


Full Name (English):	(中英文) Xu Xiaoli (徐晓莉)	
Affiliated Institution and Title (English):	Assoc. Prof, Southeast University 东南大学信息科学与工程学院, 副教授	
Biography (Please provide in paragraph form within 500 words.) (中英文)		
<p>Dr. Xiaoli Xu received her Bachelor (with first class honor) and PhD from Nanyang Technological University (NTU), Singapore, in 2009 and 2015, respectively. From May 2014 to May 2018, she worked as a Research Fellow at NTU, supported by the Singapore Defence Science Organisation (DSO) and the Economic Development Board (EDB). During this period, her research focus on information theory and network coding. In June 2018, she joined The University of Sydney as a Postdoctoral Research Associate, with research work centered on ultra-reliable low-latency communication (URLLC) and industrial Internet of Things (IoT) systems. She joined Southeast University in 2019 as an Associate Professor. Her current research interest includes low-latency coding, integrated sensing and communication (ISAC), and 6G waveform design.</p> <p>徐晓莉博士分别于 2009 年和 2015 年获得新加坡南洋理工大学 (NTU) 学士学位 (一等荣誉) 和博士学位。2015 年 5 月至 2018 年 5 月, 她在南洋理工大学担任研究员, 研究工作由新加坡国防科技局 (DSO) 和经济发展局 (EDB) 资助, 期间主要聚焦于信息论与网络编码研究。2018 年 6 月, 她加入悉尼大学担任博士后研究员, 研究重点为超高可靠低时延通信 (URLLC) 和工业物联网 (IoT) 系统。她于 2019 年加入东南大学, 任副教授, 目前的研究方向包括低时延编码、通感一体化 (ISAC) 以及 6G 波形设计。</p>		
Speech Title (English): (中英文)		
CP-OFDM ISAC: the impact of CP length and Sensing Modes CP-OFDM ISAC: 循环前缀长度与感知模式的影响		
Speech Abstract (Please provide in paragraph form within 500 words.) (中英文)		
<p>本讲座将围绕基于 CP-OFDM 的通感一体化 (ISAC) 系统, 探讨两个关键问题。首先, 传统观点认为, OFDM-ISAC 的最大感知距离受限于循环前缀 (CP) 长度, 以避免符号间干扰 (ISI) 和载波间干扰 (ICI)。然而, 我们的理论分析表明, OFDM 信号中固有的随机通信数据可自然充当“掩码”, 使 ISI/ICI 在雷达信号处理后呈现随机特性并被显著抑制, 从而使得有效感知距离远超 CP 所限定的无干扰范围。为进一步缓解远距目标因 CP 不足导致的功率衰减, 我们提出一种滑动窗口感知方法: 通过迭代检测并消除近距目标, 动态前移检测窗口, 有效提升对远距目标的感知能力。其次, 我们推导了目标定位与速度估计的克拉美-罗下界 (CRLB), 系统比较了单基地、双基地及混合感知模式的性能极限。在此基础上, 提出一种基于基站 (BS) 与用户设备 (UE) 协作的混合单/双基地感知框架。研究发现, 感知性能高度依赖于协作 UE 的几何位置, 我们进一步提出了最优 UE 选择策略, 并分析了 UE 分布密度对感知覆盖与精度的影响。</p> <p>This talk addresses two key aspects of CP-OFDM-based ISAC. First, while conventional wisdom limits sensing range to the CP-defined ISI/ICI-free zone, we show that random data in OFDM signals inherently masks ISI/ICI, enabling effective radar processing well beyond this limit. To combat power loss for long-range targets due to insufficient CP, we propose a sliding-window sensing method that iteratively cancels near-range clutter and shifts the detection window forward. Second, we derive CRLBs for localization and velocity estimation to benchmark monostatic, bistatic, and hybrid sensing modes. We then propose a BS-UE cooperative hybrid framework that requires no extra spectrum or inter-cell coordination. Performance is shown to strongly depend on UE geometry and we develop optimal UE selection strategies and analyze how UE density affects sensing coverage and accuracy.</p>		