Call for Papers – IEEE ICCET 2025

Theme: Multidimensional Modulation for Next Generation Multiple Access Networks

Past decade has witnessed the tremendous increases in data throughput and the number of connected nodes, and recent studies have also foreboded these increases in next generation multiple access networks. These tremendous increases will undoubtedly result in increasingly stringent requirements of spectral efficiency and energy efficiency. To meet these two requirements, multidimensional modulation, such as index modulation, media-based modulation, RIS-based/reflecting modulation, OTFS, and subcarrier number modulation, attracts researchers' attention in recent years. Different from conventional amplitude-phase modulation schemes, sparsity modulation employs one or more modulation dimension(s) in addition to the classic amplitude-phase constellation diagram, so as to form a higher-dimensional modulation scheme, which considerably enhances the spectral efficiency under proper system configurations.

By multidimensional modulation, only a subset of media resources or functional blocks will be activated to form a unique activation pattern. Consequently, the activation pattern per se can be used to modulate extra bit stream in addition to the bit stream modulated by data constellation symbols. As a paradigm in its infancy, there are still a large number of open research questions awaiting solutions and further research activities are of high importance to finally promote sparsity modulation to the practical implementation stage. Apart from theoretical research, the concerns of practical implementation are required to be addressed.

In light of the aforementioned advantages of applying multidimensional modulation for 6G communications and the remaining research problems, this feature topic aims to bring together leading researchers in both academia and industry from diversified backgrounds to attract original and high-quality publications addressing the theoretical and practical issues related to multidimensional modulation. Extended versions of papers published in conferences, symposiums, or workshop proceedings are encouraged for considerations.

Topics of Interest
We welcome submissions that address, but are not limited to, the following areas:
- Artificial intelligence and learning techniques assisted multidimensional modulation
- Massive MIMO and reconfigurable intelligent surface (RIS) assisted multidimensional modulation
- Multidimensional modulation in millimeter-wave, terahertz and optical wireless communications
- Multidimensional modulation for underwater optical/acoustic communications
- Distance-aware and space-frequency-correlated multidimensional modulation
- Multidimensional modulation with high mobility
- Physical security and secrecy related issues of multidimensional modulation
- Multidimensional modulation in multi-user and cooperative relay networks
- Performance analysis for multidimensional modulation based communication systems

- Resource allocation and optimization for multidimensional modulation based communication systems
- Detection and transceiver designs for multidimensional modulation
- Multidimensional modulation aided interference mitigation techniques
- Pilot designs and channel estimation techniques for multidimensional modulation
- Network architecture designs for multidimensional modulation
- Signal processing techniques for multidimensional modulation
- Novel multidimensional modulation bit-to-pattern mapping relation designs
- Multidimensional modulation aided non-orthogonal multiple access, energy harvesting, and cognitive radio schemes
- Emerging applications of multidimensional modulation
- Implementation challenges and future research directions of multidimensional modulation

Submission Guidelines

Papers should present original interdisciplinary research work, practical innovations, or theoretical developments that address the challenges in multi-scale communication systems. Submissions must adhere to IEEE's standard conference template and should not exceed 9 pages in double-column format, including figures, tables, and references.

Track Chairs

Dr. Jun Li, Guangzhou University

Dr. Yier Yan, Guangzhou University

Dr. Jia Hou, Soochow University