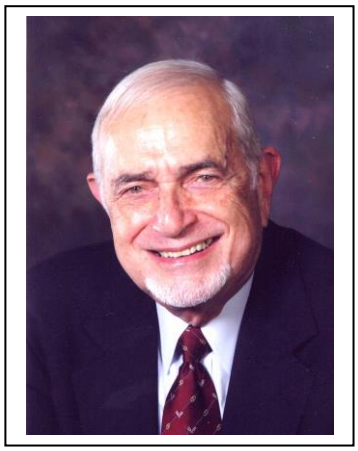
IEEE Coastal Los Angeles Systems Council Chapter, Distinguished Lecture Series

MIMO: The Future of Wireless

by Dr. Bernard Sklar



California State University, Long Beach
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Room: VEC 325

Abstract: MIMO has been called "The future of wireless." It is a key technology used in 4G systems, and is the basis for improved performance being planned in 5G. Rather than fighting multipath, it puts it to work by sending and receiving more than one data signal in the same radio channel at the same time. Multi-dimensional waveforms are used to improve range, speed, and reliability. MIMO has opened the door for a unique type of error correction-coding, called space-time codes. They complement the parameter "time" with "space" (antennas) to provide the coding redundancy. Currently, the plans for 5G are to use an enhanced version of conventional MIMO, called Massive MIMO, which employs hundreds of antennas. Also, for 5G, the radio access schemes being considered employ mm-wave technology, which entails novel advantages as well as challenges.

About Speaker: Dr. Bernard Sklar has over 50 years of technical experience at the following companies: Republic Aviation, Hughes Aircraft, Litton Industries, and The Aerospace Corporation. At Aerospace, he helped develop the MILSTAR satellite system, and was the principal architect for EHF Satellite Data Link Standards. Currently, he is the Director of Advanced Systems at Communications Engineering Services, a consulting company he founded in 1984. He has taught engineering courses at several universities, including the University of California, Los Angeles and the University of Southern California. He is an External Examiner of Digital Communication Engineering at the University of Cape Town, South Africa, and has presented numerous training programs throughout the world. Dr. Sklar has published and presented over 90 technical papers. He received the 1984 Prize Paper Award from the IEEE Communications Society for his series on digital communications, and he is the author of the book, *Digital Communications: Fundamentals and Applications*, 2nd Edition, Prentice-Hall, 2001. His academic credentials include a B.S. degree in Math and Science from the University of Michigan, an M.S. degree in Electrical Engineering from the Polytechnic Institute of Brooklyn, New York, and a Ph.D. degree in engineering from the University of California, Los Angeles.

- **For more information, please contact IEEE chapter's secretary, Dr. Shadnaz Asgari at Shadnaz.Asgari@csulb.edu**.