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NSPT for O(N) non-linear sigma model: the larger N the better

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The $O(N)$-Nonlinear Sigma Model (NLSM) is an example of field theory on a target space with non-trivial geometry. One interesting feature of NLSM is asymptotic freedom, which makes perturbative calculations interesting.

Given the successes in Lattice Gauge Theories, Numerical Stochastic Perturbation Theory (NSPT) is a natural candidate for performing high order computations also in the case of NLSM. However, in low-dimensional systems NSPT is known to display statistical fluctuations substantially increasing for increasing orders. In this presentation, we explore how for $O(N)$ this behaviour is strongly dependent on N. As largely expected on general grounds, the larger is N, the larger is the order at which a NSPT computation can be effectively performed.

Topical area

Theoretical Developments

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