THE CHINESE UNIVERSITY OF HONG KONG
Department of Information Engineering
Seminar

Near-Field Communications: What Will Be Different?

By

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Date : **21 November 2023 (Tuesday)**
Time : **2:30pm – 3:30pm**
Venue : **Rm 833, Ho Sin Hang Engineering Building, CUHK**

Abstract
In this talk, the design dilemma of "What will be different between near-field communications (NFC) and far-field communications (FFC)?" is discussed from four perspectives. (1) From the channel modelling perspective, the differences between near-field and far-field channel models are discussed. (2) From the performance analysis perspective, analytical results for characterizing the degrees of freedom and the power scaling laws in the near-field region are provided. (3) From the beamforming perspective, the features of far-field beamsteering and near-field beamfocusing are compared. A couple of new beamforming structures for NFC are also introduced. (4) From the application perspective, several new designs are discussed in the context of promising next-generation technologies in NFC. Finally, research opportunities and problem are discussed.

Biography
Yuanwei Liu is a Senior Lecturer (Associate Professor) with the School of Electronic Engineering and Computer Science, Queen Mary University of London. His research interests include next generation multiple access, integrated sensing and communications reconfigurable intelligent surface, and near-field communications. His research results have been published in prestigious IEEE top journals such as Proceedings of IEEE, IEEE JSAC/TWC/TCOM, which attracts over 20,000 Google Scholar citations. He is listed as one of 35 Innovators Under 35 China in 2022 by MIT Technology Review and a Web of Science Highly Cited Researcher since 2021. He serves as an IEEE Communication Society Distinguished Lecturer, an IEEE Vehicular Technology Society Distinguished Lecturer, the academic Chair for the Next Generation Multiple Access Emerging Technology Initiative, the rapporteur of ETSI Industry Specification Group on Reconfigurable Intelligent Surfaces on work item of "Multi-functional Reconfigurable Intelligent Surfaces (RIS): Modelling, Optimisation, and Operation", and the UK representative for the URSI Commission C on "Radio communication Systems and Signal Processing". He received IEEE ComSoc Outstanding Young Researcher Award for EMEA in 2020. He received the 2020 IEEE Signal Processing and Computing for Communications (SPCC) Technical Committee Early Achievement Award, IEEE Communication Theory Technical Committee (CTTC) 2021 Early Achievement Award. He received IEEE ComSoc Outstanding Nominee for Best Young Professionals Award in 2021. As the PI, he has secured several research grants from EPSRC, Innovate UK, Royal Society, and British Council.

** ALL ARE WELCOME **

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