

Machine learning for sampling in lattice field theory

Monday, 30 November 2020 13:30 (1 hour)

In the context of lattice quantum field theory calculations in particle and nuclear physics, I will describe avenues to accelerate sampling from known probability distributions using machine learning. I will focus in particular on flow-based generative models, and describe how guarantees of exactness and the incorporation of complex symmetries (e.g., gauge symmetry) into model architectures can be achieved. I will show the results of proof-of-principle studies that demonstrate that sampling from generative models can be orders of magnitude more efficient than traditional Hamiltonian/hybrid Monte Carlo approaches in this context.

Primary author: SHANAHAN, Phiala

Presenter: SHANAHAN, Phiala