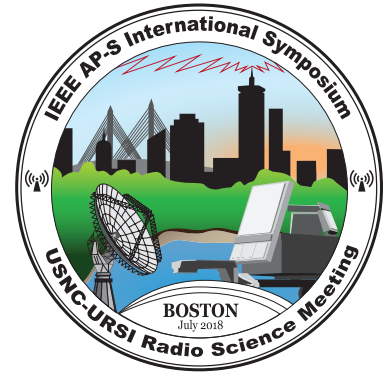




2018 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting

Boston, Massachusetts, USA

July 8-13, 2018



The 2018 IEEE AP-S Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting will be held July 8–13, 2018, at the Westin Waterfront hotel in Boston, MA. The combined symposium and meeting event are cosponsored by the IEEE Antennas and Propagation Society (AP-S) and the U.S. National Committee (USNC) of the International Union of Radio Science (URSI). The technical sessions, workshops, and short courses will be coordinated between the two organizations to provide a comprehensive and well-balanced program. This combined symposium and meeting is intended to provide an international forum for the exchange of information on state-of-the-art research in antennas, propagation, electromagnetic engineering, and radio science. The paper submission deadline is **January 15, 2018**.

Steering Committee

General Chair

Steven Best steven.best@comcast.net

Co-Chair

Mike Shields shields@LL.mit.edu

Technical Program Chair

Alan Fenn ajf@LL.mit.edu

Wajih Elsallal welsallal@mitre.org

International Liaison

Ross Stone r.stone@ieee.org

AP-S/URSI Liaison

Jamesina Simpson jamesina.simpson@utah.edu

Special Sessions Chair

Eric Mokole EMokole@mitre.org

Student Paper Competition Chair

Mohamed Abouzahra abouza@LL.mit.edu

Student Design Contest Chair

Jose Martinez jmartinez@coe.neu.edu

Short Courses and Workshops

Yueh-Chi Chang changy@raytheon.com

Young Professionals

Yaniv Brick yaniv.brick@gmail.com

Mohamed Abouzahra abouza@LL.mit.edu

Local Arrangements

Carey Rappaport rappaport@coe.neu.edu

Publicity Chair

Kristan Tuttle tuttle@LL.mit.edu

Raed Shubair rshubair@mit.edu

Finance Chair

Nestor Lopez Nestor.Lopez@LL.mit.edu

Exhibits

Drayton Hanna dhanna@mitre.org

Sponsors

Cecelia Franzini cfranzini@mitre.org

Sergey Makarov smakarov@mgh.harvard.edu

Social Programs and Hospitality

Susan Stone SueLStone@hotmail.com

Judy Long judimlong@swbell.net

Joanne Wilton jjwilton@mindspring.com

Marlene Mailloux mрмаilloux@comcast.net

Women in Engineering

Alkim Akyurtlu alkim_akyurtlu@uml.edu

<https://2018apsursi.org/>

Paper Submission

Authors are invited to submit contributions for review and possible presentation at the symposium or meeting (the “conference”) on topics of interest to AP-S and USNC-URSI, including advancements and innovations in the fields of electromagnetics, antennas, and wave propagation. Suggested topics and general information are listed on the Web site. In addition to regularly scheduled sessions for oral and poster presentations, there will be a student paper competition, as well as special sessions, workshops, and short courses that will address timely topics and state-of-the-art advancements in these fields. AP-S submissions must be in standard IEEE two-column format, and must be two pages in length. USNC-URSI submissions may be in either a one-page, one-column format with a minimum length of 250 words, or in the IEEE two-page, two-column format with a length of two pages. In all cases, only accepted and presented submissions that are in the IEEE two-page two-column format and substantially fill the two pages will be submitted for possible inclusion in IEEE Xplore, if the author chooses submission to Xplore. All accepted and presented submissions will appear in the proceedings distributed at the conference. At least one author will be required to register for the conference by **April 6, 2018**, in order for the paper to be included in the conference. A complete list of AP-S and URSI topics, as well as detailed instructions including formats and templates, are available on the conference Web site: <https://2018apsursi.org/>

AP-S Student Paper Competition

Eligible entries in the Student Paper Competition must have only one student author, and that student must be the first author. Each additional coauthor must submit a signed letter indicating that his/her contribution is primarily advisory. Letters must be in PDF format and must be uploaded to the symposium’s student paper Web site in the indicated area at the time the paper is submitted. All Student Paper Competition entries will be evaluated using a double-blind review process, in addition to the normal review process used for regular submissions. Detailed instructions are available on the conference Web site. For additional information, contact Mona Jarahi (mjarrahi@ucla.edu).

Special Sessions

Requests to organize special sessions should be submitted to Eric Mokole (EMokole@mitre.org) no later than **October 13, 2017**. Each proposal should include the title of the special session, a brief description of the topic, an indication of whether the proposed session is for AP-S, USNC-URSI, or is joint, and justification for its designation as a special session. All proposals should be submitted in PDF format. Special sessions will be selected and finalized by the end of November 2016. At that time, additional instructions will be provided to the organizers of the special sessions chosen for inclusion in the conference. The associated papers or abstracts will be due **January 15, 2018**. A list of special sessions will be posted at the symposium Web site in December 2017.

Exhibits

Industrial, academic, and book exhibits will be open July 10-13, 2018. Exhibitor registration and additional information can be found on the conference Web site.

Short Courses/Workshops/Tutorials

Several short courses and tutorials on topics of special and current interest will be solicited by the technical program committee and organized for the conference. Individuals who wish to organize a short course or workshop should contact Yueh-Chi Chang (changy@raytheon.com) by **November 13, 2017**.

AP-S Topics

AP-S.1: Antennas

- AP-S.1.1: Antenna theory
- AP-S.1.2: Antenna feeds and matching circuits
- AP-S.1.3: Mutual coupling in antenna arrays
- AP-S.1.4: Dielectric resonator antennas
- AP-S.1.5: Microstrip antennas, arrays, and circuits
- AP-S.1.6: Guided and leaky wave antennas
- AP-S.1.7: Phased-array antennas
- AP-S.1.8: Reflector and reflectarray antennas
- AP-S.1.9: Electrically small antennas
- AP-S.1.10: Broadband / ultra-wideband antennas
- AP-S.1.11: Multi-band antennas
- AP-S.1.12: Adaptive, active, and smart antennas
- AP-S.1.13: Reconfigurable antennas and arrays

AP-S.2: Electromagnetics and Materials

- AP-S.2.14: Electromagnetic theory
- AP-S.2.15: Electromagnetic material properties and measurements
- AP-S.2.16: Frequency-selective surfaces
- AP-S.2.17: Electromagnetic bandgap materials
- AP-S.2.18: Metamaterials and metasurfaces
- AP-S.2.19: Nano-electromagnetics
- AP-S.2.20: Electromagnetic education

AP-S.3: Computational and Numerical Techniques

- AP-S.3.21: Computational electromagnetics
- AP-S.3.22: High frequency and asymptotic methods
- AP-S.3.23: Integral equation methods
- AP-S.3.24: FDTD methods

- AP-S.3.25: FEM methods
- AP-S.3.26: Hybrid methods
- AP-S.3.27: Techniques for transient simulations
- AP-S.3.28: Optimization methods in EM designs
- AP-S.3.29: Parallel and special-processor based numerical methods

AP-S.4: Propagation and Scattering

- AP-S.4.30: Indoor, urban, terrestrial, and ionospheric propagation
- AP-S.4.31: Propagation and scattering in random or complex media
- AP-S.4.32: Scattering, diffraction, and RCS
- AP-S.4.33: Inverse scattering and imaging
- AP-S.4.34: Remote sensing

AP-S.5: Antenna Applications and Emerging Technologies

- AP-S.5.35: Biomedical applications
- AP-S.5.36: MIMO implementations and applications
- AP-S.5.37: Mobile and PCS antennas
- AP-S.5.38: RFID antennas and systems
- AP-S.5.39: Ultra wideband systems
- AP-S.5.40: Vehicular antennas and electromagnetics
- AP-S.5.41: Software-defined / cognitive radio
- AP-S.5.42: On-chip antennas
- AP-S.5.43: Wireless power transmission and harvesting
- AP-S.5.44: 3D printed antennas and structures
- AP-S.5.45: Millimeter-wave, sub-mm-wave, terahertz, optical antennas

URSI Topics

Commission A: Electromagnetic Metrology

USNC Chair: Jeanne Quimby (Jeanne.Quimby@nist.gov)

- A.1: Microwave to sub-millimeter measurements/ standards
- A.2: Quantum metrology and fundamental concepts
- A.3: Time and frequency
- A.4: Time-domain metrology, EM-field metrology
- A.5: EMC and EM metrology
- A.6: Noise
- A.7: Materials

- A.8: Bioeffects and medical applications
- A.9: Antennas
- A.10: Impulse radar
- A.11: Interconnect and packaging
- A.12: Test facilities
- A.13: THz metrology
- A.14: High-Frequency and millimeter wireless metrology

Commission B: Fields and Waves

USNC Chair: Jamesina Simpson (Jamesina.simpson@utah.edu)

- B.1: Antenna arrays
- B.2: Antenna theory, design, and measurements
 - B.2.1: Active antennas
 - B.2.2: Active and passive antenna matching
 - B.2.3: Antenna and propagation measurement techniques
 - B.2.4: Small antennas
 - B.2.5: Other antenna topics
- B.3: Complex, novel, or specialized media
 - B.3.1: Electromagnetic bandgap (EBG) structures
 - B.3.2: Biological media
 - B.3.3: Geophysical media
 - B.3.4: Metamaterials
- B.4: Educational methods and tools
- B.5: Electromagnetic interaction and coupling
- B.6: Frequency selective surfaces and filters
- B.7: Guided waves and wave-guiding structures
- B.8: High-frequency techniques
- B.9: Imaging, inverse scattering and remote sensing
- B.10: Microstrip antennas and printed devices
- B.11: Millimeter wave and Terahertz antennas
- B.12: MIMO antennas and systems
- B.13: Nanoscale electromagnetics
- B.14: Nonlinear electromagnetics
- B.15: Numerical methods
 - B.15.1: Fast methods
 - B.15.2: Finite-difference methods
 - B.15.3: Frequency-domain methods
 - B.15.4: Hybrid methods
 - B.15.5: Integral-equation methods
 - B.15.6: Time-domain methods
- B.16: Optimization techniques
- B.17: Propagation phenomena and effects
- B.18: Rough surfaces and random media
- B.19: RFID
- B.20: Scattering and diffraction
- B.21: Theoretical electro magnetics
- B.22: Transient fields, effects, and systems
- B.23: Ultra-wideband electromagnetics
- B.24: Wireless communications
- B.25: Wireless sensors and sensing networks
- B.26: Cognitive radio
 - B.26.1: Reconfigurable antennas
 - B.26.2: Simultaneous transmit and receive systems
 - B.26.3: Spectrum enhancement techniques

Commission C: Radiocommunication Systems and Signal Processing

USNC Chair: Eric L. Mokole (emokole@mitre.org)

- C.1: Cognitive radio and software defined radio
- C.2: Computational imaging and inverse methods
- C.3: Information theory, coding, modulation and detection
- C.4: MIMO and MISO systems
- C.5: Radar systems, target detection, localization, and tracking
- C.6: Radio communication systems
- C.7: Sensor networks, and sensor-array processing and calibration
- C.8: Signal and image processing
- C.9: Spectrum and medium utilization
- C.10: Synthetic aperture and space-time processing
- C.11: Ground Penetrating Radar (GPR)

Commission E: Electromagnetic Environment and Interference

USNC Chair: Larry Cohen (Larry.Cohen@nrl.navy.mil)

- E.1: Electromagnetic environment
 - E.1.1: Electromagnetic noise of natural origin
 - E.1.2: Man-made noise
- E.2: Electromagnetic compatibility measurement technologies
- E.3: Electromagnetic compatibility standards
- E.4: Legal aspects of electromagnetic compatibility
- E.5: Electromagnetic radiation hazards
- E.6: Electromagnetic compatibility education
- E.7: Computational electromagnetics in electromagnetic compatibility
 - E.7.1: Computer Modeling
 - E.7.2: Model Validation
 - E.7.3: Statistical Analysis
- E.8: Effects of natural and intentional emissions on system performance
 - E.8.1: Crosstalk
 - E.8.2: Effects of transients
 - E.8.3: System analysis
 - E.8.4: Signal integrity
 - E.8.5: Electromagnetic compatibility in communication systems
 - E.8.6: Statistical analysis
- E.9: High-power electromagnetics
 - E.9.1: Electrostatic discharge
 - E.9.2: Electromagnetic pulse and lightning
 - E.9.3: Transients
 - E.9.4: Power transmission
- E.10: Spectrum management

Commission F: Wave Propagation and Remote Sensing

USNC Chair: Kamal Sarabandi (saraband@eecs.umich.edu)

- F.1: Point-to-point propagation effects
 - F.1.1: Measurements
 - F.1.2: Propagation models
 - F.1.3: Multipath/mitigation
 - F.1.4: Land or water paths
 - F.1.5: Scattering/diffraction
 - F.1.6: Indoor/outdoor links
 - F.1.7: Mobile/fixed paths
 - F.1.8: Horizontal/slant paths
 - F.1.9: Surface/atmosphere interactions
 - F.1.10: Atmospheric constituents
 - F.1.11: Dispersion/delay
 - F.1.12: Natural/man-made structures
- F.2: Remote sensing of the Earth by radio waves
 - F.2.1: Atmospheric sensing
 - F.2.2: Ocean and sea ice
 - F.2.3: Field campaigns
 - F.2.4: Interferometry and SAR
 - F.2.5: Subsurface sensing
 - F.2.6: Scattering/diffraction
 - F.2.7: Radiation and emission
 - F.2.8: Propagation effects
 - F.2.9: Urban environments
 - F.2.10: Soil moisture & terrain
 - F.2.11: Propagation and remote sensing in complex and random media

Commission G: Ionospheric Radio and Propagation

USNC Chair: Attila Komjathy (Attila.Komjathy@jpl.nasa.gov)

- G.1: Ionospheric imaging
- G.2: Ionospheric morphology
- G.3: Ionospheric modeling and data assimilation
- G.4: Meteoroids and orbital debris
- G.5: Radar and radio techniques for ionospheric diagnostics
- G.6: Space weather – radio effects
- G.7: Transionospheric radio propagation and systems effects

Commission K: Electromagnetics in Biology and Medicine

USNC Chair: Majid Manteghi (manteghi@vt.edu)

- K.1: Biological effects
- K.2: Dosimetry and exposure assessment
- K.3: Electromagnetic imaging and sensing applications
- K.4: Human body interactions with antennas and other electromagnetic devices
- K.5: Therapeutic, rehabilitative, and other biomedical applications
- K.6: Body-area networks
- K.7: Medical devices