFIC COMMISSIONS

Commission A



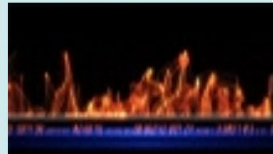
**Electromagnetic
Metrology**

Commission B



Fields and waves

Commission C



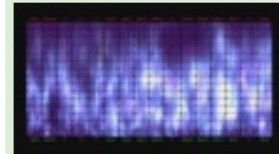
**Radiocommunication
Systems and Signal
Processing**

Commission D



**Electronics and
Photonics**

Commission E



**Electromagnetic
Environment and
Interference**

Commission F



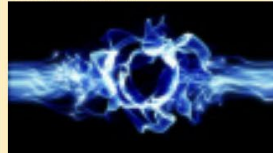
**Wave Propagation
and Remote Sensing**

Commission G



**Ionospheric Radio
and Propagation**

Commission H



Waves in Plasmas

Commission J



Radio Astronomy

Commission K



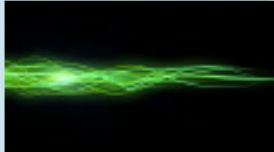
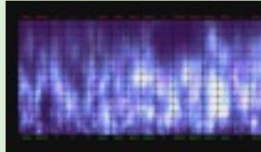
**Electromagnetics in
Biology and Medicine**



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SCIENTIFIC COMMISSIONS

Commission A  Electromagnetic Metrology	Commission B  Fields and waves	Commission C  Radiocommunication Systems and Signal Processing	Commission D  Electronics and Photonics	Commission E  Electromagnetic Environment and Interference
Commission F  Wave Propagation and Remote Sensing	Commission G  Ionospheric Radio and Propagation	Commission H  Waves in Plasmas	Commission J  Radio Astronomy	Commission K  Electromagnetics in Biology and Medicine



U.S. National Committee for URSI

This U.S. National Committee represents the URSI at the national level.

*The National
Academies of* | SCIENCES
ENGINEERING
MEDICINE

www.usnc-ursi.org



USNC-URSI Leadership* (2018-2021)

* 4 Officers + 2 National Academies Staff



Sembiam Rengarajan

USNC Chair

Dept. of Electrical and Computer Engineering

California State University

E-mail: srengarajan@csun.edu



Michael H. Newkirk

USNC Secretary and Chair-Elect

Applied Physics Laboratory

The Johns Hopkins University

E-mail: Michael.Newkirk@jhuapl.edu



David R. Jackson

USNC-URSI

Immediate Past Chair



Gary S. Brown

USNC-URSI

Accounts Manager



Kathie Bailey

The National Academies

BISO Director



Ana M. Ferreras

The National Academies

Senior Program Officer

USNC-URSI Commission B Leadership (2018-2021)



Jamesina Simpson

Chair

ECE Dept.

University of Utah

E-mail: jamesina.simpson@utah.edu



Satish Sharma

Technical Activities Chair

ECE Dept.

San Diego State University

E-mail: ssharma@sdsu.edu



Branislav Notaros

Vice-Chair

ECE Dept.

Colorado State University

E-mail: notaros@colostate.edu



Reyhan Baktur

Secretary

ECE Dept.

Utah State University

E-mail: reyhan.baktur@usu.edu



Steven Weiss

Technical Activities Chair

Army Research Lab

E-mail: steven.j.weiss14.civ@mail.mil

Individual Membership in URSI

- By application through www.ursi.org
 - Requirements similar to USNC membership
 - Benefits: recognition, registration discounts at URSI meetings starting with AT-RASC 2018, and at some URSI cosponsored conferences (e.g., some IEEE conferences)
 - Notification of *RSB*
 - Reduced page charges in *RSL*

Membership in USNC-URSI Commission B

- Nomination form at:
<https://www.nationalacademies.org/our-work/usnc-ursi-commission-b-fields-and-waves>

Items from the USNC-URSI Business Meeting

- Starting in 2021, postdocs and early career members will now get a discounted registration rate at the NRSMs in Boulder (details TBD).

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- At the 2021 NRSM, we will offer a tutorial session on proposal and paper writing for students and early career members. If you know of any volunteers who would like to participate in giving such a tutorial, please contact Jeff Mangum (jmangum@nrao.edu), who heads the NRSM tutorials committee.

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- The Joint Meeting Committee (JMC) is seeking proposals for the joint AP-S/URSI summer meeting for 2026 and after 2027.

Discussion Items (1)

- Starting in USNC-URSI leadership has agreed to join with IEEE AP-S for the Sept. 2021 ICEAA-APWC conference in Honolulu, HI. Would we like to participate? It is two months after the AP-S/URSI meeting in Singapore and a few weeks after the 2021 URSI GASS in Rome, Italy.

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Discussion Items (2)

- USNC-URSI is making plans to hold the 2021 NRSM either entirely online, or (if COVID restrictions relax) in person at Boulder with a partial online program. Any comments on this? If we do decide to hold an in-person meeting, what percentage of members will travel to attend?

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- We are seeking nominations for USNC-URSI Secretary and Chair Elect (due by December 15, 2020 to Sembiam and Mike).

Future Meetings

- NRSIM, January 6-9, 2021, Boulder, Colorado
- IEEE AP-S Joint Symposium, July 10-16, 2021, Singapore
- URSI GASS 2021, August 7-14 (?), 2021, Rome
- ICEAA/APWC/USNC-URSI, September 6-10 (?), 2021, Hawaii
- EMTS 2022, Late May, 2022, Moscow, Russia
- AT-RASC 2022, May 30-June 4, Gran Canaria, Spain
- IEEE AP-S Joint Symposium, July 10-15, 2022, Denver, CO
- AP-RASC 2022, August 20-25, 2022, Sydney, Australia
- IEEE AP-S Joint Symposium, July 2023, Portland, OR
- URSI GASS 2023, August 19-26, 2023, Sapporo, Japan
- IEEE AP-S Joint Symposium, July 14-19, 2024, Florence, Italy
- IEEE AP-S Joint Symposium, 2027, Kyoto, Japan

USNC-URSI Commission B Logo Competition:

- Please submit your ideas to me by Dec. 15th, 2020.
(Jamesina Simpson, jamesina.simpson@utah.edu)
- The winner will receive a \$100 prize.
- All Commission B members may vote during the Jan. 2021 Boulder NRSM.
- Feel free to encourage your students to submit logos even if they are not yet members!

Commission-B
Business Meeting

Committee Report



Board on International Scientific Organizations

U.S. National Committee for the
International Union of Radio Science

National Academy of Sciences

Technical Activities Report: Satish Sharma

Commission-B
Business Meeting

Committee Report



Board on International Scientific Organizations

U.S. National Committee for the
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National Academy of Sciences

Membership Committee: Steven Weiss



- ❖ Old Business?
- ❖ New Business?
- ❖ Adjourn



URSI Commission-B Special Sessions & Stats

**7 July 2020
Montreal
(Virtual Meeting)**

**Satish K. Sharma
San Diego State University**



2020 IEEE International Symposium on Antennas and Propagation and North American Radio Science Meeting

5-10 July 2020 • Montréal, Québec, Canada

Papers submitted, accepted, rejected, and withdrawn

(Breakdown: AP, URSI, URSI from US authors, URSI from non-US authors)

Submitted	Accepted	Rejected	Withdrawn
Total Submitted: 1798	Total Accepted: 1514	Total Rejected: 100	Total Withdrawn: 184
- AP Submitted: 1349	- AP Accepted: 1168	- AP Rejected: 86	- AP Withdrawn: 95
- URSI Submitted: 449	- URSI Accepted: 346	- URSI Rejected: 14	- URSI Withdrawn: 89
- URSI from US: 213	- URSI from US: 159	- URSI From US: 3	- URSI from US: 51
- URSI from non-US: 236	- URSI from non-US: 187	- URSI From non-US: 11	- URSI from non-US: 38

Note: The numbers of withdrawn papers and currently-accepted are still in flux. Symposium is waiting to see how many videos are uploaded and how many papers have authors registered.

2019 IEEE International Symposium on Antennas and Propagation/USNC-URSI National Radio Science meeting, July

7–12, 2019, **Atlanta**, Georgia

Papers submitted, accepted, rejected, and withdrawn

(Breakdown: AP, URSI, URSI from US authors, URSI from non-US authors)

Submitted	Accepted	Rejected	Withdrawn
Total Submitted: 1590	Total Accepted: 1516	Total Rejected: 74	Total Withdrawn: 47
- AP Submitted: 1245	- AP Accepted: 1179	- AP Rejected: 66	- AP Withdrawn: 32
- URSI Submitted: 345	- URSI Accepted: 337	- URSI Rejected: 8	- URSI Withdrawn: 15
- URSI from US: 203	- URSI from US: 202	- URSI From US: 1	- URSI from US: 10
- URSI from non-US: 142	- URSI from non-US: 135	- URSI From non-US: 7	- URSI from non-US: 5

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2018 IEEE International Symposium on Antennas and Propagation/USNC-URSI National Radio Science meeting, July

8–13, 2018, **Boston**, MA

Papers submitted, accepted, rejected, and withdrawn

(Breakdown: AP, URSI, URSI from US authors, URSI from non-US authors)

Submitted	Accepted	Rejected	Withdrawn
Total Submitted: 1830	Total Accepted: 1708	Total Rejected: 74	Total Withdrawn: 60
- AP Submitted: 1422	- AP Accepted: 1312	- AP Rejected: 72	- AP Withdrawn: 38
- URSI Submitted: 408	- URSI Accepted: 396	- URSI Rejected: 1	- URSI Withdrawn: 11
- URSI from US: 214	- URSI from US: 210	- URSI From US: 1	- URSI from US: 03
- URSI from non-US: 194	- URSI from non-US: 186	- URSI From non-US: 0	- URSI from non-US: 08

2020 IEEE International Symposium on Antennas and Propagation and North American Radio Science Meeting

5-10 July 2020 • Montréal, Québec, Canada

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2017 IEEE International Symposium on Antennas and Propagation/USNC-URSI National Radio Science meeting, July 9–14, 2017, **San Diego**, California

Papers submitted, accepted, rejected, and withdrawn

(Breakdown: AP, URSI, URSI from US authors, URSI from non-US authors)

Submitted	Accepted	Rejected	Withdrawn
Total Submitted: 1946	Total Accepted: 1792	Total Rejected: 67	Total Withdrawn: 87
- AP Submitted: 1507	- AP Accepted: 1380	- AP Rejected: 67	- AP Withdrawn: 60
- URSI Submitted: 438	- URSI Accepted: 412	- URSI Rejected: 0	- URSI Withdrawn: 27
- URSI from US: 254	- URSI from US: 240	- URSI From US: 0	- URSI from US: 14
- URSI from non-US: 184	- URSI from non-US: 172	- URSI From non-US: 0	- URSI from non-US: 13

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Note: The numbers of withdrawn papers and currently-accepted are still in flux. Symposium is waiting to see how many videos are uploaded and how many papers have authors register.

2016 IEEE International Symposium on Antennas and Propagation/USNC-URSI National Radio Science meeting, June 26

- July 1, 2016, Fajardo, **Puerto Rico**

Papers submitted, accepted, rejected, and withdrawn

(Breakdown: AP, URSI, URSI from US authors, URSI from non-US authors)

Submitted	Accepted	Rejected	Withdrawn
Total Submitted: 1620	Total Accepted: 1458	Total Rejected: 77	Total Withdrawn: 76
- AP Submitted: 1218	- AP Accepted: 1100	- AP Rejected: 67	- AP Withdrawn: 45
- URSI Submitted: 402	- URSI Accepted: 358	- URSI Rejected: 10	- URSI Withdrawn: 31
- URSI from US: 233	- URSI from US: 217	- URSI From US: 1	- URSI from US: 8
- URSI from non-US: 169	- URSI from non-US: 141	- URSI From non-US: 9	- URSI from non-US: 23

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2015 IEEE AP-S Int. Symposium & North American URSI Mtg., **Vancouver**, BC, Canada

Papers submitted, accepted, rejected, and withdrawn

(Breakdown: AP, URSI, URSI from US authors, URSI from Canadian authors)

Submitted	Accepted	Rejected	Withdrawn
Total Submitted: 1974	Total Accepted: 1867	Total Rejected: 105	Total Withdrawn: 31
- AP Submitted: 1392	- AP Accepted: 1301	- AP Rejected: 89	- AP Withdrawn: 24
- URSI Submitted: 572	- URSI Accepted: 549	- URSI Rejected: 16	- URSI Withdrawn: 7
- URSI From US: 328	- URSI from US: 322	- URSI From US: 6	- URSI from US: 6
- URSI From Canada: 56	- URSI from Canada: 56	- URSI From Canada: 0	- URSI from Canada: 0

URSI	Submitted Papers	Accepted Papers	Withdrawn Papers	Sessions
A	21	16	5	2
B	206	152	47	27
C	33	29	4	4
D	47	36	8	6
E	2	1	0	0
F	39	27	9	6
G	2	2	0	0
H	3	3	0	1
J	20	19	1	4
K	19	16	3	2
URSI Special	57	45	12	2
Total	449	346	89	54

2019 IEEE AP-S International Symposium & USNC-URSI Meeting, **Atlanta**, Georgia

URSI	Submitted Papers	Accepted Papers	Withdrawn Papers	Sessions
A	36	34	2	5
B	183	173	6	24
C	18	14	2	2
D	-	-	-	-
E	6	6	1	1
F	34	32	2	3
G	-	-	-	-
J	-	-	-	-
K	12	12	0	3
URSI Special	56	56	2	0
Total	345	327	15	38

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G	2	2	0	0
H	3	3	0	1
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2018 IEEE AP-S International Symposium & USNC-URSI Meeting, **Boston, MA**

URSI	Submitted Papers	Accepted Papers	Withdrawn Papers	Sessions
A	27	27	0	4
B	226	216	6	29
C	25	25	0	3
D	0	0	0	0
E	13	13	0	2
F	41	39	2	4
G	4	4	0	1
J	0	0	0	0
K	22	20	2	3
URSI Special	53	52	1	0
Total	411	396	11	46

2020 IEEE AP-S/URSI Montreal
URSI B Sessions – UB (27 sessions, 152 papers)

WEP-UB.6A: Time-Domain Methods

[THP-UB.2P: Hybrid Methods I](#)

THP-UB.1P: Efficient Computational Methods

[TH-UB.2P: Nanoscale Electromagnetic Modeling](#)

TUP-UB.1P: Guided Waves and Waveguiding Structures

[TH-UB.2A: Imaging, Inverse Scattering, and Remote Sensing](#)

WE-UB.1P: Millimeter Wave and THz Antennas

[TU-UB.1P: Microstrip Antennas and Printed Devices](#)

TU-UB.2P: MIMO Antennas and Systems

[WE-UB.3A: Frequency Domain Methods](#)

WEP-UB.4A: Integral-Equation Formulations, Bases, and Integration Techniques

[WEP-UB.5A: Integral-Equation Methods](#)

TH-UB.1A: Antenna Design I

[TH-UB.1P: Antenna Design II](#)

FR-UB.1A: Antenna Design III

[MO-UB.1P: Antenna Analysis, Synthesis and Measurement](#)

FR-UB.2P: Electromagnetic Interaction

[WEP-UB.1A: Metamaterials I](#)

WEP-UB.3A: Guided Wave and High Frequency Techniques

[WEP-UB.2A: Metamaterials II](#)

TH-UB.3P: Optimization, Nanoscale and Nonlinear Electromagnetics

[FR-UB.1P: Fundamental Aspects in Electromagnetics](#)

WE-UB.2A: Special Topics in Antenna Matching

[WE-UB.1A: Advanced Manufactured Structures](#)

FR-UB.2A: Topics in Sensing Techniques and Networks

[FR-UB.3A: Antennas and Propagation Aspects](#)

MO-UB.1A: Wireless System Performance

MO-UB.1A: Metamaterials

MO-UB.2A: Frequency Selective Surfaces and Filters

MO-UB.3A: Antenna Theory and Design I

MO-UB.1P: THz, Millimeter-Wave and Nanoscale EM

MO-UB.2P: Antenna Array I

MO-UB.3P: Time-Domain Methods

MO-UB.4P: Frequency Domain Methods

MO-UB.5P: Antenna Theory and Design II

MO-UB.6P: Antenna Theory and Arrays

TU-UB.1A: Cognitive Radio I

TU-UB.2A: Antenna Array II

TU-UB.3A: Hybrid Methods II

TU-UB.1P: Wireless Communications

TU-UB.2P: Antenna Array III

WE-UB.1A: MIMO Antennas and Systems

WE-UB.3A: Microstrip Antennas and Printed Devices

WE-UB.2A: EBG, UWB and RFID based Antennas

WE-UB.1P: Fast Methods

WE-UB.2P: Integral Equation Methods I

TH-UB.1A: Theoretical Electromagnetics III

TH-UB.2A: Guided Wave and Waveguiding Structures

TH-UB.1P: EM Interaction and Coupling

TH-UB.2P: Propagation Phenomenon and Effects

FR-UB.1A: Imaging, Scattering and Remote Sensing

2020 IEEE AP-S/URSI Montreal
AP-S/URSI Joint Special Sessions – (11 sessions)

AP-S/URSI Joint Special Sessions

WE-SP.1P: Emerging Active and Passive Metasurfaces for 5G, Beyond 5G, and 6G

WE-SP.2P: Electromagnetics in MIMO Antenna Design and Channel Modelling

TU-SP.2P: Reconfigurable Antennas for Compact Devices

MO-SP.1A: Artificial Intelligence Applications in Electromagnetics

MO-SP.2P: Mathematical Methods for Array Processing and its Applications

WE-SP.2A: Emerging Technologies for Biomedical Applications

TU-SP.1P: Low Frequency Antennas for Tactical Communications and Networking

FR-SP.1P: Foldable and Physically Reconfigurable Origami Antennas

MO-SP.2A: Cybersecurity and Broadband-Multiband Electromagnetic Systems — for Privacy-Protection and High-Performance in Wireless 5G and Others

FR-SP.2P: GNSS antennas, antenna systems and applications

TH-SP.2P: Quantum Technologies Related to Electromagnetics

Comments From Lance Cotton:

There were 13 "joint topics". That means there were 7 AP-S only topics.

Of those 13, one was a tribute session that was canceled. One was session that was jointly offered, but contains only URSI papers, so I do not consider it joint.

The tribute session was: Waves in Random Media - A Tribute to Tatarskii
(It is not currently in the program)

2020 IEEE AP-S/URSI Montreal Special Sessions – (20 sessions)

Blue: 11 URSI/APS Joint Special sessions per the last slide

RED: 7 AP-S Special Sessions only

Black: URSI Special Session ONLY

One AP-S special session is unclear or it is the Memorial Session!

WE-SP.1P: Emerging Active and Passive Metasurfaces for 5G, Beyond 5G, and 6G

WE-SP.2P: Electromagnetics in MIMO Antenna Design and Channel Modelling

TU-SP.2A: Advances in RF Measurement Technology for 5G and mmWave

TU-SP.2P: Reconfigurable Antennas for Compact Devices

TH-SP.1P: 5G and Beyond Handsets: Latest Developments and the Future

TH-SP.3P: Design, Development, Measurements and Related Standards of Complex Antenna Systems

FR-SP.1A: Extending the Boundaries of Characteristic Mode Design and Analysis

MO-SP.1A: Artificial Intelligence Applications in Electromagnetics

WE-SP.1A: Design and Analysis of Time-Varying Electromagnetic Systems

WE-SP.2A: Emerging Technologies for Biomedical Applications

MO-SP.2P: Mathematical Methods for Array Processing and its Applications

FR-SP.2A: Technical Development Towards the Next Generation Very Large Array: **URSI ONLY**

TU-SP.1A: Beam-Steerable Antenna Systems for Mobile Satellite Communication Terminals

FR-SP.1P: Foldable and Physically Reconfigurable Origami Antennas

MO-SP.1P: Advanced Antenna Systems for Next Generation

MO-SP.2A: Cybersecurity and Broadband-Multiband Electromagnetics in Wireless 5G and Others

TU-SP.1P: Low Frequency Antennas for Tactical Communications

FR-SP.2P: GNSS antennas, antenna systems and applications

TH-SP.2P: Quantum Technologies Related to Electromagnetics

TH-SP.1A: Memorial Session for Mojgan Daneshmand and

Comments From Lance Cotton:

There were 13 "joint topics". That means there were 7 AP-S only topics (??)

For Reference:

2012 APS/URSI Chicago, IL: **13** APS/URSI Joint Special Sessions

2013 APS/URSI Orlando, FL: **10** APS/URSI Joint Special Sessions

2014 APS/URSI Memphis, TN: **16** APS/URSI Joint Special Sessions

2015 APS/URSI Vancouver, Canada: **19** APS/URSI Joint Special Sessions

2016 APS/URSI Puerto Rico: **16** APS/URSI Joint Special Sessions

2017 APS/URSI San Diego: **18** APS/URSI Joint Special Sessions

2018 APS/URSI Boston: **16** APS/URSI Joint Special Sessions (+2 are APS only)

2019 APS/URSI Atlanta: **19** APS/URSI Joint Special Sessions

2020 APS/URSI Montreal: **20** APS/URSI Special Sessions

2020 National Radio Science Meeting

Is being co-organized with IEEE AP-S/URSI 2020 so no individual statistics

2019 National Radio Science Meeting

Conference Statistics

Total number of pre-registrants: 321

Total abstracts and summaries submitted: 342

Total abstracts and summaries accepted: 341

Abstracts: 283 and Summaries: 58

Number of sessions: 46

Total number of Student Travel Grant Award applications: 109

	2020	2019	2018	2017	2016	2014	2013	2012
Total No. of papers	--	342	414	421	375	399	364	369
Total No. of sessions	--	46	59	56	49	54	47	47
Total No. of travel grants	--	109	128	137	122	115	100	104

National Radio Science Meeting

Conference Statistics

Year	# Papers	# Sessions	# Travel Grants
2011	358	49	113
2012	369	47	104
2013	364	47	100
2014	399	54	115
2015	NARSM	NARSM	NARSM
2016	375	49	122
2017	425	56	137
2018	414	59	128
2019	341	46	109
2020	NARSM	NARSM	NARSM

- In 2019, one page abstracts: 283 and two page summaries: 58
- In 2018, one page abstracts: 356 and two page summaries: 61

2017, 2018 and 2019 National Radio Science Meeting Conference Statistics

2017		2018		2019	
Country	Papers		Papers		Papers
United States	404	United States	390	United States	321
Canada	6	Canada	9	Canada	16
South Africa	4	Taiwan	3	South Africa	2
Kuwait	3	Russian Federation	2	Spain	1
?	2	Czech Republic	2	Australia	1
Japan	1	Japan	2		
France	1	France	2		
China	1	Turkey, South Korea, Nigeria, India, China (1 each)	5		
Brazil	1				
Australia	1				
Total	424	Total	416	Total	341

2020: NARSM

2017: About 5% of the papers (20 papers) have come from outside the U.S.

2018: About 6% of the papers (25 papers) have come from outside the U.S.

2019: About 6% of the papers (20 papers) have come from outside the U.S.

Commission B Special Sessions, 2021 USNC-URSI NRSM, Boulder, Colorado

7 special sessions as of June 30, 2020

1. Antennas and Sensors for Harsh Environment

Sima Noghanian, Wafer LLC and Sayan Roy, South Dakota School of Mines and Technology (sima_noghanian@ieee.org and Sayan.Roy@sdsmt.edu)

2. Low-Profile Antennas from Gigahertz to Terahertz

Goutam Chattopadhyay, JPL-NASA and Satish K. Sharma, San Diego State Univ. (goutam.chattopadhyay@jpl.nasa.gov and ssharma@sdsu.edu)

3. High Power Electromagnetics (Joint Commission B and E Session)

D. V. Giri, Pro-Tech and R.L. Gardner (giri@dvgiri.com and blitz32schreiber@gmail.com)

4. Wireless Communications for Specialized Platforms and Environments

Reyhan Baktur, Utah State University and David R. Jackson, University of Houston (reyhan.baktur@usu.edu and djackson@uh.edu)

5. Multiscale and Stochastic Modeling in Computational Electromagnetics

Ata Zadehgo, University of Idaho and Johannes Russer, Technical University of Munich (azadehgo@uidaho.edu and jrusser@tum.de)

6. 5G and Millimeter Wave Antennas and Applications

Andrew Chrysler, Idaho State University, and Ting-Yen Shih, University of Idaho (chryandr@isu.edu and tshih@uidaho.edu)

7. Complex EM and Meta Structures

Filippo Capolino, University of California, Irvine and Ashwin Iyer, University of Alberta (f.capolino@uci.edu and iyer@ece.ualberta.ca)

Commission B Special Sessions, 2019 USNC-URSI NRSM, Boulder, Colorado

4 B special sessions: 35 papers, 7 B regular sessions: 55 papers (total URSI: **46** sessions, **341** papers)

Special Session Title	No. of Papers	Organizers
1. 5G and Massive MIMO Antennas and Systems (CANCELLED)	0	Shubhendu Bhardwaj, Florida Int. Univ., and Ghanshyam Mishra, San Diego State University
2. Astronomical Phased Arrays: From Theory to Practice (Commission B/J) (CANCELLED)	0	Karl Warnick, BYU and Juming Diao, UCLA
3. Metamaterials and Metasurfaces: Theory & Applications	10	Filippo Capolino, UC Irvine & Ashwin Iyer, Univ. of Alberta
4. Wearable, Implants, and Body-Area Networks (B/K)	10	Bashir Morshed, Univ. of Memphis & Ryan Green, Virginia Commonwealth University
5. Antennas for Specialized Platforms: SmallSats, UAVs, and UUVs	5	Reyhan Baktur, Utah State, & David Jackson, Univ. of Houston
6. Techniques for Modeling of Waves in Plasmas (BGH) (CANCELLED)	0	Robert Marshall, Robert Lysak, Mark Golkowski, Vijay Harid
7. Low-Profile Antennas from Gigahertz to Terahertz	10	Goutam Chattopadhyay, JPL-NASA and Satish K. Sharma, San Diego State University

Commission B Special Sessions, 2018 USNC-URSI NRSM, Boulder, Colorado
10 B special sessions, 70 papers, 8 B regular sessions, 51 papers (total URSI: **59 sessions, 414 papers**)

Special Session Title	No. of Papers	Organizers
1. Millimeter-Wave and 5G Antennas and Systems	6	Shubhendu Bhardwaj, Florida Int. Univ., & Joshua Kovitz, Georgia Tech
2. Nonmagnetic and Nonreciprocal Devices	7	Ethan Wang, UCLA, & Andrea Alu, Univ. of Texas
3. Advances in Computational Electromagnetics on Modern Computers	5	Ali Yilmaz, Univ. of Texas, & Zhen Peng, Univ. of New Mexico
4. Emerging Applications of Phased Arrays	7	Karl Warnick, BYU, & Elias Alwan, Florida Int. Univ.
5. Adv. Theory & Applications of Metamaterials	9	Filippo Capolino, UC Irvine, & Ashwin Iyer, Univ. of Alberta
6. Adv. Analysis, Design, & Appl. of WG Structures	10	Michael Havrilla, Air Force Ins of Tech, & Edward Rothwell, Michigan State
7. Wearable Antennas and Electronics	7	Asimina Kiourti, Ohio State, & Bashir Morshed, Univ. of Memphis
8. Antennas for Specialized Platforms: SmallSats, UAVs, and UUVs	5	Reyhan Baktur, Utah State, & David Jackson, Univ. of Houston
9. 3D Printed Antennas	9	Hao Xin, Univ. of Arizona, & Jacob Adams, North Carolina State
10. Techniques for Modeling of Waves in Plasmas (BGH)	5	Robert Marshall, Robert Lysak, Mark Golkowski

Commission B Regular Sessions, 2017 USNC-URSI NRSM, Boulder, Colorado
10 regular sessions, 75 papers (total URSI: **56 sessions, 421 papers**)

Regular Session Title	No. of Papers	Chairs
1. B3: Antennas	10	Dejan Filipovic, University of Colorado Boulder; Karl Warnick, Brigham Young University
2. B4: Scattering	5	Alex Yuffa, National Institute of Standards and Technology; Piergiorgio Uslenghi, University of Illinois at Chicago
3. B5: Liquid Metal Antennas	5	Jacob Adams, North Carolina State University; William Davis, Virginia Tech
4. B6: Complex Media and Nanoelectromagnetics	10	Edward Kuester, University of Colorado Boulder; Christos Argyropoulos, University of Nebraska-Lincoln
5. B8: Inverse Scattering and Remote Sensing	5	Piergiorgio Uslenghi, University of Illinois at Chicago; Pai-Yen Chen, University of Texas at Austin
6. B9: Antenna Arrays I	9	Randy Haupt, Colorado School of Mines; Dejan Filipovic, University of Colorado Boulder
7. B13: Antenna Measurements and Simulations	8	Steven Weiss, US Army Research Lab; Jeanne Quimby, NIST
8. B14: Antenna Arrays II	8	Dejan Filipovic, University of Colorado Boulder; Gokhan Mumcu, University of South Florida
9. B16: Microstrip Antennas and Printed Devices	9	Erdem Topsakal, Virginia Commonwealth University; Ozlem Kilic, The Catholic University of America
10. B17: Numerical Methods	6	Atef Elsherbeni, Colorado School of Mines; Melinda Piket-May, University of Colorado

Special Sessions for National Radio Science Meeting 2021

- Please contact Satish K. Sharma within two weeks if you are still interested in organizing special session for the NRSM 2021.
- Hope to see you all at NRSM 2021
- Email: ssharma@sdsu.edu

USNC/URSI Commission B Membership Committee

Steven Weiss (chair) – The Army Research Lab

Ed Rothwell – Michigan State University

George Hanson – University of Wisconsin-Milwaukee

Commission B
Fall 2019

Membership Guidelines

- Required qualifications:
 - technical competence
 - evidence: nominee's publications
 - interest in the activities of URSI
 - evidence: nominee's participation in URSI symposia
- Minimum publication/presentation numbers:
 - Early Career Member
 - Co-author of one URSI presentation in Commission B and attendance at one USNC-URSI symposium
 - Associate Member
 - minimum of 2-3 publications
 - two URSI presentations (at least one in Commission B)
 - Full Member
 - U.S. citizen or permanent resident
 - minimum of 5-6 publications
 - three URSI presentations (at least two in Commission B)

Commission B Nominees

- For Full Membership:
 - None
- For Associate Membership:
 - Jordan Budhu
 - University of Michigan
 - jbudhu@umich.edu 818-677-3571
 - sponsor: Sembiam Rengarajan
 - Dimitrios Tzarouchis
 - University of Pennsylvania
 - dtz@seas.upenn.edu
 - -215-820-8788
 - sponsor: Nader Engheta
- For Early Career Membership:
 - None

Jordan Budhu (Associate Member)

- U.S. Citizen
- Ph.D. in Electrical Engineering, in 2018, UCLA
- Professional experience
 - Presently working as a postdoctoral research fellow at the University of Michigan
 - Worked at JPL for two summers in 2011 and 2012 as a graduate student intern
- Research areas
 - Electromagnetics
 - Reflect antennas and arrays
 - Lens antennas
 - CubeSat antennas
- Qualifications summary (Full Member)
 - Journal pubs: 3 (IEEE APS, Magazine, and Letters)
 - URSI-B presentations: > 10
 - Participation in URSI: USNC URSI, AP/URSI

Dimitrios Tzaroushis (Associate Member)

- Not Given
- Ph.D. in Biomedical Engineering, The University of North Dakota
- Research Areas
 - During my master degree, I was researching in the area of the inductive-based wireless power transfer systems. I have been designing implantable biomedical antennas as my Ph.D. thesis and serving as reviewer and editor for IET and IEEE.
- Research areas
 - 2019-today: Post doctoral researcher, University of Pennsylvania, Philadelphia, USA
 - 2015-2019: Research and teaching assistant, Aalto University, Helsinki, Finland.
 - 2014: Network engineer, Hellenic Army General staff. Rank: Private.
- Qualifications summary (Early Career Member)
 - Journal pubs: 14
 - URSI-B presentations: >10
 - Participation in URSI: USNC URSI, AP/URSI, EMTS

Membership Committee Recommendations

- The Committee unanimously recommends
 - Election to associate member for
 - Jordan Budhu
 - Dimitrios Tzaroushis