Inverse mean mass ordering in color-flavor-locking

Abstract

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Phase of high density QCD: erratum
diagrams is indeed gauge-fixing independent, which is a consequence of Ward-Takahashi identity and can be verified by a direct calculation.

The following comments concerning the result (1) are in order. The contribution of the magnetic gluon exchange cancels between the two diagrams. This happens because emission of a magnetic gluon by an on-shell quark is suppressed by parity conservation. As a result, \( c \) is proportional to \( \Delta^2 \) instead of \( \Delta^2 \log(\mu/\Delta) \). The remaining electric gluon exchange is suppressed at small gluon momenta because of the angular momentum conservation and the requirement that the helicity flip must occur in the diagram. This removes a collinear divergence which would have given rise to an extra factor of \( 1/\log g \) [3].

References

