

Symmetry restoration and the gluon mass in the Landau gauge

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We investigate the generation of a gluon screening mass in Yang-Mills theory in the Landau gauge. We propose a gauge-fixing procedure where the Gribov ambiguity is overcome by summing over all Gribov copies with some weight function. This can be formulated in terms of a local field theory involving constrained, nonlinear sigma model fields. We show that a phenomenon of radiative symmetry restoration occurs in this theory, similar to what happens in the standard nonlinear sigma model in two dimensions. This results in a nonzero gluon screening mass, as seen in lattice simulations.

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