Call for Papers

Track ST2 – Selected Topic: Satellite Networks and Integrated Space-Air-Ground Networks

Track Chairs:

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Scope and Motivation:

The continuous densification of terrestrial networks with both stationary infrastructure and mobile nodes has been progressing for several decades. Meanwhile, the latest advancements in the engineering of aerial platforms (UAVs, HAPs, LEO CubeSats, etc.) open the door for connecting and seamlessly integrating these novel types of devices into the existing terrestrial wireless networks. In parallel, the appearance of these prospective aerial users and infrastructure elements also challenges the way wireless networks have been designed and operated today, raising some new research questions to be addressed. Last but not least, these novel devices and platforms enable new tempting use cases, for airborne networking, global sensing, and Earth exploration, as well as supporting communication with remote space missions. This unique combination of opportunities on one side and a rich set of research and engineering challenges on the other gives the motivation to closely explore the topic of next-generation (6G and beyond-6G) wireless systems envisioned to appear beyond 2030.

Main Topics of Interest:

The selected track on “Satellite Networks and Integrated Space-Air-Ground Networks” seeks original contributions in the following areas, as well as others that are not explicitly listed but are closely related:

- Channel measurements, modeling, and analysis for airborne and satellite communications
- Constellation design considerations for space communications
- Satellite communications and networking to support scientific missions
- Spectrum analysis and management for airborne and satellite communications
- Integrated Sensing and Communications for airborne and satellite systems
- Medium access control solutions for airborne and satellite communications and networks
- Interference modeling, analysis, and mitigation in airborne and satellite communications and networks
- Error control, modulation, and waveform design
- Network architectures/transmission protocols for airborne and satellite communications
- Security and privacy issues for airborne and satellite communications
- Machine/Deep/Reinforcement learning enabled airborne and satellite communications and networking
- Reconfigurable smart surfaces aided airborne and satellite communications
- Edge/Cloud computing in airborne and satellite communications
- Seamless co-existence between terrestrial (TN) and non-terrestrial (NTN) network segments
- Integration of airborne and satellite communications into terrestrial wireless networks
- Edge and distributed computing over airborne and satellite communication systems
- Optimized resource allocation, scheduling of communication and computation, network optimization, and routing design for airborne and satellite systems
- Sensing, communications, and control solutions for intelligent and safe control of aerial traffic, as well as for coordination among airborne vehicles
- Trials, demos, and prototypes of airborne and satellite communications and networks
- Research challenges and opportunities related to novel satellite and airborne integrated space-air-ground wireless systems