

Graduate Seminar



High-Performance Radi-Frequency Circuits and Applications

Zoya Popovic

**Distinguished Professor and
Lockheed Martin Endowed Chair
Electrical Engineering
University of Colorado at Boulder**

Thursday, February 9th 4:30 pm Scaife Hall 125

Abstract:

This talk will present a brief overview of the activities in the microwave group at the University of Colorado, Boulder, in areas including broadband microwave and millimeter-wave micro-coaxial circuits, antenna arrays, wireless powering for batteryless sensors and medical applications of microwaves such as microwave core-body thermometry and travelling-wave MRI. A few specific projects related to high-efficiency RF power amplifiers (PAs) and wireless powering will be presented in more detail. Design and implementation of PAs with efficiencies greater than 65% and power levels from 3kW to 12W at frequencies from 450MHz to 10GHz, respectively, will be overviewed. The amplifiers are components of radar and communication systems for various signal types, from constant envelope narrowband pulsed waveforms for wind profiling UHF radar, to high peak-to-average ratio (PAR) high-bandwidth communication and radar signals in S (~2GHz) and X (~10GHz) bands. Related to wireless powering, the talk will detail design of receivers for far-field powering at very low incident power densities ($<1\text{uW}/\text{cm}^2$), including the rectennas and power management circuits. Additionally, preliminary results in near-field powering at kW levels for vehicles in motion will be introduced.

Bio:

Zoya Popovic is a Distinguished Professor and the Lockheed Martin Endowed Chair of Electrical Engineering at the University of Colorado. She obtained her Dipl.Ing. degree at the University of Belgrade, Serbia, and her Ph.D. at Caltech. In 2001/03 and 2014, she was a Visiting Professor with the Technical University of Munich, Germany and ISAE in Toulouse, France, respectively. She has graduated 56 PhDs and currently advises 17 doctoral students in various areas of microwave engineering. She is a Fellow of the IEEE and the recipient of two IEEE MTT Microwave Prizes for best journal papers, the White House NSF Presidential Faculty Fellow award, the URSI Issac Koga Gold Medal, the ASEE/HP Terman Medal and the German Humboldt Research Award. She was named IEEE MTT Distinguished Educator in 2013 and the University of Colorado Distinguished Research Lecturer in 2015. She has a husband physicist and three daughters who can all solder.

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