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Sub-channel shared resource allocation for multi-user distributed MIMO-OFDM systems

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Key words: MIMO-OFDM, Multi-user, Resource allocation, Sub-channel shared, Signal to leakage plus noise ratio (SLNR)

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Motivation

- Well-controlled resource allocation is crucial for promoting the performance of multiple input multiple output orthogonal frequency division multiplexing (MIMO-OFDM) systems

- Recent studies have focused primarily on traditional centralized systems or distributed antenna systems (DAS), and usually assume that one sub-carrier or sub-channel is exclusively occupied by one user, which means they cannot make full use of space division multiple access (SDMA) in MIMO systems well and have a limited capacity performance

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Main idea and method

- To promote system performance, a sub-channel shared resource allocation algorithm for multi-user distributed MIMO-OFDM systems is proposed
- Each sub-channel can be shared by multiple users in the algorithm, which is different from previous algorithms
- The algorithm assumes that each user communicates with only two best ports in the system. On each sub-carrier, it allocates a sub-channel in descending order, which means one sub-channel that can minimize signal to leakage plus noise ratio (SLNR) loss is deleted until the number of remaining sub-channels is equal to that of receiving antennas

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Major results

- Simulations show that compared to other algorithms, our proposed algorithm has better capacity performance and enables the system to provide service to more users under the same capacity constraints

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