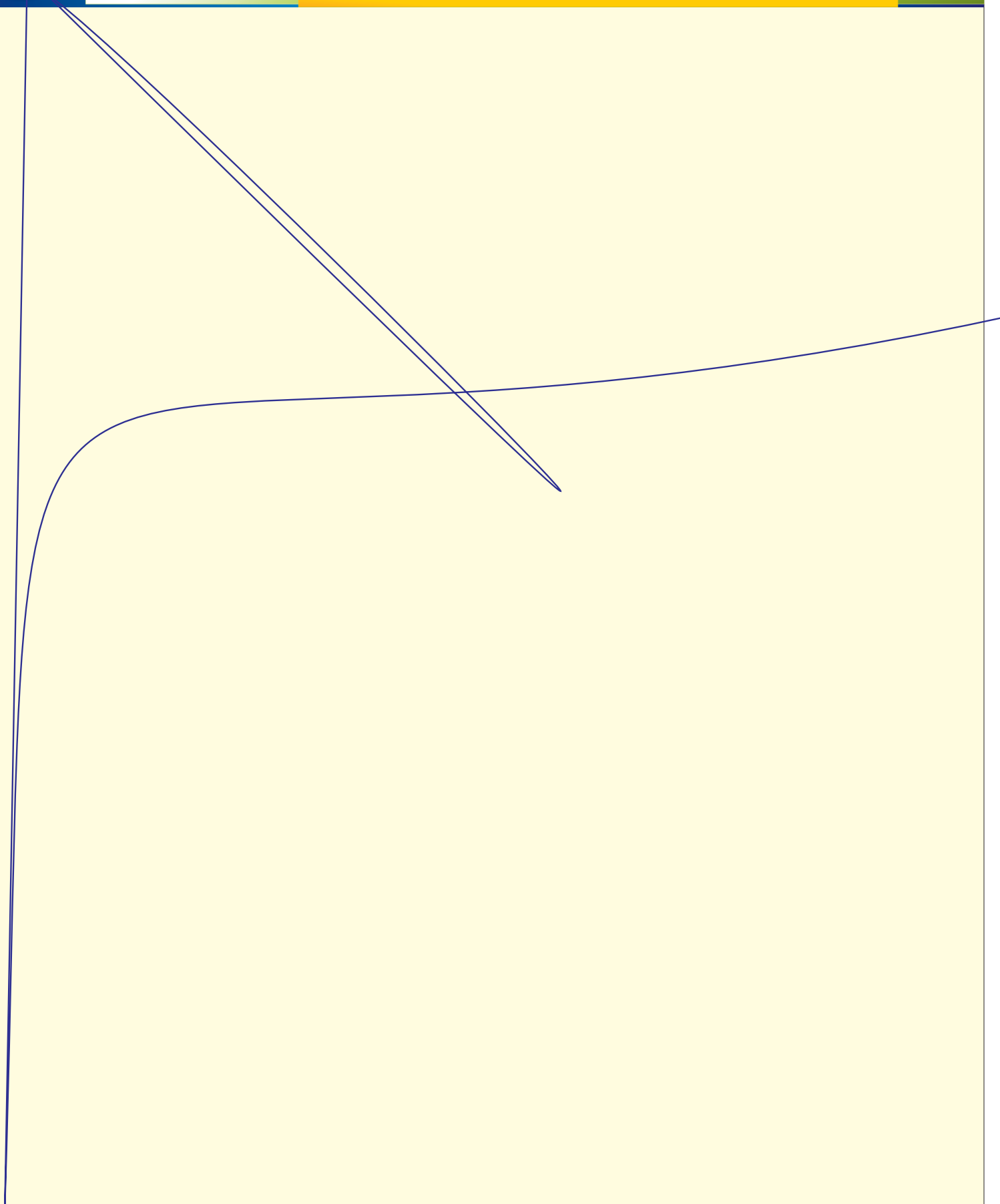


Scientific Secretary IBCAST  
Dr. Muhammad Zafar-uz-Zaman, SI  
Executive Secretary IBCAST  
Dr. Sajid Raza Chaudhary, SI  
IEEE Publication Chair  
Sy



## 2- AEROSTRUCTURES

- Aerospace structural design
- Static, Dynamic and thermal structural simulations
- Static and dynamic aeroelasticity
- Vibration, acoustics and modal analysis
- High strain Rate impact simulations
- Fracture and damage tolerance
- Fatigue life assessment
- Structural Optimization
- Biomechanics
- Advanced manufacturing techniques
- Advanced testing techniques

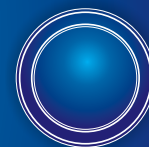
## 3- BIOSCIENCES

17<sup>th</sup> IBCAST Biosciences (BS) module aims to bring together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results on all aspects of "Biosurveillance, Microbial Detection & Countermeasures". This may result in exploring collaborations and to spark new ideas, with the aim of developing new projects and exploiting new technologies.

The sub themes includes

## 4- CONTROL & SIGNAL PROCESSING

Control engineering is the science of manipulating engineering systems for optimal performance in real-operating environments. Control



## 5- CYBER SECURITY AND ASSURANCE TECHNOLOGIES

Digital information is revolutionizing all fields of technology with electronic infrastructure serving as the communication backbone. Cyber Security is a rapidly growing area encompassing IT systems, computer networks, software, communications, cryptography and various other disciplines. Due to recent technological developments, the dependence of economy and other public and private affairs on internet and digital infrastructure is on the rise. This reliance demands reliability and security of cyber space and information flow. Furthermore, cyber space attacks show a direct threat to banking institutions, energy, infrastructure, state agencies and even social affairs. Therefore, cyber security and reliability has become crucial.

The aim of the track is to bring together researchers working on different facets of cyber security to advance this particular body of knowledge and solve the real world security related problems. Particular focus is given to the research areas involving latest topics & emerging cyber security concepts, techniques, technologies and trends, e.g., Internet of Things (IoT), Cognitive Computing and Deep Learning, Fog Computing, Cloud Computing, Virtualization, Edge Computing, Artificial Intelligence and Machine Learning, Big Data Processing and Analytics, Software Defined Networks, Blockchain, Crypto Currency, etc.

Computing software requires specialized quality assurance and testing techniques like formal verification to confirm absence of bugs. Formal verification exposes the boundary conditions and worst case scenarios which are not possible using merely computer simulations. This part of the activity also invites researches in the fields like Software Quality, Theory of Automata, Logic and Formal verification, etc.

Topics of interest include, but are not limited to: -

- Emerging Cyber Threats and Defense
- System and Network Security
- Protocol Analysis and Security
- Virtualization Security
- Data Loss Prevention Techniques
- Digital Forensics
- Privacy and Risk Management
- Malicious Code Analysis
- Hardware Security
- Trojans Detection and Prevention
- Supply Chain Security
- Security of Cyber-Physical Systems
- Security of Industrial Control System (ICSS)
- Anonymity and Identity Management
- Software Quality Assurance
- Formal Methods and Theory of Automata
- Exploiting and Exploring Secure Mathematics (Cryptography)
- Artificial Intelligence applied on cyber security
- Internet of Things - Security in Smart Devices
- Blockchain and Crypto Currency
- Cryptographic Security and Evaluation Standards
- Machine Learning Techniques for Cyber Security
- Quantum Security and Legacy Security Solutions
- Mathematical Evaluation of Security Solutions
- Zero Trust - Handling Insider Attacks



- GasDynamics
- Aerodynamics
- Hydrodynamics
- Industrial and Environmental Fluid Dynamics
- Fluid Structure interactions
- Turbulence Modeling
- Experimental Fluid Dynamics
- Multiphase flows
- Reactive flows
- Heat Transfer

## 7- MEDICAL SCIENCES

Ongoing war on terror has proven the fact that the trauma victim need not only be a young soldier. Swift in onset and slow in recovery, trauma is the most common cause of death worldwide. Trauma response protocols are ever changing, as are the ways and mechanics of trauma causation. Enormous strides have been made in recent years in the initial treatment and stabilization of trauma patients. Technological advances alone are not enough rather it is the medical responder's training which ensure that the trauma victim gets managed within the golden hour and adequately leading to optimal outcomes.

A hand-on training for the management of trauma, from minor injury to catastrophic disaster situations, including care for women, children, and the elderly, with the principal goal of improving quality of care and patient safety, would be organized for the 17<sup>th</sup> IBCAST 2020. It is designed to equip frontline health providers with basic trauma, anesthesia, and surgical skills. This session would address both junior and senior doctors, nursing staff, paramedics and resuscitation officers.



## Sonar Signal/Image Processing and Sensors

- Array Signal Processing and Array Design
- Detection, Classification and Localization
- High Resolution Spectral Analysis
- Synthetic Aperture Sonar (Active and Passive)
- Sonar Imaging and Displays
- Transducer Arrays & Materials
- Suspension System for Sonar Buoys
- Sonobuoy Dynamics and Control
- Sonar Test and Calibration

## Ocean Vehicles

- Vehicle Design
- Vehicle Navigation and Positioning
- Unmanned Underwater Vehicles (UUVs)
- Remotely Operated Vehicles (ROVs)
- Naval Architecture
- Underwater Fittings and Installations

## Marine Environment and Oceanography

- Marine Surveys
- Marine Renewable Energy
- Marine Pollution
- Marine Geology and Mineral Resources
- Hydrography and Seafloor mapping
- Mineral Resources

## Radar Topics

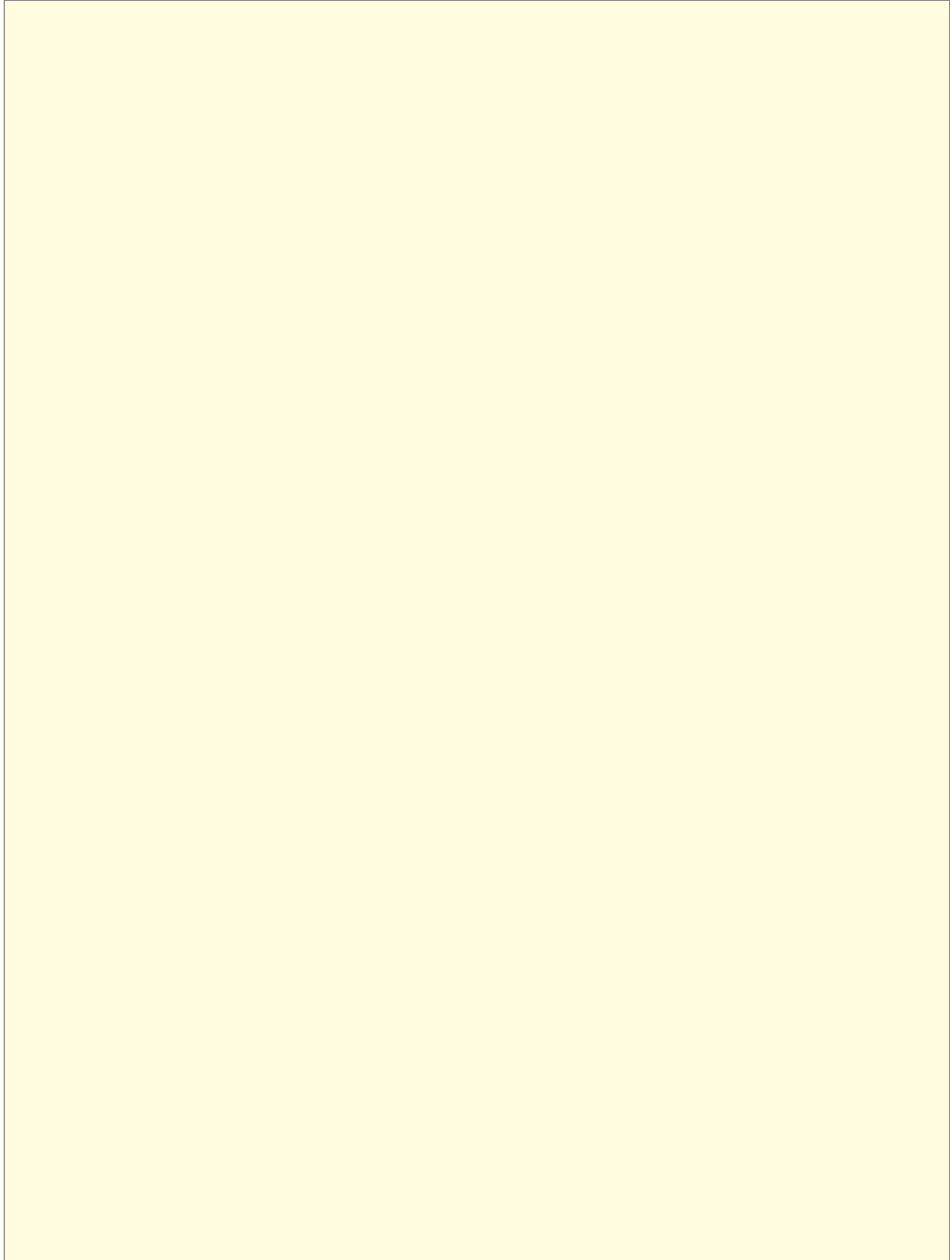
- Radar
- Millimeter Wave
- Ultra Wideband
- Performance
- Statistical
- Formulation
- Channel

## Wireless Communication Topics

- Software defined Radios
- Satellite & Space Communication
- Emerging Wireless Mobile Applications
- Network Centric Warfare
- Electromagnetic Scattering, Channel / Interference Modeling
- Adhoc Networks
- Wireless Technologies in Electro Medical Devices
- Metamaterials, FSSs and Electromagnetic Bandgap Structures
- Communication Systems Simulation
- Integrated Transceivers
- Wireless Power Transfer and Energy Harvesting
- Antennas
- Theory, Modeling and Simulation of Wireless Communication







# *Notes*

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