



Radlab Seminar

Tayfun Özdemir
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3:30 PM

1311 EECS



Dr. Tayfun Özdemir is the CTO of Monarch Antenna, Inc., a Delphi spin-off focused on commercializing the Self-Structuring Antenna (SSA) technology for consumer and industrial wireless markets such as laptops, cell-phones, and wireless sensors. Prior to joining Monarch, Dr. Özdemir was the founder and President of Virtual EM Inc., an R&D house focusing on high-performance computing, antenna and microwave circuit prototyping, and RFID hardware and software development. At Virtual EM, he was responsible for technology and business development and was credited with winning competitive R&D contracts worth \$1.4M. Dr. Özdemir holds a patent on a planar integrated antenna, and has over 20 years of experience in his field of expertise. Dr. Ozdemir is a graduate of Radiation Laboratory, has published 6 journal papers, made over 35 conference presentations, and serves as the Chair of the AP/MTT/ED Chapter of the Southeast Michigan Section of IEEE

A Cognitive Antenna for Handsets

Self-Structuring Antenna (SSA) is a *cognitive* antenna, which dynamically alters its aperture to maximize Signal-to-Noise-Ratio (SNR) in varying RF environments. SSA is a patented technology and is the product of a decade of collaborative R&D effort between Delphi Corporation and Michigan State University. Aperture is made up of *sub-resonant* antenna elements connected via RF relays, which are turned on or off to form and maintain the optimum aperture for the perceived RF environment. A feedback from the device provides a measure of signal quality for the optimizing algorithm, which in turn decides on the switch states. Genetic Algorithm (GA) has been adopted for its effectiveness in binary optimization problems. The talk will highlight three prototypes (HDTV, Automobile FM Radio and Laptop Wi-Fi) and will outline how this technology could provide relief in meeting high data rate and MIMO requirements in today's handset designs.