



# LSGI & RILS RESEARCH SEMINAR

## UWB Measurement, Transmission, and Sensing Integrated Technology for Multi-UxV Collaboration

 **17 OCT 2024 (THU)**

 **3:30 - 4:30 PM**

 **Z512, POLYU**

 **MANDARIN**

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### ABSTRACT

Multi-Unmanned Vehicle (UxV) collaboration typically requires various fundamental capabilities such as communication, radar, navigation, and vision, etc. Currently, it is facing a series of challenges, including numerous functional components, high system complexity, substantial power consumption, and prohibitive cost. These issues severely impede the research and application of UxV swarms. This presentation, aiming to the development of miniaturized and large-scale UxV swarms, examines the Ultra Wide Band (UWB) technology for near-field, high-performance, and low-cost integrated Measurement, Transmission, and Sensing (MTS) for multi-UxV collaboration. The main content includes: the requirements of MTS capabilities for near-field multi-UxV collaboration; the inspiration from natural swarms to artificial systems; the potential of UWB for integrated MTS; and the preliminary research progress from the author's team.

### BIOGRAPHY

Professor Mingquan Lu is a Professor in the Department of Electronic Engineering at Tsinghua University. He directs the Positioning, Navigation and Timing (PNT) Research Center, which develops GNSS and alternative PNT technologies. His current research focuses on GNSS signal processing, GNSS receiver development and emerging PNT technologies. He authored or co-authored 5 books and book chapters, published over 450 journal and conference papers, and hold nearly 100 patents. He provided numerous services to the GNSS community, including Deputy Secretary General of the Organizing Committee of China Satellite Navigation Conference, Deputy Director of Science and Technology Committee of GNSS and LBS Association of China, associate editor for Satellite Navigation and Journal of Navigation and Positioning, etc. Dr. Lu is a fellow of ION, and a recipient of the ION Thurlow Award.

**Moderator: Prof. George LIU**

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