



# National Radio Science Meeting

- ◆ January 4-7, 2018 ◆ University of Colorado at Boulder
- ◆ Meeting website: [www.nrsmboulder.org](http://www.nrsmboulder.org)
- ◆ USNC-URSI website: [www.usnc-ursi.org](http://www.usnc-ursi.org)

The National Academies of  
SCIENCES • ENGINEERING • MEDICINE



This open scientific meeting is sponsored by the U.S. National Committee (USNC) of the International Union of Radio Science (URSI). The USNC-URSI is appointed by the National Academies of Sciences, Engineering and Medicine, and represents U.S. radio scientists in URSI. Through technical co-sponsorship of the meeting by the IEEE Antennas and Propagation Society, authors will have their choice of submitting one-page abstracts that are not archived on IEEE Xplore, or two-page summaries that are archived on IEEE Xplore. At least one author is required to register for each presented abstract or summary. Papers must be presented for their corresponding summaries to be archived on IEEE Xplore. Abstracts or summaries on any topic in the interest area of a Commission are welcome. Contact the USNC-URSI Commission Chairs listed below or visit the meeting website for further information.

Please note that the meeting this year takes place on Thursday-Sunday (in the past it was usually Wednesday-Saturday). Sunday will be used for technical presentations only if needed to accommodate the number of accepted papers.

## Meeting Plenary Highlights

- (1) *The Wonderful World of Waves in the Near Earth Environment*
- (2) *Radio Navigation Systems - New Challenges and Opportunities*

Contacts: Anatoly Streltsov (Commission H Chair), [strelts@erau.edu](mailto:strelts@erau.edu)  
Sigrid Close (Commission G Chair), [sigridc@stanford.edu](mailto:sigridc@stanford.edu)

**USNC-URSI Chair (2015-2017):** David R. Jackson, (713)743-4426, [djackson@uh.edu](mailto:djackson@uh.edu)  
**USNC-URSI Chair (2018-2020):** Sembiam Rengarajan, (818) 677-3571, [srengarajan@csun.edu](mailto:srengarajan@csun.edu)

## COMMISSION A, Electromagnetic Metrology

Steven J. Weiss, (301) 394-1987,  
[steven.j.weiss14.civ@mail.mil](mailto:steven.j.weiss14.civ@mail.mil)  
 Incoming chair (2018-2020): Jeanne Quimby

### TOPICS

Antennas  
*Bioeffects and medical applications*  
*EM-field metrology*  
*EMC and EM pollution*  
*Impulse radar*  
*Interconnect and packaging*  
*Materials*  
*Microwave to submillimeter measurements/standards*  
*Millimeter-wave and sub-mm wave communications*  
*Noise*  
*Planar structures and microstrip circuits*  
*Quantum metrology and fundamental concepts*  
*Time and frequency*  
*Time domain metrology*

*Nano-electromagnetics*

*Nonlinear electromagnetics*  
*Numerical methods (differential- and integral-equation based, hybrid and other techniques)*  
*Propagation phenomena and effects*  
*Rough surfaces and random media*  
*Scattering*  
*Theoretical electromagnetics*  
*Transient fields, effects, and systems*  
*Ultra-wideband electromagnetics*  
*Wireless communications*

## COMMISSION B, Fields and Waves

John L. Volakis, (614) 292-5846, [volakis@ece.osu.edu](mailto:volakis@ece.osu.edu)  
 Incoming chair (2018-2020): Jamesina Simpson

### TOPICS

Antenna arrays  
*Antenna theory, design and measurements*  
*Cognitive radio*  
*Complex media (metamaterials, bandgap structures, biological and geophysical media, and others)*  
*Educational methods and tools*  
*Electromagnetic interaction and coupling*  
*Guided waves and waveguiding structures*  
*High-frequency techniques*  
*Inverse scattering and remote sensing*  
*Microstrip and printed devices and antennas*  
*Nano-electromagnetics*

## COMMISSION C, Radio-communication Systems and Signal Processing

Gregory H. Huff, (979) 862-4161, [ghuff@tamu.edu](mailto:ghuff@tamu.edu)  
 Incoming chair (2018-2020): Eric L. Mokole

### TOPICS

*Cognitive radio*  
*Computational imaging and inverse methods*  
*Distributed sensor networks*  
*Physics-based signal processing*  
*Radar systems*  
*Radar target detection, localization, and tracking*  
*Sensor array processing and calibration*  
*Signal processing for radar remote sensing*  
*Statistical signal processing of waves in random media*  
*Synthetic aperture and space-time processing*

**Abstract / Summary Submissions  
and  
Student Paper Competition Submissions  
are due by  
September 18, 2017  
This is a FIRM DEADLINE!  
Please visit [www.nrsmboulder.org](http://www.nrsmboulder.org)**

## **COMMISSION D, Electronics and Photonics**

Zoya Popovic, (303) 492-0374, Zoya.Popovic@colorado.edu  
Incoming chair (2018-2020): Negar Ehsan

### **TOPICS**

*Electronic devices, circuits, and applications*  
*Photonic devices, circuits, and applications*  
*Physics, materials, CAD, technology and reliability of electronic and photonic devices, in radio science and telecommunications*  
*Wide bandgap materials*

## **COMMISSION E, Electromagnetic Environment and Interference**

Charles Baylis, (254) 710-4306, Charles\_Baylis@baylor.edu  
Incoming chair (2018-2020): Larry Cohen

### **TOPICS**

*Communication in the presence of noise*  
*Effects of natural and intentional emissions on system performance*  
*Electromagnetic compatibility in: computational electromagnetics, education, measurement technologies, standards, and radiation hazards*  
*High-power electromagnetic effects of transients on electronic systems*  
*Spectrum management and utilization*

## **COMMISSION F, Wave Propagation and Remote Sensing**

Michael H. Newkirk, (240) 228-6976,  
Michael.Newkirk@jhuapl.edu  
Incoming chair (2018-2020): Kamal Sarabandi

### **TOPICS**

*Point-to-point propagation effects:*  
*Measurements*      *Mobile/fixed paths*  
*Propagation models*      *Horizontal/slant paths*  
*Multipath/mitigation*      *Surface/atmosphere interactions*  
*Land or water paths*      *Numerical weather prediction*  
*Scattering/diffraction*      *Dispersion/delay*  
*Indoor/outdoor links*      *Natural/man-made structures*  
  
*Microwave remote sensing of the earth:*  
*Atmospheric sensing*      *Ocean and ice sensing*  
*Field campaigns*      *Interferometry and SAR*  
*Subsurface sensing*      *Scattering/diffraction*  
*Radiation and emission*      *Propagation effects*  
*Urban environments*      *Soil moisture & terrain*  
*Subsurface sensing*  
*Propagation and remote sensing in complex and random media*

## **COMMISSION G, Ionospheric Radio and Propagation**

Sigrid Close, (650) 725-2863, sigridc@stanford.edu  
Incoming chair (2018-2020): Attila Komjathy

### **TOPICS**

*Ionospheric imaging*  
*Ionospheric morphology*  
*Ionospheric modeling and data assimilation*

*Meteoroids and orbital debris*

*Radar and radio techniques for ionospheric diagnostics*  
*Space weather – radio effects*  
*Transionospheric radio propagation and systems effects*

## **COMMISSION H, Waves in Plasmas**

Anatoly V. Streltsov, (386) 226-7137, streltsa@erau.edu  
Incoming chair (2018-2020): Robert Moore

### **TOPICS**

*Chaos and turbulence in plasmas*  
*Plasma instabilities*  
*Spacecraft-plasma interactions*  
*Solar/planetary-plasma interactions*  
*Space as a research laboratory*  
*Wave-wave and wave-particle interactions*  
*Waves in space and laboratory plasmas*

## **COMMISSION J, Radio Astronomy**

David DeBoer, (510) 520-9077, ddeboer@berkeley.edu  
Incoming chair (2018-2020): Jeff Mangum

### **TOPICS**

*ALMA 2030*  
*The VLBA at 25: Recent Accomplishments and Future Directions*  
*New Telescopes, Techniques and Technology*  
*Observatory Reports*  
*Spectral Line Cosmology and Low-Frequency Arrays*

## **COMMISSION K, Electromagnetics in Biology and Medicine**

Mahta Moghaddam, (213) 740-4712, mahta@usc.edu  
Incoming chair (2018-2020): Majid Manteghi

### **TOPICS**

*Biological effects*  
*Dosimetry and exposure assessment*  
*Electromagnetic imaging and sensing applications*  
*Human body interactions with antennas and other electromagnetic devices*  
*Therapeutic, rehabilitative and other biomedical applications*  
*Body-Area Networks*  
*Medical Devices*

## **ERNEST K. SMITH USNC-URSI STUDENT PAPER COMPETITION**

Prizes will be awarded to three student papers. Awards will be made for First Prize in the amount of \$1000, Second Prize at \$750, and Third Prize at \$500. The deadline for submission of *full papers* on the meeting website is *September 18, 2017*. Please see [www.nrsmboulder.org](http://www.nrsmboulder.org) for additional information, or contact the Student Paper Chair, Prof. Erdem Topsakal, Dept. of ECE, Virginia Commonwealth University, etopsakal@vcu.edu. Student papers and awards will be presented at the Plenary Session on Friday morning, January 5, 2018. Student Paper Competition participants will have the option of submitting their full papers for publication in a special section of the journal *Radio Science*.

## **ABSTRACT AND SUMMARY SUBMISSION**

The organizers of this meeting require the use of electronic submission. Details and instructions may be found at the conference website, [www.nrsmboulder.org](http://www.nrsmboulder.org). Authors may choose to submit to special sessions in addition to the general topics listed above. A list of special sessions will be available on the conference website. All abstracts or summaries must be submitted online by **Monday, September 18, 2017**. Abstracts must have a minimum of 250 words. You will not be able to submit an abstract that does not meet the minimum length requirements. After abstract or summary submission is complete, please note that registration is required to attend any session of the meeting or to present a paper. More information about USNC-URSI is available at [www.usnc-ursi.org](http://www.usnc-ursi.org).

**Questions about the conference:** For questions about the conference, please contact David R. Jackson or Sembiam Rengarajan. For questions concerning conference logistics, please contact Christina Patarino; Phone: (303) 492-5151, E-mail: christina.patarino@colorado.edu.