

Magnetic Catalysis through an Anisotropic Magnetic Field in a Holographic Soft-wall QCD Model

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Abstract:

We explore the effect of the magnetic field on the QCD phase transition through AdS/CFT correspondence. By introducing an anisotropic magnetic field in the Einstein-Maxwell-dilaton system a family of analytic solutions is obtained by the potential reconstruction method where the contribution of the magnetic field in the blackening background can be analytically derived. After imposing the kinetic gauge function by requesting the linear Regge spectrum of J/ψ and ρ mesons which represent the heavy and light sector in the QCD phase diagram respectively, the contribution of the magnetic field phase diagram can be demonstrated. The results show that the transition temperature will be raising as the magnetic field increases, which is the so-called magnetic catalysis effect.