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# Equation of state at finite density from functional methods

In this poster, we present first results for a state of the art calculation to obtain the quark-gluon matter pressure at finite chemical potential. To this end we employ Dyson-Schwinger equations (DSE) in a 2+1 flavor scenario that has been tested successfully elsewhere in the QCD phase diagram. The equation of state for quark-gluon matter can be used as input for the hydrostatic equilibrium equation of cold neutron stars. Two paths were explored for the calculations. First, employing an effective action expansion derived by functional methods, the pressure at finite and zero chemical potential can be compared or, second, the number density can be calculated and further integrated to yield the pressure. The latter option has already been proved useful in computing quark and baryon number fluctuations at finite temperature. Both methods are compared and some physical consequences are discussed.

## Category

Theory

## Collaboration (if applicable)

**Author:** PERFIG, Omar

**Co-authors:** Prof. FISCHER, Christian (University of Giessen, Germany); MOTTA, Theo (Justus Leibig University Gießen)

**Presenter:** PERFIG, Omar

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