SAC Symposium:
Reconfigurable Intelligent Surfaces

Co-Chair

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Scope and Motivation

With the roll-out of the fifth generation (5G) of communication systems, it is now a critical time to identify enabling technologies for the sixth generation (6G) of communication systems. 6G systems are expected to fulfill more stringent requirements than 5G systems, on transmission capacity, reliability, latency, coverage, energy consumption, and connection density. Recently, reconfigurable intelligent surfaces (RISs) have emerged as a promising technology for their capability of customizing the wireless propagation environment through nearly passive signal transformations. An RIS is a planar structure that is engineered to have properties that enable the dynamic control of the electromagnetic waves, through, e.g., signal reflections, refractions, focusing, collimation, and their combination. In wireless communications, RISs are intended to realize so-called programmable and reconfigurable wireless propagation environments, i.e., wireless environments that are not viewed and treated as random uncontrollable entities but become part of the network design parameters that are subject to optimization for supporting diverse performance metrics and quality of service needs to fulfill the stringent requirements of 6G networks. Recent applications of RISs in wireless communications include their user as nearly passive relay-type surfaces, signal- RF multi-stream multi-antenna transmitters, and reconfigurable ambient backscatters.

Topics of Interest

Contributions on the modeling, analysis, design, and development of RISs are solicited. The track welcomes original, previously unpublished, research works pertaining to the theoretical and practical aspects of RISs. Topics of interest include, but are not limited to:

- Communication-theoretic foundation
- Fundamental performance limits
- Optimization and resource allocation
- Signal processing and channel estimation
- Physics- and electromagnetic-consistent modeling and optimization
- Algorithms and protocols design and optimization
- Software-defined design and implementation

- AI-inspired optimization, resource allocation, and orchestration
- Integration of communication, sensing, radar, and localization
- Channel modeling and ray tracing
- System-level modeling and simulations
- Experimental measurements and testbed implementations
- Definition of uses cases and application scenarios
- Application to and integration with other wireless technologies (e.g., small cells, Massive MIMO, millimeter-wave communications, visible light communications, THz communications, IoT, UAV-aided communications, energy harvesting and wireless power transfer, etc.)

Biography of the Co-Chair

Alessio Zappone is a professor at the university of Cassino and Southern Lazio. Before he has been with the Dresden University of Technology, Dresden, Germany, funded by the German research foundation (DFG), and then with the LANEAS group of CentraleSupelec, Gif-sur-Yvette, as the recipient of the H2020 Marie Curie IF BESMART fellowship for experienced researchers. His research interests lie in the area of communication theory and signal processing, with main focus on optimization techniques for resource allocation and energy efficiency maximization. For his research he received the Marconi Award of the IEEE Communications Society in 2021. Alessio serves as senior area editor for the IEEE Signal Processing Letters, as Editor of the IEEE Transactions on Wireless Communications, and has served as guest editor for the IEEE Journal on Selected Areas on Communications.

How to Submit a Paper

All papers for technical symposia should be submitted via EDAS. Full instructions on how to submit papers and important deadlines are posted at https://globecom2023.ieee-globecom.org/