BCWS Seminar Series

LINEAR PRECODING OF OFDMA SIGNALS TO MINIMIZE THEIR INSTANTANEOUS POWER VARIANCE

by
Professor David Falconer
Carleton University

Time: Wednesday, January 20, 1:30 - 2:30 pm
Place: Room 4356, Mackenzie Building, Carleton University

Abstract: Large instantaneous power variability of orthogonal frequency division multiple access (OFDMA) signals necessitates significant power amplifier backoff to minimize nonlinear distortion. Is there an optimum linear block precoding that significantly reduces the instantaneous power variance of OFDMA signals? We explore this question for linear block-precoded OFDMA signals with contiguous and non-contiguous frequency mappings. We find that there is an optimum linear block precoding which yields a moderate reduction in required power backoff relative to that for DFT precoding (that is used for the uplink signaling in the 3GPP-LTE standard). It is easily applied, by simple frequency domain filtering.

Biography: Prof. David Falconer has been with Carleton University since 1980. He is now Professor Emeritus and Distinguished Research Professor in the Department of Systems and Computer Engineering. His research interests center around beyond-third-generation broadband wireless communications systems. He was Director of Carleton's Broadband Communications and Wireless Systems (BCWS) Centre from 2000 to 2004. He was the Chair of Working Group 4 (New Radio Interfaces, Relay-Based Systems and Smart Antennas) of the Wireless World Research Forum (WWRF) in 2004 and 2005. He participted in the EU WINNER Project on next-generation wireless interfaces from 2004 to 2007. He has received several IEEE and other technical awards. He is an IEEE Life Fellow.