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Detecting magnetic defects in continuum Yang-Mills theory, ensembles, and gluon topological confinement

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Initially, we discuss a family of gauge fixing conditions that detect sectors of magnetic defects in continuum YM theories. The BRST symmetry cannot be globally defined, due to sector-dependent regularity conditions on the ghosts fields. This opens a window for the space of quantum states to be different from that implied when defects are removed. Next, we review how to integrate the partial contributions originated from non-Abelian monopoles, characterized by phenomenological dimensionful parameters. Using polymer techniques, we suggest how the ensemble can be related with a gauge model containing adjoint Higgs fields. In the SSB phase, due to topological reasons, there are no isolated adjoint magnetic charges, which can be interpreted as the absence of gluons in asymptotic states.

Furthermore, a colour singlet quark-antiquark pair would be confined by a smooth center string, while a nonsinglet pair would combine with a valence gluon to form a hybrid meson.

Summary

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