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

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Abstract: A maximally generalized Yang-Mills model, which contains, besides the vector part V_μ, also an axial-vector part A_μ, a scalar part S, a pseudoscalar part P, and a tensor part $T_{\mu\nu}$, is constructed and the dynamical breaking of gauge symmetry in the model is also discussed. It is shown, in terms of the Nambu-Jona-Lasinio mechanism, that the gauge symmetry breaking can be realized dynamically in the maximally generalized Yang-Mills model. The combination of the maximally 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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