

Lee-Yang edge singularities in QCD via the Dyson-Schwinger Equations

We take the Dyson-Schwinger Equation approach of QCD for the quark propagator at complex chemical potential to study the QCD phase transition. The phase transition line of the (2+1) flavor QCD matter in the imaginary chemical potential region is computed via a simplified truncation scheme, which curvature is found to be consistent with the one at real chemical potential. Moreover, the computation in the complex chemical potential plane allows us to determine the location of the Lee-Yang edge singularities. We show explicitly that the critical end point coincides with the Lee-Yang edge singularities on the real μ_B axis. We also investigate the scaling behavior of the singularities, check its model parameters dependency and discuss the possibility of extrapolating the CEP from a certain range of chemical potential.

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