

Special Issue on
**Unmanned Aerial Vehicle (UAV)-enabled
Wireless Communications and
Networking**

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Nowadays, Unmanned Aerial Vehicles (UAVs) have found numerous applications in a variety of fields, such as aerial inspection, photography, precision agriculture, traffic control, search and rescue, package delivery, and wireless communications. Among applications and enabling technologies for UAVs, wireless communication is absolutely essential. Instead of conventional terrestrial communications, UAV-enabled communications and networking offer new opportunities for cellular-connected UAVs and other UAV-enabled wireless communications in 5G and beyond.

UAVs can be exploited as a promising communication platform thanks to their advantages, such as their ability to operate in dangerous environments, to be relocated easily and rapidly on demand, to improve coverage due to the improved line-of-sight (LoS) connections with ground users, have adjustable height to meet quality of service (QoS) requirements based on user intensities, desired data rate, and interference/blockage effects. However, UAV-enabled communications and networking may encounter several challenges against their maturity. Specifically, the high altitude of the UAVs requires the cellular base station (BS) to offer 3D aerial coverage, which may result in more frequent handovers and time-varying wireless backhaul links with ground BSs/users. Another problem is that the LoS-dominant air-to-ground channel may cause a strong air-to-ground interference, which is a critical issue that may severely limit the cellular network capacity of coexisting aerial and terrestrial BSs/users. Furthermore, the LoS-dominant air-to-ground links also make UAV communications more susceptible to jamming/eavesdropping attacks by malicious ground nodes. Finally, since the UAVs usually have stringent size, weight, and power (SWAP) constraints, they pose critical limits on their endurance and communication capabilities. Therefore, smaller size, lighter weight, more compact antenna, and more power efficient hardware than their terrestrial counterparts need to be designed to cater to the limited payloads and sizes of UAVs.

The goal of this Special Issue is to disseminate the latest research and innovations in UAV-enabled wireless communications and networking. Original research and review articles are welcome.

Potential topics include but are not limited to the following:

- ▶ Modelled channels for UAVs
- ▶ Antenna model for UAVs
- ▶ UAV energy consumption model
- ▶ New architectures/protocols for cellular-connected UAVs
- ▶ Offline/online UAV trajectory design with QoS constraints
- ▶ Physical-layer security in UAV-terrestrial users
- ▶ Integrating UAVs into cellular networks
- ▶ Interference management techniques for UAV communication
- ▶ UAV BS/relay 3D placement and dynamic movement
- ▶ MIMO/massive MIMO/mmWave for UAV-assisted communications
- ▶ UAV meets wireless power/energy harvesting/caching/edge computing
- ▶ Machine learning/AI for UAV communications and networking

Authors can submit their manuscripts through the Manuscript Tracking System at <https://review.hindawi.com/submit?specialIssue=958599>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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Submission Deadline

Friday, 11 June 2021

Publication Date

October 2021