



**CSULB Systems Council Chapter presents**

**IEEE Distinguished Lecture Series on**

# **Multi-user MIMO via Active Scattering Platforms**

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**Dr. Donald Chang**

**Date: Friday, October 24, 2014**

**Time: 1:00 p.m. to 2:00 p.m.**

**Location: VEC 325**

**Summary:**

Aircrafts flying near Earth or naval vessels are used as active scattering platforms in a multipath communications channel in MIMO communications systems. These man-made platforms in a communications channel, with techniques of beam forming and wavefront multiplexing in both transmitters at source and receivers at destinations enhance the ability to coherently combine the power of the communication signals, and improve the signal-to-noise ratio in addition to the MIMO advantage of multiple times of channel capacity over a finite bandwidth via frequency reuse. These platforms may be stationary, mobile ground based, or ocean surface based. They may also be airborne, or space borne. A swarm of 10's micro-UAV based mini-transponders is an example through active scattering of these micro-UAVs to generate 10x more available bandwidth between a base station and ground mobile users over the same bandwidth.

**About the Speaker:**

Dr. Donald Chang is the CEO and the President of Spatial Digital Systems (SDS), formed in 2002 to develop smart antenna technologies for wireless communications. He retired from Hughes in 2002 as a Chief Technologist after more than twenty years of service. He is an expert on communications satellites, advanced satellite antennas, space based microwave remote sensing instruments, especially in passive synthetic aperture radiometry. He authors > 40 technical papers, holds > 100 U.S. patents, and has > 50 US patents pending on smart antennas, low cost spacecraft design, synthesized aperture for microwave radiometry, stratospheric platform based data communications, space-based positioning and air traffic management, satellite constellation for multimedia applications. Among the many awards honored from Hughes, the most impressive is the Hyland Award awarded in 2000 for his key contributions in digital beam-forming technology since early 1980s. He is a key contributor in all SDS intellectual property (IP) with portfolios covering various categories of smart antennas; 18 US and 3 international awarded patents and >35 pending. Dr. Chang earned his Ph.D. & MSEE from Stanford University, and completed his MSEE & BSEE at National Cheng-Kung University, Tainan, Taiwan. He also graduated from Strategic Leadership Institution, Anderson School, UCLA.

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For more information, please contact IEEE chapter's secretary, Dr. Shadnaz Asgari at [Shadnaz.Asgari@csulb.edu](mailto:Shadnaz.Asgari@csulb.edu).