

Tackling the Signal to Noise problem with Stochastic Automatic Differentiation

Wednesday, 14 May 2025 11:45 (45 minutes)

Lattice field theory computations of two-point functions are generally affected by the so called signal to noise problem, wherein the signal of the Euclidean time correlator decays faster than the variance. In this talk we propose a different perspective on the origin of this problem. Following this, we argue that by writing correlators as derivatives with respect to sources and evaluating these derivatives using techniques of stochastic automatic differentiation we can eliminate completely the signal to noise problem. Results in a four dimensional scalar theory confirm the expected behavior.

Presenter: Dr CATUMBA, Guilherme (University of Milano)