

SOURCE: Institute of Communication Networks and Computer Engineering,
Universita't Stuttgart, Stuttgart, Germany

System Level Evaluation of Dynamic Base Station Clustering for Coordinated Multi-Point in Future Cellular Networks

A promising concept to increase the efficiency of future cellular networks is to allow cooperation between Base Stations (BSs), which is known under the term Coordinated Multi-Point (CoMP). Various techniques to achieve cooperation are known and partly standardized for Long Term Evolution (LTE) networks. In this paper we focus on Joint Transmission (JT) in the Downlink (DL) direction, because this scheme offers the highest increase of the spectral efficiency. In JT the same data is transmitted from multiple BSs so that the signals interfere constructively at the receivers.

A major drawback of CoMP is the increased effort for channel measurement and beamforming or precoding before data transmission. One way to cope with the higher costs of CoMP is to group BSs into CoMP clusters. Cooperation of BSs is then only allowed between BSs belonging to the same cluster. In this paper we propose a new dynamic clustering algorithm, which is then evaluated under a realistic scenario. The scenario includes a traffic model of Web-traffic and changing user locations. The performance of the proposed clustering algorithm is compared with the performance of a traditional operation without any cooperation as well as with two static clustering variants.

Sebastian Scholz
Pfaffenwaldring 47, 70569 Stuttgart
Phone: +49-711-685-67968
Fax: +49-711-685-67983
Email: sebastian.scholz@ikr.uni-stuttgart.de