反问题与成像团队学术报告

报告题目： Learnable Regularization and Its Applications in Accelerated MRI

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摘　　要：

The design of regularizers has been a central research topic for decades. Early approaches primarily relied on manually designed regularizers, offering limited flexibility and adaptability. With the advancement of machine learning, allowing certain parameters to be learned from data, thereby improving performance. The introduction of adversarial regularizers further advanced the field, enabling fully data-driven regularizer design. However, adversarial regularizers face significant limitations, including their inability to adapt to specific measurement systems in inverse problems and a persistent discrepancy between numerical solutions and theoretical expectations. To address these challenges, this talk introduces a novel learnable regularizer based on the source conditions of the measurement system. This approach enables dynamic adaptation to both the data and the measurement framework, bridging the gap between theoretical principles and practical implementation. The regularization properties of the proposed method in solving inverse problems will be discussed, along with its application and effectiveness in addressing challenges in accelerated MRI.