



International Union of Radio Science U.S. Commission B

J. Volakis, Chair	<i>Please reply to:</i>	
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MINUTES Commission B Business meeting

2017 USNC-URSI

Boulder, CO, USA

January 6, 2017

1. Meeting on Thursday was canceled due to the campus closing, consequently the meeting was moved to Friday at 5:15.
2. Before the official start of the Commission B meeting, Zoya Popovic asked to review and vote for new member applications for Commission D. It was approved. Commission B members reviewed and voted for new Commission D members.
3. Chair called the meeting to order at 5:18 pm.
4. Secretary handed out guests sign-up sheet, membership data base, minutes from 2016 Boulder meeting and 2016 Puerto Rico meeting.
5. Guests were introduced.
6. Chair gave an overview of the agenda (included in the attached meeting presentations).
7. Boulder 2016 and Puerto Rico 2016 meeting minutes were both put forward for approval, both were approved. (Note: The Boulder 2016 minutes was approved at the 2016 Puerto Rico URSI Commission B business meeting. Some members noted issues on the minutes before the 2017 Boulder meeting. Accordingly, the secretary fixed those issues and brought the minutes to the 2017 Boulder meeting for a new vote.)
8. Chair Report-- Officers
 - URSI Comm. B Officers
 - Nominations needed for Vice Chair for Commission B.
 - USNC Officers
 - USNC-URSI Members and Members at Large
 - Other USNC-URSI Representatives
 - International URSI-B Officers 2015-2017

- International URSI Officers 2015-2017

9. Chair Report-- Upcoming Meetings (included in the attached meeting presentations)

10. Chair Report—Questions from USNC

Nine questions were discussed.

Q1: Proposed day for Boulder 2018 meeting

- Two proposed date: Jan 10-13 or Jan 4-7
- Hands raised, **6** hands for Jan 10, and **13** for Jan 4-7
- We will report this vote to USNC.

Q2: Will we be interested in offering short courses?

- Yahya Rahmat-Samii suggested that we should ask students.
- A student Mert Hidayetoglo (UIUC) said he liked it, but wish it can be inexpensive.
- A student suggested that short course should be during the evenings from meeting time to reduce the cost. That way there is no extra day stay in Boulder.
- Yahya Rahmat-Samii said the cost is critical and should be free or very little.

Q3: Will your Commission participate in the 2018 AP-S/USNC-URSI joint summer meeting in Boston and 2019 AP-S/USNC-URSI joint summer meeting in Atlanta?

- Ross stone said we do both.
- Motion put forward, second, voted, pass.

Q4: Regarding nominations

- It is a brief note, there is no real question. John Volakis reminded about nominations.

Q5: Will our commission participate in 2017 APS-URSI?

- Moved, second, voted. YES.

Comment 6 and Comment 7

- No discussion was made.

Q7: Suggestions requested for the 2018 NRSM Plenary Session?

- Sembiam Rengarajan confirmed that we get new topics.
- John Volakis asked if we have any new recommendation. John Volakis suggested smart city, big data.
- Yahya Rahmat-Samii said in the past the executive will decide. So, who are the next two pairs that are involving.
- Erdem Topsakal: smart city is good.
- Gary Brown: Detection of gravity waves.

Q8: Suggestions are requested for special sessions at 2018 NRSM?

- Will email and ask for vote later, as we need to move on.

Q9: Should Associate Members be allowed to vote?

- This is a revisited question.

- Was not further discussed.

11. Student Paper Competition (SPC)

- The SPC chair Erdem Topsakal gave a brief summary on student travel support and student paper competition.

12. GASS: 2017 General Assembly and Scientific Symposium

- Ross Stone, on behalf of David Jackson, introduced the 2017 GASS and reminded the attendees about the submission deadline and the fact that the summaries that are accepted go to IEEE Xplore (authors have a choice of submitting an abstract or a summary).
- Ross also put forward items to be revisited from 2016
 - Can associate member vote?
 - Ed Kuester clarified that it is USNC.
 - Voted, it is clear, stay as it is.
 - Introduced the status of digest.
 - Introduced individual memberships, fellows.

13. Committee Report-- Membership Committee

- Ed Rothwell presented membership report.
- Ed introduced the membership committee, guidelines.
- We have 5 nominees, 2 last-minute applications will be postponed for summer APS.
- This year we have full, associate, and early career member. Ed encouraged professors/members to nominate guests/students as early career members.
- Three candidates (listed below) up for full were reviewed, discussed, voted, all passed.
 - Christos Argyropoulos, cargyropoulos2@unl.edu
 - Goutam Chattopadhyay, goutam@jpl.nasa.gov
 - Kamallesh Sainath, Sainath.1@osu.edu

14. Committee Report-- Technical Activities Report

- Branislav Notaros presented the Technical Activity report (attached at the end of these meeting minutes).

15. Ed Kuester expressed appreciation to David Jackson and other officers for handling the snow and cancelation situation.

- John confirmed the appreciation.

16. New members were welcomed back.

17. Chair Report-- Old Business

None.

18. Chair Report-- New Business

None.

19. Adjourned at 6:15 pm.

Guests in attendance

First Name	Last Name	Affiliation
Barshij	Morshed	University of Memphis
Umar	Housni	Virginia Commonwealth University
Mert	Hidayetoglu	UIUC
Shu	Chen	UIUC
Muhamadeziz	Tursunniyaz	Utah State University
Christopher	Deloglos	Virginia Commonwealth University
Georgios	Trichopoulos	Arizona State University
Christos	Argyropoulous	University of Nebraska Lincoln
Charles	Baylis	Baylor University
Sean	Burns	University of Utah
Alex	Yuffa	NIST
Atieh	Talebzadeh	Missouri S&T
Ali	Foudazi	Missouri S&T
Ran	Guo	University of Houston
Shubin	Zeng	University of Houston
Xin-Yu	Liu	University of Houston
Abdulaziz	Haddab	CU Boulder

Members in attendance

Professor John Volakis, Professor Branislav Notaros, Professor Jamesina Simpson, Professor David Jackson, Professor Sembiam Rengarajan, Dr. Ross Stone, Professor Reyhan Baktur, Professor Ed Rothwell, Professor Ed Kuester, Professor Yahya Rahmat-Samii, Professor Don Wilton, Professor Zoya Popovic, Professor Gary Brown, Professor Erdem Topsakal, Professor Franco De Flavis, Professor Leung Tsang

Respectfully submitted by Reyhan Baktur, Secretary



USNC-URSI Commission-B Business Meeting

Friday, Jan 6, 2017

5:00 – 6:00 p.m.

Location: 1B40



2017 Radio Science Meeting, Boulder CO



AGENDA

USNC Commission-B Business Meeting

- Welcome to members and guests
- **Motion for Commission D to have their business meeting at the end of Commission B's meeting (today only).**
- USNC and International URSI officers
- Approval of Meeting Minutes:

2016 Puerto Rico

Revised 2016 Boulder

http://sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pga_169826.pdf

AGENDA continued

- Upcoming Meetings
- Questions & Discussions from USNC
- Student competition stats (Topsakal)
- General Assembly report (David Jackson)
- URSI membership/Assoc Member Voting/Abstracts online (Stone)

COMMITTEE REPORTS

- Technical Activities Report (Branislav Notaros)
- Membership Comt. (Ed Rothwell)
- Old business
- New business
- Adjourn



Commission B Officers

USNC Commission-B
Business Meeting

USNC-B Officers 2015-2017

Chair: **John L. Volakis**

Vice-Chair: **Jamesina Simpson**

Secretary: **Reyhan Baktur**

Chair, TAC: **Branislav Notaros**

Chair, Membership Committee: **Edward Rothwell**

Webmaster:

Chelsea Bock, CBock@nas.edu at National Academies

Web Site

http://sites.nationalacademies.org/PGA/biso/URSI/PGA_080674



USNC Officers

USNC Commission-B
Business Meeting

USNC Officers 2015-2017

Chair: **David Jackson**

Past-Chair: **Steven C. Reising**

Secretary and Chair-Elect: **Sembiam Rengarajan**

Accounts Manager: **Gary Brown**

National Acad. BISO Director: **Kathie Bailey**

National Acad. Senior Program Officer: **Ana M. Ferreras**

Consult Web Site Below for updates:

http://sites.nationalacademies.org/PGA/biso/URSI/PGA_067360

USNC-URSI Members (2015-2017)

MEMBERS at LARGE

Reyhan Baktur
Danilo Erricolo
Albin J. Gasiewski
W. Devereux (Dev) Palmer
Wayne Scales
Jamesina J. Simpson

A Member-at-Large is someone who does not represent one particular Commission, but rather represents the USNC-URSI as a whole.

These are voting positions.

Society Representatives

Randy Haupt (IEEE AP-S)
David Kunkee (IEEE GRS-S)
T. Joseph W. Lazio (American Astronomical Society)
Robert E. Marshall (American Meteorological Society)
Steven C. Reising (IEEE MTT-S)
Fabiano S. Rodrigues (American Geophysical Union)

Other USNC-URSI Representatives

Student Travel Program & Paper Competition:

Erdem Topsakal

Virginia Commonwealth University



International URSI-B officers

USNC Commission-B
Business Meeting

International URSI-B Officers 2015-2017

Chair: Ari Sihvola (Finland)

Vice-Chair: Kazuya Kobayashi (Japan)



International URSI Officers

USNC Commission-B
Business Meeting

International URSI Officers 2015-2017

President: Paul Cannon (UK)

Past-President: Phil Wilkinson (Australia)

Vice Presidents:

Subra Ananthakrishnan (India)

Makato Ando (Japan)

Yahia Antar (Canada)

Umran Inan (USA)

Secretary-General: Paul Lagasse (Belgium)

Asst. Secretary-General (Publications): Ross Stone (USA)

Asst. Secretary-General (AT-RASC): George Uslenghi (USA)

Asst. Secretary-General (AP-RASC): Kazuya Kobayashi (Japan)

Upcoming and Future Conferences

2018 USNC-URSI, January xxxx in Boulder, Colorado

The next annual National Radio Science Meeting (NRSN) will be held from **Wednesday, January 4 through Saturday, January 7 in Boulder, Colorado.**

The meeting will offer Student Travel Grant awards to both graduate and undergraduate students, and will feature the 120 Ernest K. Smith Student Paper Competition. The first place winner will receive \$1000, the second place winner will receive \$750, and the third place winner will receive \$500. The meeting website (<http://www.nrsmboulder.org/>) will be updated soon with more information.



Upcoming Meetings

USNC Commission-B
Business Meeting

See Site <http://www.ursi.org/en/events.asp>

- ❑ **2017 IWAT, Athens, Greece, March 1-3, 2017**
- ❑ **2017 ICEAA-IEEE APWC**, Verona, Italy, Sept 11-15, paper deadline March 10, 2017
- ❑ **2017 EuCAP, Paris, France, 19-24 March 2017**
- **2017 ACES Symposium, March 19-23, 2017, Florence, Italy**
- ❑ **2017 IEEE MTT Bio Conf.**, May 15-17, Gotenborg, Sweden, paper deadline Jan 17th
- ❑ **2017 IEEE NEMO (RF to THz modeling and apps)**, Seville, Spain, May 17-19, deadline Jan 15th.
- ❑ **2017 EEE APS/URSI Conference, July 9-15, San Diego, CA,**
- ❑ **2017 IEEE Int. Microwave Symposium/IMS, June 4-9, Honolulu, Hawai'i**
- ❑ **2017 URSI General Assembly , August 19-26, 2017**
- ❑ **2017 AMTA**, <http://www.amta2017.org/>, Atlanta, Georgia, October 15–20, 2017
- ❑ **2017 IEEE Int conference on CEM (ICCEM), March 8-10, Kumamoto, Japan**
- ❑ **2018 2nd AT-RASC, 28 May-1 Jun, ExpoMeloneras Convention Center, Gran Canaria**
- ❑ **2019 URSI Commission B EMTS, May 27-31, San Diego, CA. Contact Sembiam Rengarajan.**
- ❑ **2019 URSI AP-RASC, New Delhi, India (likely)**

URSI Triennial Flagship Meetings

One per Year: GASS, AT-RASC, AP-RASC

- **GASS: 2014, 2017, 2020**
- **AT-RASC: 2015, 2018, 2021**
- **AP-RASC: 2016, 2019, 2022**
- URSI Board and Coordinating Committee meetings will be held at these meetings

Upcoming Meetings: IEEE APS/URIS Joint Symposia

- 2017, July 9-15, San Diego, CA
- 2018, July 14-21, Boston, MA,
- 2019, July 7-12, Atlanta, GA
- 2020 July 4-10, Montreal, Fairmont Queen Elizabeth Hotel
- 2021, July 10-16, Singapore

Questions from USNC

Question 1: Proposed dates for the 2018 NRSM Boulder are Jan 10-13. A second possibility suggested at the USNC Business meeting was Jan, 4-7 (with technical sessions during Thu-Sat).? **What is your commission's preference**

Question 2. Will your Commission be interested in offering short courses, workshops or tutorials on the day before or after the meeting? This could be a way to increase attendance and/or revenue and benefit students. The interdisciplinary nature of URSI seems amenable to this

Questions from USNC

Question 3. Will your Commission participate in the 2018 AP-S/USNC-URSI joint summer meeting in Boston and 2019 AP-S/USNC-URSI joint summer meeting in Atlanta?

Question 4. Nominations/Recommendations are requested for the new Vice Chair and/or Secretary of Commissions for terms starting Jan 1, 2018



USNC Questions

Comment 5. Please submit papers to GASS 2017--- deadline jan 30th. Up to 50 YSA grants of \$1,000; \$750 for Members of Commissions, on a first-come first-serve basis (contingent upon NSF grant)

Comment 6. Comments on the Plenary Session in 2017 – did you like the split theme?

Question 7. Suggestions requested for the 2018 NRSM Plenary Session?

USNC Questions

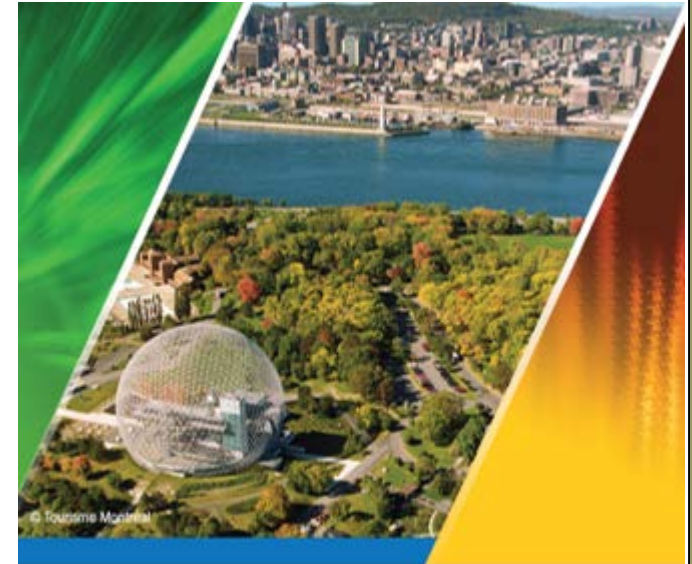
Question 8. Suggestions are requested for special sessions at 2018 NRSM?

Question 9. Should Associate Members be allowed to vote?

Original guidelines for membership put forward by the Membership Committee allowed for Associate Members to vote. Nevertheless, it was decided at the Executive Council Meeting to keep with the present policy of NOT allowing Associate members to vote. This issue is revisited

GASS: 2017 General Assembly and Scientific Symposium----David Jackson & Ross Stone

- 2017 August 19-26, 2017,
Palais des Congres, Montreal,
Canada
 - Outstanding venue and hotels
- Also, Special Celebration
Events Planned due to
- 375th anniversary of Montreal,
- 150th anniversary of Canada



www.gass2017.org



Committee Report

USNC Commission-B
Business Meeting

Technical Activities Report: Branislav Notaros



Committee Report

USNC Commission-B
Business Meeting

URSI B Membership Nominations: Ed Rothwell



Chair Report

USNC Commission-B
Business Meeting

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

Item to be Revisited from 2016

- **2016 Executive Council Meeting decided that Associate Members should not be voting members of the Commissions.**
- **However, Commissions were split nearly evenly on this.**
- **Agreed we would revisit issue at this meeting**
- **As a reminder, no citizenship or permanent residency requirement for Associate Member, but this is required for Full Member**

Item to be Revisited from 2016

- **Do we wish Associate Members to be voting members of the Commissions?**

USNC-URSI Archive

- **Abstract digests for joint USNC-URSI/AP-S meetings**
 - Started in 1963
 - Have from 1968 forward, with some missing
- **Abstract digests for separate USNC-URSI NRSM**
 - Started October 1974
 - Have from October 1974 forward, with some missing
- **Abstract digests for USNC-URSI portion of Joint AP-S/USNC-URSI summer meetings**
 - Started 1974, have all
- **Missing only 11 out of all of above**

USNC-URSI Archive

- **61 abstract books scanned as PDF with OCR**
 - Black and white, graphics rendered using “pseudo-screening”
 - More recent years already in digital form
- **Total archive size: 840 MB**
- **Bill Davis then optimized the PDFs to reduce size with minimal loss of graphics quality**
- **Resulting PDFs: 1.5 MB to 12 MB each; ~300 MB total**
- **Created Acrobat index**
 - Allows searching across complete set of digests

USNC-URSI Archive

- **Should be available on USNC-URSI Web site in a couple of months**

Individual Membership in URSI

- The official Members of URSI are the countries or territories, represented by their academies of sciences: e.g., USNC
- URSI has just established Individual Members, Individual Associate Members, and Fellows
- Individual Members and Associate Members 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*

Individual Membership in URSI

- **Go to URSI Web site www.ursi.org and join!**
- **Fellow is only by invitation of the URSI Board**

URSI- Boulder 2017

Student Travel Support and SPC

Erdem Topsakal, Chair

Student Travel Support

- 137 student received support
 - 109 outside Colorado - \$600
 - 15 inside Colorado outside Boulder - \$300
 - 13 inside Boulder - \$100

107 PhD, 15 MS, and 7 BS – 7 Unknown

November 15 is deadline to announce

Student Paper Competition

- 17 students competed
 - Top 7 were chosen for second round review (**5-27, 1-26, 1-25, rest is <21**)
 - Commission Chairs ranked top 3 finalists.
- Andrew Nuttall – Comm- G
- Ashanthi Maxworth – Comm-H
- Lingnan Song – Comm- K



2017 GASS



URSI 2017 GASS
XXXIInd URSI GENERAL ASSEMBLY
& SCIENTIFIC SYMPOSIUM
AUGUST 19-26, 2017 | MONTRÉAL | CANADA

<http://www.ursi2017.org/>

Aug. 19-26, 2017, Montreal, Canada

Submission deadline: Jan. 30, 2017

We need to have a strong attendance by the members of
USNC-URSI Commissions.

Contingent on funding from the proposed NSF grant, we
plan to support travel costs, as follows:

- Up to 50 YSA grants of \$1,000.
- \$1,000 grants to all Commission Chairs.
- \$750 for Members of Commissions, on a first-come first-serve basis.

Note: All applicants for travel support must be the presenter of at least one accepted paper for oral or poster presentation at the 2017 URSI GASS in Montreal.

USNC/URSI Commission B Membership Committee

Ed Rothwell (Chair) – Michigan State University
George Hanson – University of Wisconsin-Milwaukee
Kathleen Melde – University of Arizona
Don Wilton – University of Houston

Commission B Business Meeting
Boulder, CO
January 2017

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:

■ Christos Argyropoulos

- 844 N. 16th St. SEC, Room 239N, Lincoln, NE, 68588
- cargyropoulos2@unl.edu (402) 472-3710
- sponsor: Andrea Alu

■ Goutam Chattopadhyay

- NASA Jet Propulsion Laboratory, M/S 168-314, 4800 Oak Grove Drive, Pasadena, CA, 91109
- goutam@jpl.nasa.gov (818) 216-1091
- sponsor: Sembiam Rengarajan

■ Kamalesh Sainath

- The Ohio State University, 1330 Kinnear Road, Columbus, Ohio, 43212
- Sainath.1@osu.edu (805) 236-1049
- sponsor: Fernando Teixeira

Commission B Nominees

- For Associate Membership:

- Georgios C. Trichopoulos

- 781 E Terrace Road, Tempe, AZ, 85287
 - gtrichop@asu.edu (614) 364-2090
 - sponsor: Kubilay Sertel

- For Early Career Membership:

- Ala Ali Alemaryeen

- 427 Tulane Ct, Grand Forks ND, 58203
 - ala.alemaryeen@und.edu (701) 885-2374
 - sponsor: Sima Noghanian

Christos Argyropoulos

- U.S. permanent resident
- Ph.D., 2011, University of London, UK
- Professional experience
 - 2014-present: Assistant Professor, University of Nebraska, Lincoln
 - 2013-2014: Post-Doc, Duke University
 - 2011-2013: Post-Doc, University of Texas, Austin
- Research areas
 - Plasmonics, metamaterials, electromagnetic cloaking, nanoantennas, nanophotonics
- Qualifications summary (Full Member)
 - Journal pubs: 49 (Radio Science, IEEE AP, JAP, APL, Phys Rev B, etc)
 - URSI presentations: 11 Commission B
 - Participation in URSI:
 - AP/URSI 2009-2016 (5 times), Boulder URSI 2013, URSI EMTS 2010, 2016, Session chair at 2016 AP/URSI, Reviewer for Radio Science

Goutam Chattopadhyay

- U.S. citizen
- Ph.D., 1999, California Institute of Technology
- Professional experience
 - 2015-present: Senior Research Scientist, NASA-JPL
 - 2006-present: visiting Professor, Cal Tech
 - 2005-2015: Senior/Principal Engineer, NASA-JPL
 - 1999-2005: Senior Researcher, Cal Tech
- Research areas
 - THz technology, receiver technology, micromachined components, THz antennas, radar imaging
- Qualifications summary (Full Member)
 - Journal pubs: Numerous – h-index of 34, i10-index of 97
 - URSI presentations: 7 URSI Commission B
 - Participation in URSI:
 - Boulder URSI 2014, 2016, 2017, URSI General Assembly 2005, 2008, 2011, 2014, chaired sessions at Boulder 2016 and GASS 2005, 2008, 2011.

Kamalesh Sainath

- U.S. citizen
- Ph.D., 2016, OSU
- Professional experience
 - 2014-2016: Intern, NASA-JPL
 - 2010-2011: Undergraduate Researcher UC Irvine
- Research areas
 - Fields in layered media, computational techniques, remote sensing, complex media
- Qualifications summary (Full Member)
 - Journal pubs: 8 (IEEE AWPL, Phys Rev E, JOSA B, etc.)
 - URSI presentations: 7 URSI B, 5 URSI F
 - Participation in URSI:
 - AP/URSI 2015, URSI Boulder 2014-2016, URSI Student Paper Competition 2014, URSI Business meetings 2015, 2016

Georgios C. Trichopoulos

- Not a U.S. citizen or PR
- Ph.D., 2013, OSU
- Professional experience
 - 2015-present: Assistant Professor, Arizona State University
 - 2014-2015: Senior Research Associate, Ohio State
 - 2013-2014: Post Doc, Ohio State
- Research areas
 - Numerical EM, THz technology and devices, THz imaging systems
- Qualifications summary (Associate Member)
 - Journal pubs: 6 (IEEE AP, IEEE MTT, etc.)
 - URSI presentations: 7 URSI B
 - Participation in URSI:
 - AP/URSI 2009-2016, URSI Boulder 2012-2014, 2016, URSI Boulder session chair, 2014, 2016

Ala Ali Alemaryeen

- Not a U.S. citizen or PR
- Ph.D. student, University of North Dakota, 2016-present
- Professional experience
 - Grad research assistant, UND
- Research areas
 - Wearable antennas, health effects of EM
- Qualifications summary (Early Career Member)
 - Journal pubs: 1 (ACES Journal)
 - URSI presentations: 2 URSI B
 - Participation in URSI:
 - URSI Boulder 2016, URSI International Symposium on Signals, Systems, and Electronics (ISSSE) 2015

Membership Committee Recommendations

- The Committee unanimously recommends
 - Election to full member for Christos Argyropoulos
 - Election to full member for Goutam Chattopadhyay
 - Election to full member for Kamalesh Sainath
 - Election to associate member for Georgios C. Trichopoulos
 - Election to early career member for Ala Ali Alemaryeen



URSI Commission-B Special Sessions & Stats

**6 January 2017
Boulder, Colorado**

**Branislav M. Notaros
Colorado State University**



2017 National Radio Science Meeting

Conference Statistics

Total number of pre-registrants: 348

Total abstracts and summaries submitted: 425

Total abstracts and summaries accepted: 421

Number of sessions: 56

Total number of Student Travel Grant Award applications: 137

	2017	2016	2014	2013	2012	2011
Total No. of papers	421	375	399	364	369	358
Total No. of sessions	56	49	54	47	47	49
Total No. of travel grants	137	122	115	100	104	113

National Radio Science Meeting

Conference Statistics

Registration as of Close of Online Pre-Registration

Year	Early Reg.	Late Reg.	Student/Ret. Early	Student/Ret. Late	Total
2011	159	30	146	12	347
2012	158	40	134	18	350
2013	161	31	139	13	344
2014	134	35	149	11	329
2015	NARSM	NARSM	NARSM	NARSM	NARSM
2016	163	17	149	10	339
2017	141	33	135	31	340

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

2017 National Radio Science Meeting Conference Statistics

Country	Papers
United States	404
Canada	6
South Africa	4
Kuwait	3
?	2
Japan	1
France	1
China	1
Brazil	1
Australia	1
Total	424

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

Commission B Special Sessions, 2017 USNC-URSI NRSB, Boulder, Colorado

8 special sessions, 63 papers (total URSI: **56** sessions, **421** papers)

Special Session Title	No. of Papers	Organizers
1. Adv. Theory & Applications of Metamaterials	10	Filippo Capolino, UC Irvine, & Ashwin Iyer, Univ. of Alberta
2. Advances in CEM and Emerging Applications	10	Branislav Notaros, Colorado State, & Yahya Rahmat-Samii, UCLA
3. Adv. Analysis, Design, & Appl. of WG Structures	5	Michael Havrilla, Air Force Ins of Tech, & Edward Rothwell, Michigan State
4. Advanced Modeling of EM Propagation	6	Jamesina Simpson, Univ. of Utah & Robert Marshall, Univ. of Colorado
5. Terahertz Antennas and Applications	10	Kubilay Sertel, Ohio State, & Georgios Trichopoulos, Arizona State
6. Wearable Antennas and Electronics	9	Asimina Kiourti, Ohio State, & Bashir Morshed, Univ. of Memphis
7. Antennas for Small Satellites	4	Reyhan Baktur, Utah State, & David Jackson, Univ. of Houston
8. Magnetic Resonance Imaging B/D/K	9	Branislav Notaros, Colorado State, Zoya Popovic, Univ. of Colorado, Erdem Topsakal, Virginia Com. Univ.

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

Commission B Special Sessions, 2017 USNC-URSI NRSM, Boulder, Colorado
8 special sessions, 63 papers (total URSI: 56 sessions, 421 papers)

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

Commission B Special Sessions, 2016 USNC-URSI NRSM, Boulder, Colorado
9 special sessions, 54 papers (total URSI: 49 sessions, 375 papers)

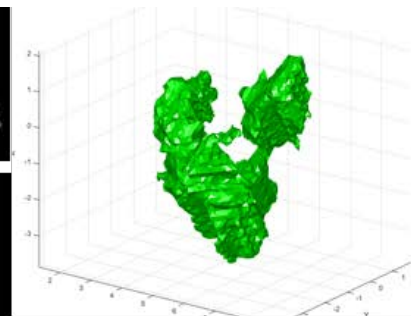
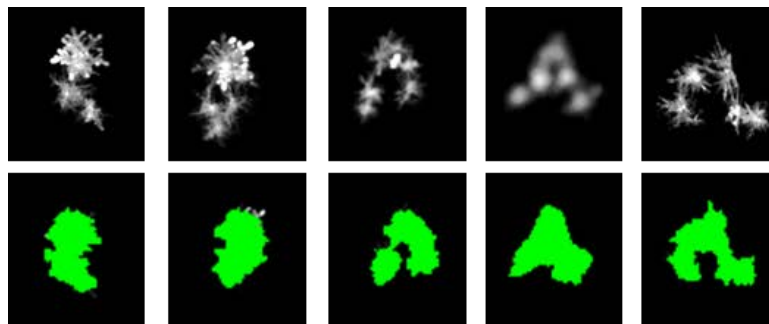
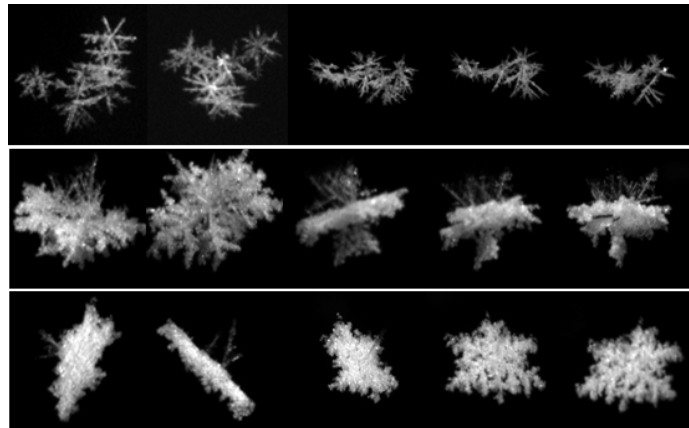
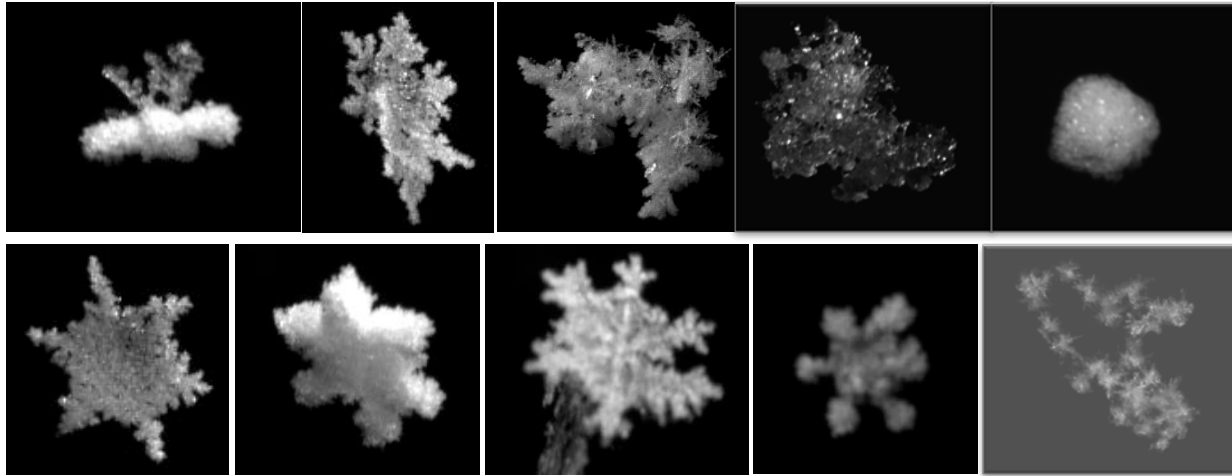
Commission B Regular Sessions, 2016 USNC-URSI NRSM, Boulder, Colorado
9 regular sessions, 73 papers (total URSI: 49 sessions, 375 papers)

NEXT: Commission B Special Sessions, 2018 USNC-URSI NRSM, Boulder, Colorado

Special Session Title	No. of Papers	Organizers
1. Adv. Theory & Applications of Metamaterials	10	Filippo Capolino, UC Irvine, & Ashwin Iyer, Univ. of Alberta
2. Advances in CEM and Emerging Applications	10	Branislav Notaros, Colorado State, & Yahya Rahmat-Samii, UCLA
3. Adv. Analysis, Design, & Appl. of WG Structures	5	Michael Havrilla, Air Force Ins of Tech, & Edward Rothwell, Michigan State
4. Advanced Modeling of EM Propagation	6	Jamesina Simpson, Univ. of Utah & Robert Marshall, Univ. of Colorado
5. Terahertz Antennas and Applications	10	Kubilay Sertel, Ohio State, & Georgios Trichopoulos, Arizona State
6. Wearable Antennas and Electronics	9	Asimina Kiourti, Ohio State, & Bashir Morshed, Univ. of Memphis
7. Antennas for Small Satellites	4	Reyhan Baktur, Utah State, & David Jackson, Univ. of Houston
8. Magnetic Resonance Imaging B/D/K	9	Branislav Notaros, Colorado State, Zoya Popovic, Univ. of Colorado, Erdem Topsakal, Virginia Com. Univ.

Suggested deadline: May 1, 2017, **please send suggestions to notaros@colostate.edu**

Snow in Colorado is Beautiful!



Flake ID: 46922
 $V = 13.64 \text{ mm}^3$
 $SA = 69.87 \text{ mm}^2$
 $AR = 0.58$