

SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
COLLEGE OF DESIGN AND ENGINEERING

Website: <https://cde.nus.edu.sg/ece>

Area: Microwave & Radio Frequency

Host: Professor Chen Zhi Ning

**Technical Seminar Jointly Organized by
IEEE Singapore RFID and ECE NUS**

Merlion RFID Forum 2023 Paper Sharing Series

TOPIC	:	Mutual Coupling Suppression between Two Closely Placed Patch Antennas Using Higher Order Modes
SPEAKER	:	Dr. Jianfeng Qian University of Kent, UK
DATE	:	Tuesday, 24 October 2023
TIME	:	3:30PM to 4:30PM
VENUE	:	Block E4, E4-04-05, E-cube 1 College of Design and Engineering, National University of Singapore Alternatively, Join Zoom Meeting https://nus-sg.zoom.us/meeting/register/tZUzd-2oqT4tHtcp2ChTrqfuOTAZVtMG9YyW [Registration is required] Meeting ID: 811 0407 5743 Passcode: 453049

ABSTRACT

This paper presents a novel method for decoupling two patch antennas. Instead of using the TM_{10} mode of a conventional patch, TM_{20} mode is utilized as the operation mode of the antenna. By loading stubs at the radiating edge of the patch, the resonance frequency of the TM_{20} mode is moved down to the same band as the original TM_{10} mode. Then the mutual coupling between two such patch antennas is suppressed simply by physical placement, even when they are placed extremely close to each other. Without using any extra decoupling elements, isolation is improved by up to 20 dB using this method. Furthermore, this method can also be applied to multi-element multi-input-multi-output (MIMO) array and dual-antenna system with different operating bands. The proposed method is verified with three different application scenarios, including a 2-element MIMO array, a 2-antenna system with adjacent operating bands, and a 4-element MIMO array. Reasonable agreements between simulated and measured results can be observed, showing the advantages of simple structure, low cost, high isolation, and good radiation performance.

BIOGRAPHY



Jianfeng Qian received the B.S. degree from the Hefei University of Technology, Hefei, China, in 2016, and the M.E. degree from the South China University of Technology, Guangzhou, China, in 2019. He is currently pursuing the Ph.D. degree with the University of Kent, Canterbury, U.K. His research interests include microwave antennas, filters, filtering antennas and associated RF circuits for microwave and millimeter-wave applications. Mr. Qian was twice awarded the China National Scholarship for Postgraduates in 2017 and 2018. In 2019, he was awarded the Outstanding Graduate Student of Guangdong Province. He was a recipient of the Outstanding Master's Thesis Award from the Chinese Institute of Electronics, in 2019. He was a recipient of the Best Student Paper Award from the 17th International Workshop on Antenna Technology (iWAT 2022), Dublin. E-mail: jq42@kent.ac.uk

CONTACT PERSON

Dr. Xinyi Tang Tang_Xinyi@i2r.a-star.edu.sg

Dr. Peiqin Liu leliup@nus.edu.sg

<https://cde.nus.edu.sg/ece/highlights/events/>