Cullimore Lecture Series

Spatial Sampling Theorems and Applications to Gigabit Wireless Networks

By Joseph Y. Hui

Date: October 13, 2000 (Friday).
Time: 11:30am (refreshment starts at 11:15am).
Place: 202 ECEC, NJIT.

About the Speaker

Joseph Hui is ISS Chair Professor of Electrical Engineering and Interim Director of the Telecommunication Research Center at Arizona State University. Prior to joining ASU in 1999, he held appointments as Professor in the Chinese University of Hong Kong (95-99) and Rutgers University (89-99), as well as a Member of Technical Staff at Bellcore (83-89). He obtained his BS and MS (81) and Ph.D. (83) from MIT. His research interests include information theory, coding theory, broadband switching, teletraffic theory, wireless communications, and network economics. He has published widely in the field, including the first book on Broadband Switching and Traffic Theory for Broadband Networks. He is a Fellow of IEEE (96), an NSF Presidential Young Investigator (90), and the recipient of the IEEE William Bennett Prize Paper Award.

About the Talk

Recently, there has been intensive interest in using the spatial dimension to increase the capacity of wireless communications. Two spatial techniques have emerged: smart directional antennas and omnidirectional space time coding, both using multiple antenna array. In this talk, we take a fundamental look at the Helmholtz equation of EM waves, as well as applying techniques of Fourier Optics to devise a spatial capacity of the wireless channel. We then compare the two spatial techniques under various assumptions of propagation geometry. We then look at a new paradigm of Gigabit Wireless Networks using these spatial techniques, and the type of protocol these networks may employ.

Sponsors: **NJIT Newark College of Engineering**
Department of Electrical and Computer Engineering
IEEE Communications Society North Jersey Section)

For more information contact Nirwan Ansari (973) 596-3670, or check http://www-ec.njit.edu/~ieeenj for latest update