

Call for Papers

Special Focus on Wireless Communications with Unmanned Aerial Vehicles (UAVs)



SCIENCE CHINA Information Sciences (SCIS) calls for papers for a Special Focus on Wireless Communications with Unmanned Aerial Vehicles (UAVs). The past few years have witnessed a rapid increase on the use of UAVs in a wide range of civilian and commercial applications. Integrating UAVs into 5G and beyond cellular networks is a promising technology to unlock the full potential of UAVs. On the one hand, those UAVs with their own missions could be connected to cellular networks as special aerial users, which are known as cellular-connected UAVs. On the other hand, dedicated UAVs could also be employed as airborne communication platforms, to further assist the terrestrial communications in 5G, which is known as UAV-assisted 5G communications. The integration of UAVs into 5G and beyond calls for a paradigm shift on the design of both cellular and UAV communication systems, to enable a highly heterogeneous network

with not only terrestrial users and base stations, but also aerial users and communication platforms with a wide range of altitude. In particular, both frameworks of cellular-connected UAV communications and UAV-assisted 5G communications are significantly different from the conventional terrestrial communications, due to the high altitude and mobility of UAVs, the unique channel characteristics of the UAV-ground links, the asymmetric quality of service (QoS) requirements for downlink command and control (C&C) and uplink mission-related data transmission, the stringent constraints imposed by the size, weight, and power (SWAP) limitations of UAVs, as well as the additional design degrees of freedom with joint UAV mobility control and communication resource allocation. Therefore, this proposed special focus aims to bring together researchers, industry practitioners, and individuals working on the related areas to share their new ideas, latest findings, and state-of-the-art results. Topics of interest in this special focus include but not limited to the following:

- Channel modeling for UAV-ground and UAV-UAV communications
- Cellular systems with coexisting aerial and ground users
- 3D beamforming for cellular-connected UAVs
- New architectures and communication protocols for cellular-connected UAVs
- Spectrum management and multiple access schemes for cellular-connected UAVs
- Interference mitigation for cellular-connected UAVs
- Massive MIMO/millimeter wave communications for cellular-connected UAVs
- 3D aerial base station placement
- UAV-aided enhanced mobile broadband (eMBB), massive machine type communications (mMTC), and ultra-reliable low-latency communication (URLLC)
- Online/offline and machine learning based UAV trajectory optimization
- Joint trajectory design and resource allocation for UAV-assisted wireless communication

- Spectrum sharing and coordination between aerial and ground BSs
- Energy consumption model of UAVs
- Energy-efficient UAV communications
- UAV swarm in 5G and beyond
- UAV channel estimation
- UAV meets wireless power transfer, caching, edge computing, etc.
- Field channel measurement and prototype results for UAV systems
- Physical layer security and techniques in wireless networks with UAVs

Submission

The papers should be edited in the SCIS template, and should be submitted online through the manuscript submission system of the SCIENCE CHINA Information Sciences. The submission website is: <https://mc03.manuscriptcentral.com/scis>. You should choose **Special Focus on Wireless Communications with Unmanned Aerial Vehicles (UAVs)**. Information and guidelines on preparation of manuscripts are available on the journal website: <http://scis.scichina.com>.

Important Dates

Submission deadline: Apr. 1, 2020

Acceptance notification: Jun. 1, 2020

Final manuscripts due: Jul. 1, 2020

Publication: Oct. 1, 2020

Guest Editors

Yong ZENG (曾勇), Southeast University, China, yong_zeng@seu.edu.cn

Lingyang SONG (宋令阳), Peking University, China, lingyang.song@pku.edu.cn

Zhaoyang ZHANG (张朝阳), Zhejiang University, China, ning_ming@zju.edu.cn

Min SHENG (盛敏), Xidian University, China, msheng@mail.xidian.edu.cn

Jie XU (许杰), Guangdong University of Technology, China, jiexu@gdut.edu.cn

Robert SCHOBBER, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany, robert.schober@fau.de