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A variational method for spectral functions

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The Generalized Eigenvalue Problem (GEVP) has been intensively used in the past in order to reliably extract energy levels from time-dependent euclidean correlators calculated in Lattice QCD. We propose an alternative formulation of the GEVP in frequency space. Our approach consists in applying the model independent Backus-Gilbert method to a set of euclidean two-point functions with common quantum numbers. A GEVP analysis in frequency space is then applied to a matrix of estimators that allows us, among other things, to obtain particular linear combinations of the initial set of operators that optimally overlap to different local regions in frequency. This approach can be interesting both for vacuum physics as well as for finite temperature problems.

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