

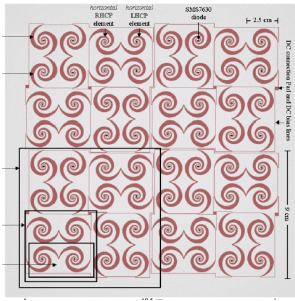
WPT: from $\mu\text{W}/\text{cm}^2$ harvesting to kW capacitive vehicle powering

Zoya Popovic

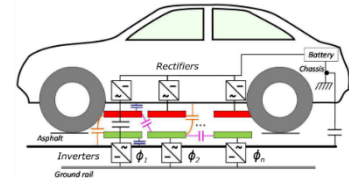
Distinguished Professor and Lockheed Martin Endowed Chair

Electrical, Computer and Energy Engineering

University of Colorado, Boulder



This talk will overview wireless power transfer for power levels from μW to kW. The ultra-low power density application is in far-field harvesting at GHz frequencies for unattended wireless sensors. In this case, efficiency and power management are challenging, as well as miniaturization and energy storage. Several examples will be shown, including harvesting sidelobes from a 4.3GHz altimeter radar antenna on a Boeing 737 aircraft for powering health-monitoring aircraft sensors. At the high power levels, near-field capacitive power transfer is chosen in the 6 MHz range for powering stationary vehicles and vehicles in motion. In this case, over 85% efficiency is achieved for 1kW of capacitive power transfer while meeting safety standards in the vicinity of the vehicle through a near-field phased array approach. Other approaches, such as power beaming and multi-mode shielded wireless powering will also be discussed.



Short 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. She has graduated over 55 PhD students and currently advises 15 graduate students in various areas of high-frequency electronics and 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 a Distinguished Research Lecturer of the University of Colorado in 2016. She has a husband physicist and three daughters who can all solder.

