A Generalized Yang-Mills Model and Dynamical Breaking of Gauge Symmetry

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Abstract: A generalized Yang-Mills model, which contains, besides the vector part V_μ, also a scalar part S, is constructed and the dynamical breaking of gauge symmetry in the model is also discussed. It is shown, in terms of Nambu-Jona-Lasinio (NJL) mechanism, that the gauge symmetry breaking can be realized dynamically in the generalized Yang-Mills model. The combination of the generalized Yang-Mills model and the NJL mechanism provides a way to overcome the difficulties related to the Higgs field and the Higgs mechanism in the usual spontaneous symmetry breaking theory.

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