

QCD Vacuum Structure and Confinement



Contribution ID: 14

Type: **not specified**

Non-Perturbative Yang-Mills Beyond One-Loop Order

Wednesday 28 August 2024 11:45 (45 minutes)

Abstract: I present a novel analytic framework for $SU(N)$ Yang-Mills theory in the four-dimensional continuum. Background and effective field theory techniques are used to include non-perturbative contributions from cubic and quartic interactions. This approach is inspired by Savvidy who claims that first-order contributions from quartic interactions stabilise IR divergence found at one-loop order, paving the way for IR finite Yang-Mills calculations. I assess the validity of this claim and discuss the implications of my findings.

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