

# 2017 IEEE International Conference on Wireless for Space and Extreme Environments



WiSEE 2017: Concordia University, Montréal, Canada // October 10<sup>th</sup> to 12<sup>th</sup>, 2017

URL: <http://sites.ieee.org/wissee>



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## Scope

Spaceflight involves critical sensing and communication in extreme environments such as planetary surfaces, space vehicles, and space habitats. The many challenges faced in space sensing and communication are extremely diverse and overlap significantly with those found in many terrestrial examples of extreme environments such as extreme hot or cold locations, extreme high- or low-pressure environments, critical control loops in aircraft and nuclear power plants, high-speed rotating equipment, oil/gas pipelines and platforms, etc. All of these environments pose significant challenges for radio-frequency or optical wireless sensing and communication and will require the application of a broad range of state of the art technologies in order to generate reliable and cost effective solutions. Although the specific challenges vary significantly from the environment to environment, many of the solutions offered by sensing, communication, and statistical signal processing technologies can be applied in multiple environments, and researchers focusing on space applications can benefit greatly from understanding the problems encountered and solutions applied in alternative environments.

This IEEE conference will bring together investigators from the National Aeronautics and Space Administration (NASA), the Canadian Space Agency (CSA), the European Space Agency (ESA), and other space agencies, along with aerospace and space defense industries and academic researchers, in an effort to understand and solve the emerging problems facing wireless sensing and communication in space and related extreme environments. Topics of interest include but are not limited to:

- Wireless sensors, systems, and networks
- Delay and disruption tolerant networks
- Network architectures, middleware integration, data management
- Big data processing and data fusion techniques
- Wireless privacy, security and routing techniques
- Localization, detection, classification and tracking methods
- Antenna design and processing
- Integrated vehicle systems and robotics
- RFID devices and systems
- Propagation modeling and channel description
- Optical communication systems
- Availability, certification, spaceflight qualification for wireless devices/systems
- Multi-carrier systems, spread spectrum techniques
- Cognitive radio networks, emerging technologies
- High speed, low latency, multi-stream data techniques (full-duplex, LTE, MIMO)

## IMPORTANT INFORMATION

### Conference dates:

**October 10<sup>th</sup> to 12<sup>th</sup>, 2017**

### Conference location:

**Concordia University  
Montréal, QC, Canada**

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**Early bird/Regular registration  
(US \$495/\$675) for IEEE Members:  
September 10<sup>th</sup>, 2017**

## Workshops

### *Passive Wireless Sensor Technology Workshop (PWST)*

George Studor (Johnson Space Center, NASA)

Omar Torres (Langley Research Center, NASA)

### *Space Solar Power (SSP)*

Darel Preble (Space Solar Power Institute, Georgia Tech, USA)

Reza Zekavat (Michigan Tech University, USA)

### *Workshop on Massive Intelligent Sensor Systems (MISS'17)*

Habib Rashvand (University of Warwick, U.K.)

Gholamreza Alirezaei (RWTH Aachen University, Germany)

### *Space-Terrestrial Inter-networking (STINT)*

Edward Birrane (Germany Johns Hopkins University, USA)

Juan Fraire (University of Cordoba, Spain)

Scott Burleigh (Jet Propulsion Laboratory, NASA)

## Keynote Speakers

### **Chris Singer**

Former NASA Deputy Chief  
Engineer & Marshall  
Spaceflight Center  
Engineering Director

**Topic:** Engine of Possibility  
Accelerating Development



### **Dr. Fassi Kafyeke**

Senior Director, Strategic  
Technology & Innovation,  
Bombardier Aerospace

**Topic:** The Growing Use of  
Sensors in Business and  
Commercial Jet Aircraft



### **Dr. Sterling Rooke**

Founder Brixon, Inc., &  
Director-Elect ISA  
Communications Division  
(2018-2019)

**Topic:** Translational  
Awareness: at the Nexus of  
Physics and Cyber-in-Space



### **Dr. Obadiah Kegege**

NEN Development Manager,  
Exploration & Space  
Communications Projects  
Division, NASA /GSFC

**Topic:** User Needs and  
Advances in Space Wireless  
Sensing & Communications



### **Dr. Panagiotis Tsiotras**

College of Engineering  
Dean's Professor, School of  
Aerospace Engineering,  
Georgia Institute of Tech.

**Topic:** The Next Frontier:  
The Challenges in  
Developing Truly  
Autonomous Space Robots



### **Dr. Jim Lyke**

Research Program Manager,  
Space System Branch, Air  
Force Research Laboratory,  
Space Vehicles Directorate,  
AFRL Fellow

**Topic:** Energy Consequences  
of Information as It Relates to  
Spacecraft and Space Missions

