



HAWAII CENTER FOR ADVANCED  
COMMUNICATIONS  
University of Hawai'i • College of Engineering

*The College of Engineering is pleased to sponsor  
a Distinguished Lecturer Seminar*

**Smart Antennas for Future  
Reconfigurable Wireless Communication  
Networks**

*Presented by:*

Professor Constantine Balanis  
Regents' Professor  
Arizona State University

Friday, December 1, 2006  
2:00 to 3:00 p.m.  
POST Building, Room 127  
1680 East West Road

# Smart Antennas for Future Reconfigurable Wireless Communication Networks

Presented by:  
Professor Constantine Balanis  
Regents' Professor  
Arizona State University

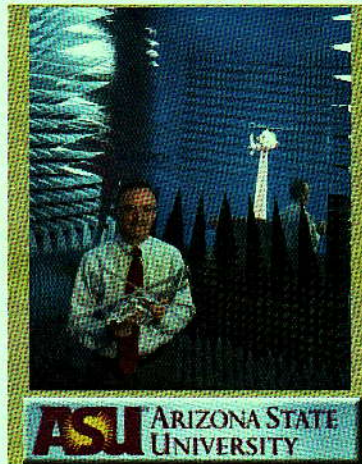
Friday, December 1, 2006  
2:00 to 3:00 p.m.  
POST Building, Room 127  
1680 East West Road

## **Abstract**

The antenna is one of the fundamental distinctions between a wired and a wireless system. The design of the antenna impacts the development of each component—from the circuit design to the receiver structure and coding technique, as well as the channel access protocol - employed in future wireless communication networks. The most challenging environment for the design of each component is where the communication devices are extremely small, low power computing and consuming mobile terminals. Furthermore, these terminals may be able to move randomly and organize themselves in an ad hoc communication structure. Such a network of communication terminals is referred to as a Mobile Ad Hoc Network (MANET). In this project, it is proposed to investigate the use of smart (adaptive) antennas to improve channel quality in a MANET. The design of a smart antenna for a MANET will pose many challenges in antenna, feed network, signal processing, communication and protocol designs.



# Biography



Constantine A. Balanis received the BSEE degree from Virginia Tech in 1964, the MEE degree from the University of Virginia in 1966, the Ph.D. degree from Ohio State University in 1969, and an Honorary Doctorate from the Aristotle University of Thessaloniki (AUTH) in 2004. From 1964-1970 he was with NASA Langley Research Center, and from 1970-1983 he was with the Department of Electrical Engineering, West Virginia University. Since 1983 he has been with the Department of Electrical Engineering, Arizona State University (ASU), Tempe, AZ, where he is now Regents' Professor. His research interests are in low- and high-frequency methods for antennas, propagation, and scattering; smart antennas for wireless communication; penetration and scattering of High Intensity Radiated Fields (HIRF); and multipath propagation. He received the 2000 IEEE Third Millennium Medal, the 1997 Outstanding Graduate Mentor Award of ASU, the 1992 Special Professionalism Award from the IEEE Phoenix Section, the 1989 IEEE Region 6 Individual Achievement Award, and the 1987-1988 Graduate Teaching Excellence Award, School of Engineering, ASU.

Dr. Balanis is a Life Fellow of the IEEE, and a member Sigma Xi, Electromagnetics Academy, Tau Beta Pi, Eta Kappa Nu, and Phi Kappa Phi. He has served as Associate Editor of the IEEE Transactions on Antennas and Propagation (1974-1977) and the IEEE Transactions on Geoscience and Remote Sensing (1981- 1984), as Editor of the Newsletter for the IEEE Geoscience and Remote Sensing Society (1982-1983), as Second Vice-President (1984) and member of the Administrative Committee (1984-85) of the IEEE Geoscience and Remote Sensing Society, and as Chairman of the Distinguished Lecturer Program of the IEEE Antennas and Propagation Society (1988-1991), Distinguished Lecturer of IEEE Antennas and Propagation Society (2003-), and member of the AdCom (1992-95, 1996-1999) of the IEEE Antennas and Propagation Society. He is the author of *Antenna Theory: Analysis and Design* (Wiley; 1982, 1997, 2005) and *Advanced Engineering Electromagnetics* (Wiley; 1989).