

Seminar On

IEEE AP-S Young Professional Ambassador Talk Series: RF Power Harvesting for Batteryless Wireless Sensing

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- Date** : 27 September 2024 (Friday)
Time : 10:00 am – 11:00 am (UTC+08:00) Hong Kong
Venue : Online
Registration : <https://events.vtools.ieee.org/event/register/431146>

Abstract

The realization of Internet-of-Things (IoT) relies on a large amount of geographically distributed wireless sensor nodes (WSNs). Traditional power supply cords prevent the large-scale utilization and mobility of the WSNs, while the batteries as substitutes for supply cords are not optimal solutions due to the limited lifetime, high cost, and undesired ecological effects. In this scenario, wireless power harvesting technologies provide a new charging solution to remotely powering WSNs.

This talk will introduce analytical methods for evaluating and designing RF power harvesters. Then efficient rectennas with various characteristics, such as multi-band capability, wide spatial coverage, or wide dynamic power range will be developed and discussed. This talk will also include the rigorous analysis and development of collaborative power harvesters that incorporate multiple sources together, for enhancing the output dc power in ambient power scavenging scenarios. Finally, the applications of the proposed RF power harvesters will be demonstrated in two typical scenarios for batteryless wireless sensing, fully showing their potentials in IoT applications.

Biography



Lei Guo received the B.Eng. degree in communication engineering from the Harbin Institute of Technology, Harbin, China, in 2011, and the Ph.D. degree in electronic engineering from the City University of Hong Kong, Hong Kong, China, in 2016. From 2016 to 2019, she was a postdoctoral research fellow with City University of Hong Kong, China and Poly-Grames Research Center, Polytechnique Montreal, Canada. She is currently an Associate Professor with the School of Information and Communication Engineering, Dalian University of Technology, Dalian, China.

She has authored/ co-authored more than 60 articles, and holds 9 patents including 6 US patents and 4 Chinese patents. She received the Student Best Paper Award in iWEM-2015 and her student won the Third-Place Prize in IEEE MTT-S FLASH Competition. She served as the organizing committee member in multiple international conference, e.g. 2018 IEEE MTT-S WPTC, 2022 ICMMT, 2023 MTT-S IWS, 2024 MTT-S IWS, and etc. She has been involved in organizing Women Special Sessions in the IEEE Open Journal of Antennas and Propagation (IEEE OJAP) for two consecutive years (2022 & 2023). She served as a Guest Editor for a Special Issue in the IEEE OJAP (2021) and for a Special Issue in IEEE MTT (2023). She also takes lead in the launch of a WeChat Channel in China, for the promotion of IEEE Transactions on Antennas and Propagation (IEEE TAP) in China. Dr. Guo is now serving as an Associate Editor for the IEEE TAP and IEEE OJAP. She was selected as AP-S Young Professional Ambassador for 2024. Her current research interests include wireless energy harvesting techniques, dielectric resonator antennas, millimeter-wave antenna arrays, and wireless sensing technologies.

*** ALL ARE WELCOME ***

Enquiries:

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