



Invited Talk

Resource Allocation in Hybrid Macro/Femto Networks

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Lecturer

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Date: 21 April 2010, Wednesday
Time: 3:00 p.m. – 4:00 pm
Venue: G3, Electrical Engineering Building

Abstract

Femtocell has been considered by the wireless industry as a promising solution not only to improve indoor coverage, but also to unload traffic from overburdened macrocell networks. In hybrid macro/femto networks, macrocells may have to share the same spectrum with femtocells, due to spectrum availability and network infrastructure considerations, in spite of potentially excessive interference caused by densely deployed femtocells. In this talk, we look into a decentralized resource allocation scheme for the orthogonal frequency division multiple access (OFDMA) downlink of a shared-spectrum macro/femto network, where each femtocell randomly selects a subset of available OFDMA resources for transmission, in order to achieve decentralized inter-cell interference avoidance. The performance of the decentralized resource allocation scheme is evaluated through simulations based on per-cell or network-wide performance metrics. Simulation results provide insights on how the resource allocation in a shared-spectrum hybrid macro/femto network should take into account the spatial density of femtocells and indoor/outdoor radio propagation channel conditions.

Biography

Dr. Xiaoli Chu is a Lecturer with the Department of Electronic Engineering at King's College London. She received the BEng degree with first class honours in Electronic and Information Engineering from Xi'an Jiao Tong University, China, in July 2001, and the PhD degree in Electrical and Electronic Engineering from the Hong Kong University of Science and Technology, Hong Kong, in August 2005. From September 2005 to December 2006, she was a Postdoctoral Research Associate with the Department of Electronic Engineering at King's College London, working on the EPSRC project for measurement and modelling of the spatial-temporal ultra-wideband (UWB) radio channel. Dr. Chu has been working on the design and analysis of multi-user UWB communications systems under realistic channel conditions. Her current research extends to advanced technologies for link performance improvement and capacity enhancement, such as cooperative communications, adaptive radio resource management, and multidimensional diversity schemes. In June 2008, she was granted the UK EPSRC Cooperative Awards in Science and Engineering for New Academics to investigate cooperation and adaptation techniques for efficient use of the increasingly precious radio spectrum and network resources. In December 2009, she was awarded the UK EPSRC First Grant "OFDMA Downlink Resource Allocation in User-Deployed Femtocells". Dr. Chu is an Editorial Board Member of the International Journal of UWB Communications and Systems. She is currently Chair of the Graduates of the Last Decade (GOLD) Affinity Group and Secretary of the Computer Chapter within the IEEE United Kingdom and Republic of Ireland (UKRI) Section.