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The Complex Gluon, Ghost and Higgs

Wednesday 11 September 2019 14:20 (50 minutes)

We discuss how to extract from lattice data information about the (unphysical as gauge variant) spectral representation of gluons and ghosts using a regularized inversion strategy, compatible with the standard Källen-Lehmann spectral integral, whilst allowing generalizations thereof, namely with non-positive density and/or complex conjugate poles.

We also discuss how to introduce gauge invariant spectral functions for gauge Higgs systems and what the differences are with the standard correlation functions at the level of perturbation theory.

As an extra, we introduce a gauge independent topological momentum space index that is sensitive to the analytic structure of the propagators and which we speculate to be able to detect phase transitions.

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