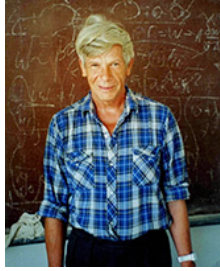


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Tachyon condensation in a chromomagnetic background field and the groundstate of QCD

Monday, 10 October 2022 17:10 (25 minutes)

In an attempt toward a better understanding of the vacuum of QCD I propose a condensation of the tachyonic mode in $SU(2)$. In the Savvidy vacuum, this mode is known to be unstable. In an approximation where the gluon fields are reduced to the tachyonic mode, which can be considered as a complex scalar field in $(1+1)$ -dimensions, I apply the methods known from the Higgs model and finite temperature field theory. The symmetry is spontaneously broken by a condensate of tachyons, i.e. of the unstable mode. As a result, I obtain a stable vacuum state with energy below zero. The energy of this state is a minimum in two parameters, the chromomagnetic background field, and the condensate. Raising the temperature, I observe a phase transition; and a restoration of the symmetry. (based on arxiv 2207.08711)

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