

Date: November 6, 2009
Speaker: Dr. Athina Petropulu
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Topic: Cooperative Approaches for Improving
Performance in Wireless Communication Networks



Abstract

Node cooperation in wireless communication networks can overcome several of the limitations introduced by the wireless channel, such as fading, attenuation, susceptibility to eavesdropping and collisions. This talk presents research results in the area cooperative communications. First, the talk explores cooperative beamforming for reliable transmission of information over long distances in an energy and cost efficient fashion. Second, it explores the role of cooperative transmissions in guaranteeing secure communications without use of cryptography. In particular, it presents an information theoretic framework for optimizing secrecy rate in the presence of one or multiple eavesdroppers.

Biography

Athina P. Petropulu is a Professor at the Department of Electrical and Computer Engineering at Drexel University. She has held visiting appointments at SUPELEC in France and at Princeton University. Dr. Petropulu's research interests span the area of statistical signal processing, wireless communications, signal processing in networking and biomedical signal processing. She is the co-author (with C.L. Nikias) of the textbook entitled, "Higher-Order Spectra Analysis: A Nonlinear Signal Processing Framework," (Englewood Cliffs, NJ: Prentice-Hall, Inc., 1993).

She is the recipient of the 1995 Presidential Faculty Fellow Award in Electrical Engineering given by NSF and the White House. Dr. Petropulu is Fellow of IEEE. She is currently serving as Editor-in-Chief of the IEEE Transactions on Signal Processing (2009-2011). She was IEEE Signal Processing Society Vice President-Conferences (2006-2008), and member-at-large of the IEEE Signal Processing Board of Governors. She has served as an Associate Editor for the IEEE Transactions on Signal Processing the IEEE Signal Processing Letters, was member of the editorial board of the IEEE Signal Processing Magazine and the EURASIP Journal on Wireless Communications and Networking. She was the General Chair of the 2005 International Conference on Acoustics Speech and Signal Processing (ICASSP-05), Philadelphia PA.

She is co-recipient of the 2005 IEEE Signal Processing Magazine Best Paper Award.

More info on Dr. Petropulu's research can be found at www.ece.drexel.edu/CSPL