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A gauge-independent Higgs mechanism and the implications for quark confinement

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1. Introduction
2. Conventional Higgs mechanism
3. Higgs-Confinement: SU(2) case
4. Higgs-Confinement: SU(3) case
5. Conclusion and discussion

Summary

We propose a gauge-independent description for the Higgs mechanism by which a gauge boson acquires the mass in a manifestly gauge-invariant way
without assuming spontaneous breakdown of gauge symmetry signaled by a non-vanishing vacuum expectation value of the scalar field.
This enables us to discuss the confinement-Higgs complementarity from a new perspective.
Moreover, we discuss the implications of this Higgs mechanism for quark confinement for the SU(N) Yang-Mills theory.

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