



THE CHINESE UNIVERSITY OF HONG KONG
Department of Information Engineering

Seminar

Wireless Relay Networks for Green Environment

by

Professor Zbigniew Dziong
École de technologie supérieure
University of Quebec
Montreal, Canada

Date : 22 Feb., 2010 (Tue.)
Time : 10:00a.m. - 11:30a.m.
Venue : Room 833, Ho Sin Hang Engineering Building
The Chinese University of Hong Kong

Abstract

Wireless relay networks have been considered for 3GPP LTE and WiMax (IEEE 802.16j) technologies. The focus has been mainly for cost-effective throughput enhancement and coverage extension. In the first part of this presentation we address the issue from a different perspective. Namely, we consider how the wireless relay network can lead to greener environment. Two possible directions are described. The first is based on green energy sources that can be used to power the relay stations (solar, wind). The second applies spatial diversity in order to reduce the energy consumption (per bit). Here diversity is achieved by using several relays in parallel to transfer the information.

In the second part of the presentation we show some initial model formulation and numerical results that will be used as a benchmark for spatial diversity models. In this case, the focus is on optimal location of relay stations without using spatial diversity. In this approach mobiles are optimally associated with relay stations and base stations such that the sum-rate of the network is maximized. Then the cost and energy effectiveness of replacing base stations with relay stations is verified by keeping the same capacity as with the base station only architecture.

Biography

Zbigniew Dziong received his M.Sc. and Ph.D. degrees from the Warsaw University of Technology, Poland, both in Electrical Engineering where he also worked as an Assistant Professor. From 1987 to 1997 he was with INRS-Telecommunications, Montreal, Canada, as a Professor. From 1997 to 2003 he worked for Performance Analysis Department at Bell Labs, Lucent Technologies, Holmdel, New Jersey, USA. Since 2003 he is with École de technologie supérieure (University of Quebec), Montreal, Canada, where he teaches on both undergraduate and graduate level as a Full Professor.

Zbigniew Dziong is an internationally recognized expert in the domain of performance, control, protocol, architecture and resource management for data, wireless and optical networks. He participated in research projects realized for many leading companies including Bell Labs, Nortel, Ericsson, and France Telecom. His research achievements are documented in over 100 scientific publications and 15 patents and patent applications. He won the prestigious STENTOR Research Award (1993, Canada) for collaborative research in the domain of resource management for broadband networks. His monograph "ATM Network Resource Management" (McGraw Hill, 1997) has been used in several universities for graduate courses. Currently he is engaged in several research projects supported by industry and government agencies.

**** ALL ARE WELCOME ****

Host: Professor Wing C. Lau (Tel: 2609-8356, Email: wclau@ie.cuhk.edu.hk)
Enquiries: Information Engineering Dept., CUHK (Tel.: 2609-8385)