

# Accepted Manuscript

Short communication

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PII: S1434-8411(16)31252-3  
DOI: <http://dx.doi.org/10.1016/j.aeue.2017.01.007>  
Reference: AEUE 51773

To appear in: *International Journal of Electronics and Communications*

Received Date: 16 November 2016  
Revised Date: 5 January 2017  
Accepted Date: 11 January 2017

Please cite this article as: X. Zeng, M. Sun, X. Jian, D. Du, L. Miao, Optimal Base Stations Planning for Coordinated Multi-Point System, *International Journal of Electronics and Communications* (2017), doi: <http://dx.doi.org/10.1016/j.aeue.2017.01.007>

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## Optimal Base Stations Planning for Coordinated Multi-Point System

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### Abstract

Through decreasing inter-cell interferences, CoMP (Coordinated Multi-Point) can enhance system capacity and spectral efficiency of cell-edge users significantly. BSs (Base stations) are the front-end accesses of CoMP and their planning influences the overall performance of the system directly. Different from the traditional cellular network, the coverage of BSs in CoMP always overlaps with each other to some degree. In order to investigate the BSs planning for CoMP, this paper builds two optimization models to obtain the location and the number of the BSs. A joint optimization algorithm is proposed to solve models, in which the methodologies of mesh adaptive direct search and successive elimination have been used. Numerical results show that the proposed models can effectively reduce the total transmission power and the number of BSs without losing the quality of service for users, which verifies the effectiveness of the proposed algorithms and the inherent advantage of CoMP.

*Key words:* CoMP; BSs planning; overlapping coverage; site selection; number optimization

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### 1. Introduction

OFDM (Orthogonal Frequency Division Multiplexing) can decrease the intra-cell interference effectively, but the inter-cell interferences still exist. Sharing channel

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