

Randomized dynamical sampling for source recovery

Le Gong

Vanderbilt University

We study the recovery of graph signals evolving under a linear dynamical system, where both the initial condition and the source term are bandlimited. To address this problem, we propose two random space-time sampling strategies and identify conditions for stable recovery. Sampling complexity bounds are derived using the Restricted Isometry Property (RIP). We also present a robust recovery algorithm with theoretical guarantees and demonstrate its effectiveness through extensive experiments on synthetic and real-world datasets.

In Special Session 1 on Applied Harmonic Analysis and Operator Theory at the Mathematical Congress of the Americas 2025.