Contribution ID: **29**   Type: **Oral talk**

Revisiting the Polyakov loop Nambu-Jona-Lasonio model at finite density of baryon charge

Monday, 21 December 2020 12:10 (20 minutes)

We revisit the Polyakov Loop coupled Nambu-Jona-Lasinio model that maintains the Polyakov loop dynamics at zero temperature, which is the most interesting for astrophysical applications. For this purpose we re-examine potential for the deconfinement order parameter at finite baryonic densities. Secondly, and the most important, we explicitly demonstrate that naive modification of this potential at any temperature is formally equivalent to assigning a baryonic charge to gluons. We develop a general formulation of the present model which is free of the discussed defect and is normalized to asymptotic of the QCD equation of state given by $\mathcal{O}(\alpha_s^2)$ perturbative results. We also demonstrate that incorporation of the Polyakov loop dynamics to the present model sizably stiffens the quark matter equation of state supporting an existence of heavy compact stars with quark cores.

Primary authors: IVANYTSKYI, Oleksii (Bogolyubov Institute for Theoretical Physics); PROVIDENCIA, Constanca

Presenter: IVANYTSKYI, Oleksii (Bogolyubov Institute for Theoretical Physics)

Session Classification: Physics of Nuclei and Elementary Particles

Track Classification: Physics of Nuclei and Elementary Particles