



Contribution ID: 69

Type: **Poster**

Shear viscosity of classical fields in Yang-Mills theory

Monday, 24 June 2019 17:00 (20 minutes)

The created matter in the initial stage of relativistic heavy ion collisions is described well by the classical Yang-Mills (CYM) fields. It has been shown that the dynamics of the CYM fields play a significant role in the realization of a local thermal equilibrium. In this work, we expect that the CYM fields themselves have hydrodynamical properties such as transport coefficients in equilibrium. We discuss the shear viscosity of the classical fields in the CYM theory using the Green-Kubo formula. We show that the time correlation function of the energy-momentum tensor in equilibrium shows a monotonous decay with an exponential form and the shear viscosity can be well evaluated by the contribution from the exponential decay.

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Session Classification: Poster session