QPSO-based Beamforming in Dual RIS-assisted Uplink Anti-jamming Communication System

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Abstract—**Considering a dual reconfigurable intelligent surface (RIS) assisted uplink cellular communication system under a malicious jamming user with known positions, we propose a joint active and passive anti-jamming beamforming scheme to maximize the system signal-to-interference-plus-noise ratio (SINR) and enhance the system achievable rate in this paper. To obtain the optimal solution, the quantum particle swarm optimization (QPSO) algorithm is utilized, which also mitigates the risk of falling into the local optimum and achieves better reliable global optimization. The simulation results illustrate that the proposed beamforming design in the dual RIS-assisted uplink cellular system exhibits superior anti-jamming performance compared with the other typical optimized beamforming schemes.**

Keyword—**anti-jamming, RIS, QPSO, beamforming, SINR**

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