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Type: **Talk**

Multilevel Normalizing Flow Samplers with Built-in Variance Reduction in LFT

Monday 3 November 2025 17:00 (20 minutes)

Abstract:

We present a multilevel generative sampler for lattice field theories that combines local upsampling with normalizing flows (NFs). At each level, new sites are first sampled independently from Gaussian mixture models and then refined with NFs to introduce correlations, while the coarse sites remain embedded in the finer lattice. Our results show that hierarchical generative sampling scales more efficiently than training single-level models directly at large lattice sizes. We further introduce a multilevel estimator that prioritizes sampling at the coarser scales, yielding significant variance reduction.

Parallel Session (for talks only)

Algorithms and artificial intelligence

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