

QCD Equation of State in External Magnetic Field and at Finite Baryon Density

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In this report we present our first results on lattice study of QCD equation of state in external magnetic field and at finite baryon density. The simulations are performed with $N_f = 2 + 1$ rooted staggered quarks at physical quark masses. Finite baryon density is implemented through the lattice simulations at imaginary chemical potential. The results for the equation of state are expanded in imaginary chemical potential up to $O(\mu_B^6)$ and analytically continued to the real domain. A significant influence of the magnetic field on QCD equation of state is observed.

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