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User Weighted Probability Algorithm for Heterogeneous C-RAN Interference Mitigation

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Deployment of low power base-stations (referred to as HetNet) within cellular systems can improve system capacity, coverage and enhance users experience. However, the inter-tier and intra-tier interference in such systems can significantly impact overall system performance, which make interference and spectral resource management more complex. To build, operate HetNet networks, mobile operators have given significant attention to cloud radio access networks, C-RANs, due to their beneficial features of performance optimization and cost effectiveness. In C- RAN cooperated networks, the macro base-stations can operate cooperatively with small base-stations as advanced wireless access network paradigm, where cloud computing is used to fulfill the centralized large-scale cooperative processing. In this paper, such cooperated HetNet and C-RAN architecture is deployed to achieve effective spectral resources and interference management. The study proposes a user weighted probability-based algorithm, which divide the spectrum into shared and dedicated partitions, given that the amount of each partition is calculated efficiently based on the proposed methodology. The algorithm allocates each BS to the appropriate partition in order to meet certain QoS requirements and optimize overall users throughput in each tier.

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