SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
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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	:	**Reactive Impedance Surface-Loaded Wideband Wide-Scanning Phased Array in Triangular Lattice**
SPEAKER	:	**Dr. Binyun Yan** **Nanjing University of Science and Technology, China**
DATE	:	**Monday, 28 August 2023**
TIME	:	**4:00PM to 5:00PM**
VENUE	:	**Block E4, E4-05-39** **College of Design and Engineering, National University of Singapore** **Alternatively,** **Join Zoom Meeting** https://nus-sg.zoom.us/meeting/register/tZ0vfuyorD0tH9UaGhjkWTa_YCY6MoVFGaL_ **[Registration is required]** **Meeting ID: 892 9502 6751** **Passcode: 962084**

ABSTRACT

A phased array loaded with a reactive impedance surface (RIS) is proposed for wideband wide-scanning performance. The mushroom-like RIS structure, etched on the same printed circuit board (PCB) of the antenna, is introduced as a superstrate over the antenna aperture. The reactance of the RIS structure compensates for the scan impedance variation of the antenna during the beam scanning, explained by the equivalent transmission-line model. A superior scanning performance in all azimuth planes is achieved, and the scan blindness in the H-plane is alleviated, especially. The total compact design is capable of operating over a 2.3:1 (6-14 GHz) bandwidth in broadside and over a 1.8:1 bandwidth in ±60° E-plane, ±70° D-plane, and ±65° H-plane scanning. The array is implemented in a triangular lattice, and edge elements in the E-plane are connected to metal walls for edge effect elimination. A 45-element (5 × 9) array prototype is fabricated and measured. Active reflection coefficients are calculated, and scanning patterns are synthesized.

BIOGRAPHY

Binyun Yan has been a Post Doc in Nanjing University of Science and Technology (NJUST, Nanjing, China) since 2022. She received the B.E. and Ph.D degrees in Electrical Engineering from NJUST in 2015 and 2022, respectively. She was a visiting PhD student at National University of Singapore from 2019 to 2021. She was a recipient of the Student Paper Award of 2022 Marina Forum on Metantennas. Her current research interests include phased arrays, reconfigurable antennas, and radar systems.

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