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Reconstruction of the vector meson propagator using a generalized eigenvalue problem

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For long distances in the euclidean time the vector meson (ρ) propagator has an exponentially decreasing signal-to-noise ratio.

However, the vector correlator not only consists of the vector meson but also of the propagator of a two-pion system with the same quantum numbers. We measure all two-pion propagators with an energy lower than the mass of the resting vector meson and employ a generalized eigenvalue problem (GEVP) to resolve the different contributing energy states. Using those we can reconstruct the propagator with a much smaller noise at large euclidean time distances.

In this talk I present an efficient way to measure two-pion propagators and our results on reconstruction of the vector meson propagator with staggered fermions in a box.

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