Optimization of Modelling & Simulation in Wireless Networks for Interference Management of Dense Networks

Proposal Overview:

Dense wireless environments strain network capacity and quality due to severe co-channel interference. Optimizing modelling and simulation frameworks is essential for evaluating and mitigating these effects. By integrating advanced interference models with multi-objective optimization algorithms, such as genetic algorithms, particle swarm optimization, and reinforcement learning, researchers can fine-tune power control, channel allocation, and beamforming strategies. High-fidelity simulators incorporating stochastic user behavior, spatial traffic distributions, and hardware impairments enable scalable "what-if" analyses, while real-time emulation platforms facilitate validation under realistic dynamics. This Special Issue aims to gather contributions that advance robust modelling and simulation tools to drive effective interference management, enhancing throughput, reliability, and latency in next-generation dense networks.

Potential Topics:

- Metaheuristic Optimization of Power Control Models
- Machine Learning–Augmented Interference Prediction in Large-Scale Simulations
- Cross-Layer Co-Simulation Frameworks for Joint Scheduling and Interference Mitigation
- Stochastic Geometry–Based Models with Optimized Parameter Estimation
- Reinforcement Learning–Driven Beamforming in Ultra-Dense Networks
- Hybrid Analytical–Simulation Approaches for Fast "What-If" Interference Analysis
- Scalable GPU-Accelerated Simulators for Real-Time Interference Optimization
- Multi-Objective Optimization of Spectrum Allocation under Dense Deployment
- Edge-Cloud Co-Simulation Architectures for Distributed Interference Management
- Adaptive Dense Network Topology Modelling with Optimized Node Placement

Important Dates:

- Deadline for Submission: 15 April 2026
- Notification to Authors: 15 May 2026
- Revised Paper Submission: 20 July 2026
- Acceptance Deadline: 15 September 2026

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