Contribution ID: **14** Type: **Invited talk**

Testing infrared confining models beyond fundamental correlation functions

Monday 26 May 2025 10:00 (45 minutes)

Infrared-confining models such as the Curci-Ferrari and Refined Gribov-Zwanziger frameworks are known to provide modified gluon propagators that incorporate nonperturbative mass scales and/or complex analytic structures, while also yielding results compatible with benchmark nonperturbative approaches such as Lattice QCD. These models are largely evaluated through gluon, ghost and quark correlation functions, so that their predictive power for physical observables remains to be better explored. In this talk, I discuss how one can assess the efficacy of infrared-confining models in two distinct phenomenological contexts: the proton and neutron anomalous magnetic moments and color superconductivity in cold, dense matter. In particular, we analyze one-loop corrections to the quark-photon vertex and extract the F2 form factor for the different confining models. The associated proton and neutron magnetic moments are constructed using the constituent quark model to show how confining parameters impact predictions. Finally, in the superconducting context, we investigate how confining propagators impact the frequency-dependent gap structure in a Yukawa-type model. Overall, our results indicate that infrared-confining models provide consistent predictions for distinct QCD observables, while yielding quantitative discrepancies that might allow to discriminate between them.

Author: FARIA DOMINGUES PALHARES, Leticia (State University of Rio de Janeiro)

Presenter: FARIA DOMINGUES PALHARES, Leticia (State University of Rio de Janeiro)

Session Classification: Talks