



THE CHINESE UNIVERSITY OF HONG KONG
Institute of Network Coding
and
Department of Information Engineering
Seminar



Wireless MIMO Switching

by

Dr. Fanggang Wang (王方剛博士)
Postdoctoral Fellow, Institute of Network Coding
The Chinese University of Hong Kong

Date : 26 January 2011 (Wednesday)
Time : 11:30 am - 12:30 pm
Venue : Room 833, Ho Sin Hang Engineering Building
The Chinese University of Hong Kong

Abstract

In this talk we will consider a network with a multi-antenna relay operating as a switch, to switch data among multiple end stations. In a generic switching problem, a switching pattern consists of a one-to-one mapping from a set of inputs to a set of outputs (i.e., a permutation). We introduce a framework of wireless switching among the end stations with the use of a multi-antenna relay. We refer to such a relay as a MIMO switch. With beamforming and linear detection, the MIMO switch controls which end stations are connected to which other end stations. Each beamforming matrix, referred to as a “switching matrix”, corresponds to a permutation pattern among the end stations. With a set of different switching matrices, each end station is able to send an equal amount of independent data to every other end station. We will introduce how to choose such a set. Finally, a MIMO switching scheme with network coding is proposed to improve system throughput of the scheme with permutation transmission pattern.

Biography

Fanggang Wang is a postdoctoral fellow with the Institute of Network Coding at CUHK. He received the B.S. degree in Communication Engineering and Ph.D. degree in Signal and Information Processing in 2005 and 2010 from Beijing University of Posts and Telecommunications (BUPT) respectively. From Sept. 2008 to Apr. 2010 he worked as a visiting Ph.D. student in the Electrical Engineering Dept., Columbia University. His research interests include network coding, relay networks, statistical signal processing.

****ALL ARE WELCOME ****