Contribution ID: **47** Type: **talk**

Chiral phase transition of three flavor QCD with nonzero magnetic field

Tuesday, 27 June 2017 16:20 (25 minutes)

Lattice simulations for (2+1)-flavor QCD demonstrated that the quark mass is one of the important parameters responsible for the (inverse)-magnetic catalysis. In this talk we will discuss the dependence of chiral condensates and susceptibilities on the magnetic field in three flavor QCD in the regime of the first order phase transition. The lattice simulations were performed using standard staggered fermions and the plaquette action with spatial sizes N_s = 16 and 24 and a fixed temporal size N_t = 4. The value of the quark mass was chosen such
that the system undergoes a first order chiral phase transition with zero magnetic field.
We find that the quark chiral condensate undergoes magnetic catalysis in the whole temperature region, and the first order phase transition becomes stronger as magnetic field increases. The underlying mechanism will also be discussed.

Primary author: TOMIYA, Akio (CCNU)

Co-authors: Dr SCHMIDT, Christian (Frankfurt Institute for Advanced Studies); Mr DING, Heng-Tong (Bielefeld University); Dr MUKHERJEE, Swagato (Assistant Physicist)

Presenter: TOMIYA, Akio (CCNU)