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Machine Learning Kernels for Real-Time Complex Langevin

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Real time evolution in QFT poses a severe sign problem, which may be alleviated via a complex Langevin approach.

However, so far simulation results consistently fail to converge with a large real-time extent. A kernel in a complex Langevin equation is known to influence the appearance of the boundary terms and integration cycles, and thus kernel choice can improve the range of real-time extents with correct results. For multi-dimensional models the optimal kernel is searched for using machine learning methods. We test this approach by simulating the simplest possible case, a 0+1-dimensional scalar field theory in Minkowski space

Parallel Session (for talks only)

Algorithms and artificial intelligence

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