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QCD inspired determination of NJL-model parameters

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Studies of the QCD phase diagram at finite temperature and quark chemical potential are currently one of the most discussed topics in theoretical physics and are of great importance to better our understanding of heavy-ion collision experiments. However, there is considerable uncertainty about the detailed structure of the QCD phase diagram at high baryon densities. Models provide some insight into the phase structure but usually rely on various parameters and therefore require validation from the point of view of the fundamental theory. We propose to apply nonperturbative functional Renormalization Group methods (FRG) to QCD in order to determine constraints on the parameters used in low-energy QCD models. In particular, this includes a determination of the dependence of these parameters on temperature and quark chemical potential. We present first results and argue that our findings can be used to improve the predictive power of model calculations.

Summary

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