Ph: 9585554590, 9585554599
Email: support@salemsmartreach.com
URL: www.salemsmartreach.com

Coordinated Multipoint Transmission in Dense Cellular Networks with User-Centric Adaptive Clustering

Abstract:

Based on random network (RN) topologies generated from Poison Point Processes (PPP), this paper investigates the performance of macro-diversity coordinated multipoint transmission (MD-CoMP) in dense cellular networks. Firstly, the signal to interference and noise ratio (SINR) outage probability is analyzed for a typical mobile station (MS) and for the global network. Next, a user-centric adaptive clustering method is described, which is designed to maximize each MS's normalized outage capacity (goodput). Simulation are carried out and show that MD-CoMP could significantly improve both the RN and regular hexagonal network (HN) coverage performance by increasing the 10th percentile of SINR by 12dB if each MS uses a CoMP cluster of size four. It is also shown that MD-CoMP is more beneficial for RN, since 78% MSs in RN would choose CoMP to optimize their normalized goodput while this number is 58% in HN. Moreover, 58% MSs in RN have their normalized goodput doubled compared to that with no-CoMP, while this number is 36% in HN. The impact of predefined clustering schemes is also evaluated, to show the importance of using a fully adaptive clustering to overcome cluster-edge issues, where the MSs' performance is poor due to the limited choices of BSs.