

Speech title: Channel Estimation and Diversity Reception for RIS-Empowered Broadband Wireless Systems

Abstract: Channel estimation is a challenging problem for reconfigurable intelligent surface (RIS) empowered wireless communications, especially for broadband channels. In this talk, a cyclic-prefixed single-carrier (CPSC) transmission scheme with PSK signaling for this purpose is first introduced. We will see that different cyclically delayed versions of the incident signal can be created by wisely configuring the RIS according to the transmitted PSK symbols. Based on this, a practical and efficient channel estimator can be easily developed and multipath diversity can be harvested. By resorting to the concept of index modulation (IM), this talk will then introduce how to extend CPSC-RIS for improved spectral efficiency. Finally, BER results will be shown to verify the superiority of the presented scheme over the orthogonal frequency division multiplexing (OFDM) solution.

Short Bio:

Miaowen Wen received the Ph.D. degree from Peking University, Beijing, China, in 2014. From 2012 to 2013, he was a Visiting Student Research Collaborator with Princeton University, Princeton, NJ, USA. From 2019 to 2021, he was with the Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, as a Post-Doctoral Research Fellow. He is currently a Professor with South China University of Technology, Guangzhou, China. He has published two Springer books entitled *Index Modulation for 5G Wireless Communications* and *Index Modulation for OFDM Communications Systems*, as well as 250+ research papers, which include 170+ journal papers and 70+ conference papers. His research interests include a variety of topics in the areas of wireless and molecular communications.

Dr. Wen was a recipient of the IEEE Asia-Pacific (AP) Outstanding Young Researcher Award in 2020, and five Best Paper Awards from the IEEE ITST'12, the IEEE ITSC'14, the IEEE ICNC'16, the IEEE ICCT'19, and the EAI QSHINE'22. He was the winner in data bakeoff competition (Molecular MIMO) at IEEE CTW'19, Selfoss, Iceland. He served as a Guest Editor for the IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS and for the IEEE JOURNAL OF SELECTED TOPICS IN SIGNAL PROCESSING. Currently, he is serving on the Editorial Boards of the IEEE TRANSACTIONS ON COMMUNICATIONS, the IEEE TRANSACTIONS ON MOLECULAR, BIOLOGICAL, AND MULTISCALE COMMUNICATIONS, and the IEEE COMMUNICATIONS LETTERS.