



IEEE Presents:

**Group-wise Generalized Selection Diversity Combining and its
Applications in Wireless Communications
Dr. Ning Kong**

Tuesday, 28 July 2009
11:30 a.m. – 11:45 a.m. Pizza & Networking
11:45 a.m. – 1:00 p.m. Lecture

No charge, non-members welcome

The Aerospace Corporation, Building: D8, Room: 1010
200 N. Aviation Ave, El Segundo, CA 90245
Chairs: Ron Smith, Northrop Grumman and Charles Wang, The Aerospace Corporation

**RSVP by 21 July to Ms. Janice Penland, via email Janice.D.Penland@aero.org
Please identify your citizenship, IEEE membership (non-members welcome), and affiliation when you RSVP**

Abstract

Diversity is the most effective way to combat multipath fading in wireless communications. It reduces the slope (on a log scale) of symbol error rate, which results in a much greater SNR gain over the gain through coding, without loss of BW efficiency and increase of the Tx power. Generalized selection diversity combining (GSC) where m best (e.g., in SNR) diversity branches are selected and combined from L ($L = m$) available diversity branches is well known. Its special cases are maximal ratio combining (MRC) where all L branches are selected and selection combining (SC) where the largest (in signal power) is selected.

However, in reality GSC is not general enough to cover all diversity selection cases, some of which are of great practical interest in terms of lower cost. The talk introduces a new concept of groupwise generalized selection combining (GGSC), in which there are in groups of GSC (each group has L diversity branches) where the m largest (in SNR) elements are selected from L independent branches. The talk gives applications of GGSC in MIMO, CDMA and etc. It also presents the average combined SNR and symbol error probability (SEP) for GGSC and compare them with those of MRC and GSC which select the same number of diversity branches (nm) globally from a total of same available branches (nL) as GGSC in a Rayleigh fading channel.

Biography

Dr. Ning Kong has been a wireless communication system engineer for over 10 years. She recently designed XPIC (cross polarization interference canceller) and indoor repeater echo canceller for two companies in San Diego. She has a Ph.D in EE and now holds a temporal post doctor position in ECE, UCSD.



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Directions

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(Just past the I-105 interchange).
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