

Broadband Wireless Low-Power Transmission

Joseph A. Hagerty, Zoya Popovic

Department of Electrical and Computer Engineering
University of Colorado at Boulder, Boulder, CO 80309-0425

Phone: (303) 492-0374,
zoya@colorado.edu

This talk addresses wireless transmission of power for low-power battery-less sensor networks and for rf energy recycling. Experimental and theoretical results on 2-18GHz broadband rectenna (rectifier/antenna) arrays will be presented. These arrays receive incident broadband (or multiband) microwave radiation and convert it to DC power. The rectennas are designed for optimal operation in a multipath environment, taking into account the statistical variation in polarization and power. A new design methodology that combines nonlinear harmonic-balance circuit simulation and full-wave electromagnetic simulation is applied and validated experimentally. Important issues related to efficiency and management of the low-level rectified power will be discussed.