



Call for Papers for *Symposium on Selected Areas in Communications* *Aerial Communications Track*

TRACK CHAIR:

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SCOPE AND MOTIVATION:

Aerial communications refer to systems that involve aerial nodes (such as manned and unmanned aircrafts, floating balloons, airships) with significantly higher altitude than their terrestrial counterparts. On one hand, those aerial nodes could be deployed as aerial base stations, relays, or access points, to provide wireless connectivity for ground users from the sky. Thanks to their appealing features such as wide coverage with elevated altitude, the ability of on-demand deployment and fast responses, aerial-assisted wireless communications have found many promising applications, such as data traffic offloading, public safety, disaster relief, information dissemination and data collection. On the other hand, aerial nodes with their own missions (such as package delivery, aerial photography, surveillance) may also be connected to ground networks as new aerial users. Network-connected aerial nodes are expected to not only enable their truly remote command and control (C&C) with unlimited operation range, but also to support their high-capacity payload communications. However, aerial communications are significantly different from conventional terrestrial communications, due to the high altitude and/or high mobility of aerial nodes, the unique channel characteristics of air-ground links, the asymmetric quality of service (QoS) requirements for C&C and mission-related payload communications, the stringent constraints imposed by the size, weight, and power (SWAP) limitations of aerial nodes, as well as the additional design degrees of freedom enabled by joint aerial mobility control and communication resource allocation. This track aims to foster research and innovation surrounding the study, design and development of aerial communications. The track solicits original, previously unpublished papers pertaining to the theoretical and practical aspects of aerial communications.

TOPICS OF INTEREST:

Topics of interest for this symposium include but are not limited to the following:

- Networking architectures and communication protocols for aerial communications

- Theoretical frameworks for the analysis of aerial communications
- System-level simulation studies of aerial communications
- Channel measurement and modeling for air-ground and air-air links
- Spectrum management and multiple access schemes for aerial communications
- Interference mitigation for aerial communications
- Manned and unmanned aerial systems communication
- Aerial swarm communications and control
- Machine learning for aerial communications
- Massive MIMO/Millimeter wave/reconfigurable intelligence surface for aerial communications
- 3D aerial node placement and online/offline aerial trajectory/path optimization
- Joint trajectory design and resource allocation for aerial communications
- Internet connectivity using aerial platforms
- UAV-supported emergency communications
- UAV-supported data offloading
- UAV-assisted mobile edge
- Integration of UAVs in 5G and 6G mobile networks
- UAV-assisted fast deployment of communication and networked services
- Energy consumption model and energy supplying methods of aerial communications
- Energy-efficient aerial communications • Simultaneous wireless information and power transfer in aerial communications
- Cyber security and physical-layer security of aerial communications
- Virtualization and softwarization of UAVs and networks of UAVs
- Experimental performance demonstrations, prototyping, and field-tests of aerial communications
- Standardization progress
- Economic frameworks for aerial communications, e.g., cost studies, business models, etc.
- Regulatory schemes for aerial communications, e.g., safety operation, privacy protection, etc.

IMPORTANT DATES:

Deadline for paper submission: 11 October 2021

Date for notification: 18 January 2022

Deadline for final paper submission: 15 February 2022