



THE CHINESE UNIVERSITY OF HONG KONG

Seminar

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Department of Information Engineering, CUHK and
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MIMO Channel for Multimode Fiber: Channel Model and Signal Processing

by

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The Chinese University of Hong Kong

Abstract

The multi-input multi-output (MIMO) channels for mode-division multiplexing (MDM) in multimode fiber have many interesting characteristics, contrasting these with MIMO wireless channels. This seminar review MIMO channel models for multimode fibers, the channel statistics derived from them, and their implications for system performance and complexity.

Strong mode coupling is essential to enable practical MDM system. Strong mode coupling reduces the delay spread due to modal dispersion, minimizing the complexity of digital signal processing for dispersion compensation and signal separations. Strong mode coupling also reduces the variations of mode-dependent gains/losses (MDL) arising from transmission fibers and inline optical amplifiers, maximizing average channel capacity. The combined impact of modal dispersion and MDL provides frequency diversity, reducing the probability of system outage.

Biography

Keang-Po Ho received his B.S. and Ph.D. degree from National Taiwan University and the University of California at Berkeley in 1991 and 1995, respectively, both in electrical engineering.

Keang-Po Ho is with the wireless division of Silicon Image (form by acquiring SiBEAM) since 2006 as Principal Engineer and Senior Manager for the Baseband Algorithm group. As a pioneer in 60-GHz millimeter-wave indoor communication, he is the primary inventor of WirelessHD video area networking, part of the IEEE 802.15.3c personal area network standard. He was the Chief Technology Officer and co-founder of StrataLight Communications (acquired by OpNext by about US\$170M). Other than that, he had been with IBM, Bellcore, the Chinese University of Hong Kong, and National Taiwan University. Over the years, his major fields are high-speed communication systems via optical fiber, copper wire, or radio frequency. He has published over 200 technical articles, and authored the book *Phase-Modulated Optical Communication Systems* (Springer, 2005).

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