Reliability Optimization Decision of Intelligent Fusion Cooperative Network

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二. 成果简介：

The novel NOMA fusion network with intelligent cooperative transmission using the RIS or user-relay is provided, which aims to adaptively improve the coverage of high-quality service to the far-end edge users with weak channel scenarios. Based on the cooperative NOMA system using RIS as relay, the channel model of multi-hop transmission mechanism from BS to destination is constructed, which can solve the resource allocation.

三. 主要研究内容及创新点：

In order to solve the coverage of edge users while optimizing non-orthogonal resource allocation of intelligent cooperative network (Fig 1). For the uplink cooperative network, an opportunistic NOMA strategy based on amplifying and forwarding user-relay is adopted to analyze its impact on the performance of the cooperative NOMA system in multi-user detection error rate and secure outage probability, aiming to improve the high-quality service coverage for remote edge users in the weak channel scenario (Fig 2). Finally, the reliability decision of RIS cooperative relay combined with NOMA is proposed to improve the design of cooperative NOMA (Fig 3). The results proves that the multi-hop relay mechanism combined with non-orthogonal resource access technology can realize multi-user interference cooperative scheme in Fig 4 and Fig 5.

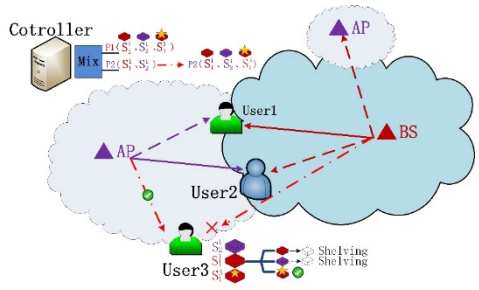


Fig 1. Diagram of Collaborative network

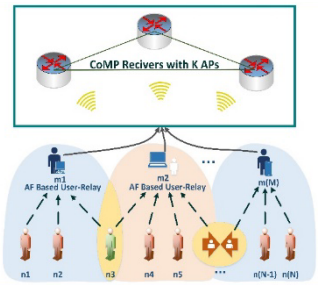


Fig 2. UR-ONOMA network

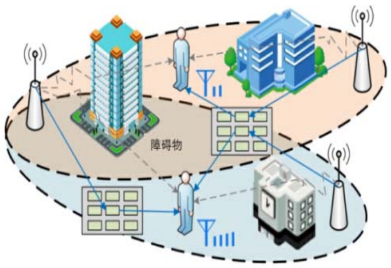


Fig 3. RIS-assisted network

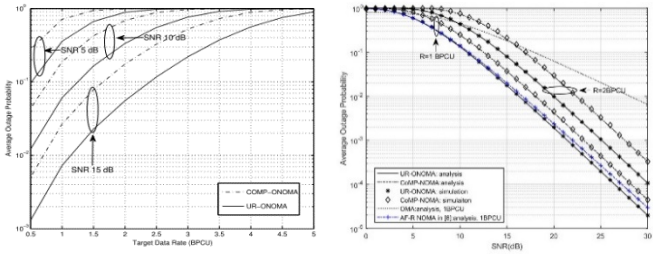


Fig 4. Average outage probability vs. SNR

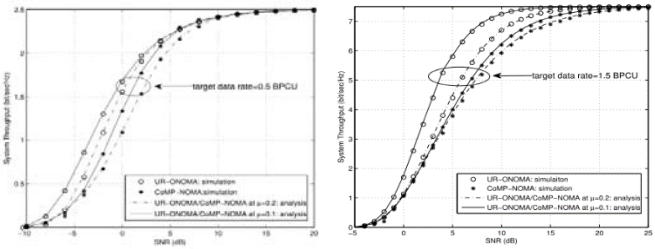


Fig 5. Throughput vs. SNR

四. 主要研究成果及应用情况

[1] Y. Tian, Baiyun Xiao*, et al., “Performance analysis of opportunistic NOMA strategy in uplink coordinated multi-points systems,” Computer Communications, Volume 177, pp207-212, 2021.

[2] Baiyun Xiao, Y. Tian*, et al., “Multi-hop Channel Selection strategy in RIS-assisted system,” submitted to IEEE Internet of journal, 2021.

[3] Yue Tian, Baiyun Xiao, et al., “RIS-Assisted Rate Splitting Resource Allocation in Cloud-Fog Integrated Networks” submitted to IEEE Trans. On Vehicular Technology

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