Contribution ID: **38** Type: **not specified**

背景场中胶子重求和传播子及德拜屏蔽效应的研究

Based on the Dyson-Schwinger equation, we compute the resummed gluon propagator in a holonomous plasma that is described by introducing a constant background field for the vector potential A_0. Due to the transversality of the holonomous Hard-Thermal-Loop in gluon self-energy, the resummed propagator has a similar Lorentz structure as that in the perturbative Quark-Gluon Plasma where the holonomy vanishes. As for the color structures, since diagonal gluons are mixed in the over-complete double line basis, only the propagators for off-diagonal gluons can be obtained unambiguously. On the other hand, multiplied by a projection operator, the propagators for diagonal gluons, which exhibit a highly non-trivial dependence on the background field, are uniquely determined after summing over the color indices. As an application of these results, we consider the Debye screening effect on the in-medium binding of quarkonium states by analyzing the static limit of the resummed gluon propagator. In general, introducing non-zero holonomy merely amounts to modifications on the perturbative screening mass m_D and the resulting heavy-quark potential, which remains the standard Debye screened form, is always deeper than the screened potential in the perturbative Quark-Gluon Plasma. Therefore, a weaker screening, thus a more tightly bounded quarkonium state can be expected in a holonomous plasma. In addition, both the diagonal and off-diagonal gluons become distinguishable by their modified screening masses $calM_D$ and the temperature dependence of the ratio $calM_D/T$ shows a very similar behavior as that found in lattice simulations.

Primary author: Dr GUO, Yun (Guangxi Normal University)

Co-author: Mr KUANG, Zhenpeng (Guangxi Normal University)

Presenter: Dr GUO, Yun (Guangxi Normal University)