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Three-gluon vertex from quenched lattice simulations in general kinematics

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We present results for three-gluon vertex form factors in a relatively general kinematics using quenched lattice gauge theory. Three-gluon vertex is the key ingredient of Yang-Mills theory, reflecting its non-Abelian nature and serving as a unique testing ground for any non-perturbative approach such as Dyson-Schwinger techniques. In this work, we have focused on a partially asymmetric kinematic configuration containing both the symmetric (all moments are equal) and the asymmetric (one of the moments is zero) cases studied in the past as particular limits. We will pay special attention to the infrared limit, where a logarithmic singularity, related to the gluon mass generation mechanism and ghost masslessness, features a zero-crossing in both the symmetric and asymmetric cases.

Abstract

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