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Fifth Workshop on Industrial Private Beyond-5G Wireless Networks

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The fifth generation (5G) and beyond-5G of radio technology delivers multi-Gbps peak data rates, ultra-reliable low latency, and massive connectivity. Thus, it provides many new applications and opens a wide variety of business opportunities. Beyond-5G has the potential to shape the industrial world through the automation of everything. However, public beyond-5G networks, which are owned and operated by mobile network operators, have drawbacks. On their pursuit of revenue, mobile network operators may deploy networks only in densely populated areas with vast number of subscribers. This may result in limited public network coverage, particularly in some enterprise and remote areas, far away from business hubs. Public network coverage may also often be insufficient within some industrial buildings and factories, with harsh radio frequency operating conditions. Therefore, industrial private networks have emerged and are attracting a significant interest to address the above-mentioned defects. This workshop aims to bring researchers for technical discussion on fundamental and practically relevant questions to many emerging challenges in industrial private wireless networks.

Topics of interest includes, but not limited to:

- New private networking architectures, including OpenRAN and MLO for next generation WiFis
- Quantum computing, networks, and sensing, quantum security for the private networks
- Intelligent network orchestration and AI-based radio resource management (including cooperative edge computing, LLM, MCTS, reinforcement learning, spectrum allocation, and spectrum management)
- Wireless data traffic characterization and forecasting
- Efficient multi-band aggregation, multi-channel operations, multi-node cooperation, distributed MIMO
- Further enhanced URLLC for industrial private networks including indoor URLLC
- Intelligent signal processing for reduced interference and controlling interference for WiFi
- AI-based Spectrum agile and robust hardware
- Integration of time sensitive networking in industrial wireless networks for FA
- Private network planning, optimization, and energy efficiency
- Distributed learning and over-the-air FL, including privacy-preserving learning across multiple private networks, one-sided and two-sided AI
- RF-controlled intelligent reflecting surface for industrial private networks
- Non-terrestrial network connectivity, e.g., satellites and UAVs, in the private networks
- Accurate localization and tracking and its integration with integrated sensing and communications
- Wireless security for low-latency communications and security enhancement in the smart grid

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