



西北大学数学学院
SCHOOL OF MATHEMATICS NORTHWEST UNIVERSITY

New Sequence Design for Future Wireless Systems

报告人：Zilong LIU @ School of CSEE, University of Essex

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报告摘要：

Sequence design used to be a very hot research topic especially in the era of 3G (and before) where low-correlation pseudo-random sequences are adopted in code-division multiple access (CDMA) systems. After many years of study, complaints are heard from time to time that many old design problems have been well solved. Therefore, it is time to ask what new sequences are needed for the next-generation wireless systems and how we can efficiently design and process them using effective mathematical and signal processing tools. A series of new sequence design problems arising from 5G/6G communication background will be introduced. In contrast to the prior state-of-the-art, the key is to embrace sparsity, multi-domain design, Doppler-resilience, randomness, and multi-functionality. I will argue in this talk that the golden time of sequence design is yet to arrive.

报告人简介：

刘子龙博士，现任英国埃塞克斯大学副教授、6G实验室主任，并于2024年获评该校年度杰青。研究方向聚焦于编码、信号处理与通信系统的交叉领域，先后在序列，波形与多址等领域做出了一系列原创贡献。学术论文发表在《IEEE Transactions on Information Theory》和《IEEE Transactions on Signal Processing》等著名期刊。先后毕业于华中科技大学（学士）、清华大学（硕士）、新加坡南洋理工大学（博士），并曾任英国萨里大学5G创新中心（欧洲最大的通信研究中心）高级研究员。刘博士是IEEE车载技术分会杰出讲师，曾荣获英国EPSRC新锐学者（New Investigator Award），曾担任日本国家级6G自动驾驶顾问专家。目前，他是《IEEE Transactions on Vehicular Technology》、《IEEE Transactions on Wireless Communications》、《IEEE Wireless Communications Letters》与《Advances in Mathematics of Communications》等多个国际期刊的编委。

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