

# Professor Moonseo Park

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## Network Coding Techniques for Two-Way Relay Channels

### Professor Moonseo Park



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### Short Bio

Moonseo Park, Ph.D. received his Ph.D. degree in electrical engineering from The Pennsylvania State University in University Park, Pennsylvania in 1999 with focus on joint source-channel decoding. After the graduation, he had developed physical layer systems of ADSL modems in industries in USA including GlobeSpan, Inc. He is currently a Research Professor of Korea University in Seoul, Korea. His interest is in the area of the signal processing for network coding for two-way relay channels.

### Location & Time

Monday 23 May 2011 14:00-15:00, room T2:C3-434  
The lecture is open for all academics and students.

### Lecture abstract

Recently, network coding for two-way relay channels (TWRCs) is obtaining much attention. By applying the network coding at the relay, we can improve the throughput of the TWRC. However, when there is a detection error at the relay due to a channel noise, there will be an error propagation. This talk considers the effect of the channel noise in the TWRC employing the network coding. First, several relay resign techniques for the TWRC to overcome the effect of the noisy channels are introduced. It is shown that the use of a network code other than exclusive OR (XOR) function at the relay improves the performance of the system when the TWRC is used in source coding/decoding scenario. Second, a physical layer network coding for the TWRC is considered. The exact bit error rate of the physical layer network coding for the TWRC for binary phase shift keying (BPSK) modulation is analyzed.

### About DiRaC (Digital Radio Communications) group

DiRaC group is the research group at the department of Radio Engineering K13137 at FEE/CTU. The group is headed by prof. Jan Sykora. General areas of activity are: Digital communication theory - modulation, coding, physical layer signal processing algorithms, Information theory, Parameter estimation and detection theory, Stochastic signal processing. In our current effort, we concentrate on: Mobile radio communication systems with distributed, cooperative and MIMO coding and processing, Network coded modulation in Multi-node and Multi-source systems, Spatial diversity technique, particularly MIMO systems, Nonlinear Space-time modulation and coding, Iterative Factor Graph based technique in detection, channel state estimation and equalization, Adaptive modulation under specific constraints.

### More information at . . .

- prof. Jan Sykora  
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