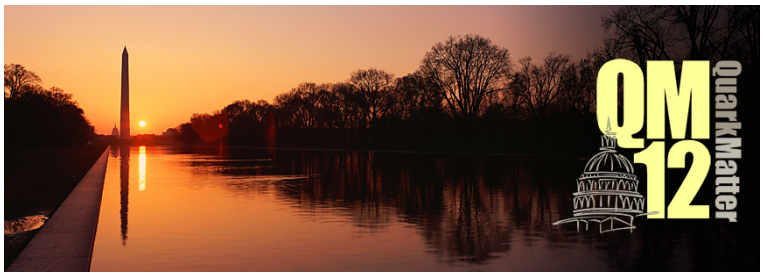

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Extruction of nontrivial correlation between chiral and deconfinement transitions from two-color QCD at imaginary chemical potential

Thursday 16 August 2012 16:00 (2 hours)

We investigate the nontrivial correlation between the chiral and deconfinement transition in the two-color QCD.
To extract the information, the imaginary chemical potential is taken into account.
At $\theta = \pi/2$ where θ is the imaginary chemical potential divided by the temperature, there is the exact nontrivial center symmetry which is the Z_2 symmetry and this symmetry can be spontaneously broken.
This behavior is quite different form the three-color QCD because the nontrivial center symmetry is always broken by the quark degree of freedom
in the three-color QCD.
This means that we can investigate the nontrivial correlation between the chiral and deconfinement transitions in the two-color system clearly than that in the three-color system.
Such nontrivial correlation is very important to construct the effective model of QCD and thus we can expect that several important model constraints are obtained from the two-color QCD analysis.
In this study, we mainly pay attention to the behavior of the Roberge-Weiss (RW) endpoint which appears at $\theta = \pi/2$ in the tho-color system.
We show that the RW endpoint is second-order if the nontrivial correlation is weak, but it turn into first-order when the nontrivial correlation is sufficiently strong.

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