

Seminar On

Reconfigurable Intelligent Surfaces for Wireless Communication and Sensing

Professor Cheng Qiang

Southeast University, China

Date : 7 November 2025 (Friday)

Time : 11:00 am – 12:00 noon

Venue : Room 15-202, 15/F, State Key Laboratory of Terahertz and Millimeter Waves,
Lau Ming Wai Academic Building, City University of Hong Kong

Abstract

Reconfigurable intelligent surfaces (RISs) have emerged as a transformative technology for integrated sensing and communications (ISAC), using digital coding strategy to dynamically manipulate electromagnetic waves. This report highlights their key role in tackling ISAC challenges in complex electromagnetic environments. By combining space and time coding strategies, RISs overcome the static limitations of conventional metasurfaces, enabling flexible wave control across time, space, and frequency. Such multi-dimensional regulation improves communication coverage and spectral efficiency, while also enhancing sensing precision—enabling real-time environmental awareness, high-resolution detection, and interference suppression. Practical hurdles are discussed, including hardware response speed and multi-task optimization complexity. Future directions call for faster reconfigurable components and smarter algorithms to fully realize the potential of RIS in next-generation wireless systems.

Biography



Cheng Qiang is a Professor at the School of Information Science and Engineering, Southeast University, and also holds the position of Deputy Director at the State Key Laboratory of Millimeter Waves. He is a recipient of the National Science Fund for Distinguished Young Scholars. To date, he has published 293 SCI-indexed papers in top-tier journals including Nature Electronics and Nature Communications, with an H-index of 78. His primary research interests focus on reconfigurable metasurfaces and their applications in wireless communication and sensing. He was awarded the Second Prize of the National Natural Science Award in both 2014 and 2018, and the 2024 IEEE Marconi Prize.

*** ALL ARE WELCOME ***

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