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Study of energy-momentum tensor correlation function in Nf=2+1 full QCD for QGP viscosities

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We study correlation functions of the energy-momentum (EM) tensor in Nf=2+1 full QCD for the sake of QGP viscosities.
The viscosity is given by three steps on lattice:
(1) calculate two point correlation functions of the energy-momentum tensor,
(2) derive the spectral function from the correlation function,
(3) applying the Kubo's formula the viscosity is related to the spectral function.
However the first two steps have severe difficulties.
By applying the gradient flow we solve the difficulty in the first step that the EM tensor cannot be defined as a conserved current on lattice and give a non-perturbatively renormalized EM tensor.
We calculate the correlation functions of the EM tensor and try to extract the shear viscosity through the spectral function.

Primary author: Prof. TANIGUCHI, Yusuke (University of Tsukuba)

Co-authors: Mr SUZUKI, Asobu (University of Tsukuba); Mr BABA, Atsushi (University of Tsukuba); Prof. SUZUKI, Hiroshi (Kyushu University); Prof. KANAYA, Kazuyuki (University of Tsukuba); Prof. KITAZAWA, Masakiyo (Osaka University); Prof. EJIRI, Shinji (Niigata University); Mr SHIMOJO, Takanori (Kyushu University); Prof. UMEDA, Takashi (Hiroshima University)

Presenter: Prof. TANIGUCHI, Yusuke (University of Tsukuba)

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