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Topological feature and phase diagram of QCD at complex chemical potential

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One of the important subjects in QCD is understanding properties of deconfinement transition at finite temperature and density. We investigate the pseudo-critical temperature of the deconfinement transition by considering the complex chemical potential. The imaginary chemical potential can be interpreted as the Aharonov-Bohm phase induced by U(1) flux insertions to the fictitious hole of the imaginary-time direction, then the analogy of topological order suggests that we can determine the deconfinement transition temperature by the Roberge-Weiss endpoint. We also present the expected QCD phase diagram based on the perturbative calculation at finite complex chemical potential.

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