

Quantum Field Theory on the Lattice I

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Abstract content

Summary

We present the basic concepts behind numerical simulations, which lead to non-perturbative results in particle physics. We first sketch the functional integral formulation of quantum field theory, its transition to Euclidean space and the link to statistical mechanics. Thus we are prepared for the lattice regularisation, which we apply to scalar fields, gauge fields and fermions. In particular we address the treatment of chiral symmetry. At last we describe the formulation of lattice QCD and comment on simulation techniques and important results.

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