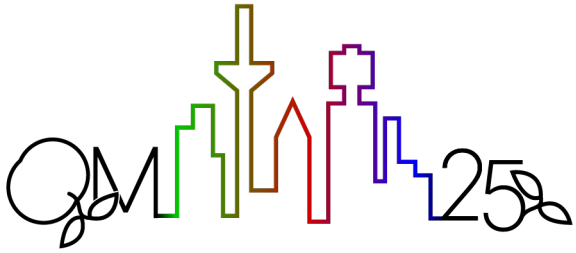

Contribution ID: **424** Type: **Oral**

Hot and dense perturbative QCD in a very strong magnetic background

We compute the pressure, chiral condensate and strange quark number susceptibility from first principles within perturbative QCD at finite temperature and very high magnetic fields up to two-loop and physical quark masses. We also discuss cold and dense quark matter in the presence of a very strong magnetic field using perturbative QCD at finite density. The effectively negligible contribution of the exchange diagram allows for building a simple analytic model for the equation of state for pure quark magnetars at extremely large fields. Finally, we consider the Taylor coefficients for the pressure in magnetic QCD. Our results for the chiral condensate, strange quark number susceptibility and Taylor coefficients can be directly compared to recent lattice QCD data away from the chiral transition. Even though current lattice results do not overlap with the region of validity for perturbation theory, perturbative results seem to be in the same ballpark.

Category

Theory

Collaboration (if applicable)

Primary authors: FRAGA, Eduardo (Universidade Federal do Rio de Janeiro); PALHARES, Leticia (Universidade do Estado do Rio de Janeiro); Dr RESTREPO, Tulio (Department of Physics, University of Houston)

Presenter: FRAGA, Eduardo (Universidade Federal do Rio de Janeiro)

Track Classification: New theoretical developments