Quark Loop Effects on Dressed Gluon Propagator in Framework of Global Color Symmetry Model

ZONG Hong-Shi[1,2,3] and SUN Wei-Min[1,2]

[1] Department of Physics, Nanjing University, Nanjing 210093, China
[2] Joint Center for Particle, Nuclear Physics and Cosmology, Nanjing 210093, China
[3] CCAST (World Laboratory), P.O. Box 8730, Beijing 100080, China

Abstract: Based on the global color symmetry model (GCM), a method for obtaining the quark loop effects on the dressed gluon propagator in GCM is developed. In the chiral limit, it is found that the dressed gluon propagator containing the quark loop effects in the Nambu-Goldstone and Wigner phases are quite different. In solving the quark self-energy functions in the two different phases and subsequent study of bag constant one should use the above dressed gluon propagator as input. The above approach for obtaining the current quark mass effects on the dressed gluon propagator is quite general and can also be used to calculate the chemical potential dependence of the dressed gluon propagator.

[Full text: PDF]

Close