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DOWNLINK COCHANNEL INTERFERENCE MITIGATION IN WIRELESS CELLULAR NETWORKS

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ABSTRACT

Severe co-channel interference in wireless cellular networks significantly affects users at cell edges. We propose a cost-effective Downlink Co-channel Interference Mitigation (DCIM) scheme to improve network performance. For DCIM, base stations judged as severe interferers transmit randomly and transmission is controlled by wireless channel states to optimize the overall network performance while maintaining proportional fairness amongst users. The DCIM scheme requires low signaling overhead and only minor changes to the existing mobile systems. Simulation results show that the proposed scheme, DCIM, significantly outperforms traditional networks through avoidance of severe co-channel interference as well as exploitation of multiuser diversity through cross-layer design.

KEYWORDS: Co-channel Interference, Fractional Frequency Reuse, Downlink, Automatic Relay Stations