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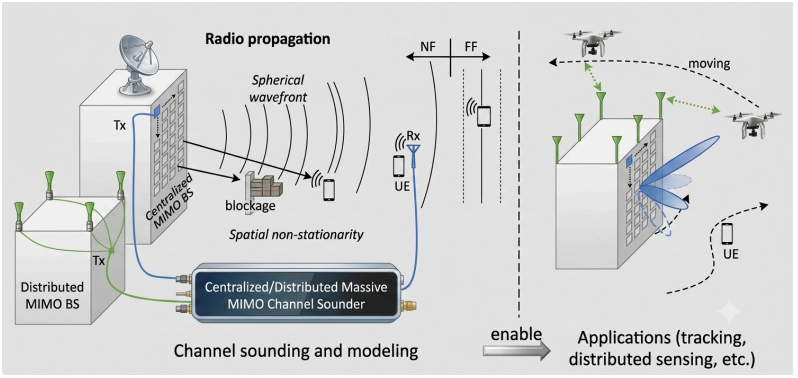
Call-for-Paper

Special Section on Advanced Channel Sounding, Modeling, and Model-Enabled ISAC Applications for Centralized and Distributed Massive MIMO Systems

Submission deadline: January 31, 2027

Aims & Scope: The evolution of multi-antenna technology is driving wireless systems beyond conventional far-field (FF) MIMO toward ultra-massive, centralized MIMO and distributed MIMO architectures. These systems offer significant benefits in spectral efficiency, coverage, reliability, and spatial resolution, while enabling emerging capabilities such as near-field (NF) localization and tracking, distributed sensing, and integrated sensing and communication (ISAC). Channel sounding and modeling constitute a fundamental prerequisite for the realization of such systems, providing the basis for system design, deployment, optimization, and realistic performance evaluation. However, the transitions from FF to NF propagation and from centralized to distributed antenna deployments introduces new propagation characteristics, including spherical wavefront propagation, spatial non-stationarity, distributed scattering. These challenges call for advanced channel sounding methodologies, propagation measurements, physically grounded channel modeling frameworks, and enhanced application investigation.



This Special Section aims to provide advanced topics on channel sounding, propagation characterization, channel modeling, and model-enabled applications for centralized and distributed massive MIMO systems, fostering the development of new methodologies, technologies, and practical deployment strategies for future wireless networks. By bridging propagation measurements, antenna array systems, channel modeling, and emerging applications such as sensing, localization, and ISAC, this Special Section seeks to promote impactful contributions to both the scientific community and real-world implementation.

Potential topics Potential topics include but are not limited to the following:

- Advanced channel sounder architectures for centralized and distributed massive MIMO systems
- Advanced channel sounders and measurement methodologies for centralized and distributed massive MIMO systems
- Measurement-based propagation characterization, including NF propagation, spatial non-stationarity, and distributed scattering
- Advanced channel modeling for centralized and distributed massive MIMO systems, related to scenarios including NF, non-stationary, distributed MIMO, etc.
- Measurement-based channel model validation and channel emulation
- Channel characterization and modeling across emerging frequency bands, including Sub-6 GHz, U6G, FR3, mmWave, sub-THz, and THz
- Large-scale multi-antenna measurement campaigns and propagation studies in representative 6G scenarios

Keywords: Centralized and distributed MIMO; Channel Sounding and Modeling; Near-Field Propagation; ISAC

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The review process of each Special Section paper starts upon submission and accepted papers immediately appear on IEEE Xplore®, forming an expanding collection of reference material on emerging topics in Antennas and Propagation.

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