



Illinois Center for Wireless Systems

Joint iCIMS and ICWS Seminar



Ultrahigh Bandwidth Analog-to-Digital Conversion Via Time Dilation

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Abstract: Ultra wideband analog-to-digital conversion (ADC) is one of the most critical problems faced in communication, instrumentation, and radar systems. Time stretched ADC is a relatively new technique that uses optical time-wavelength transformations to reduce the signal bandwidth prior to digitization. By doing so, it offers revolutionary enhancements in the bandwidth of electronic converters. This talk will start with the fundamental physics of the time-wavelength transformations and the implication of time-dilation on signal-to-noise ratio. It describes various optical impairments and means to overcome them. Recent demonstration of a record 1 TSample/s real-time transient digitizer will be described along with a current DARPA project aimed at achieving continuous-time operation.

Biography: Bahram Jalali is a Professor of Electrical Engineering at UCLA, a Fellow of IEEE and the Optical Society of America (OSA), and a Trustee of California Science Center. He was elected into the Scientific American Top 50 in 2005 and won the 2007 R.W. Wood Prize from the Optical Society of America for “Invention and Demonstration of Raman Lasing in Silicon”. In 1999 he founded Cognet Microsystems and served as the company’s CEO from its inception through acquisition in 2001 by Intel Corporation, where he was a consultant until 2004. He received the BrideGate 20 Award for his contribution to Southern California economy.

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