

11th International Conference on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions



Beitrag ID: 247

Typ: Talk

Thermal photon production rate from Transverse-Longitudinal(T-L) mesonic correlator on the lattice.

Dienstag, 28. März 2023 17:50 (20 Minuten)

Thermal photons are vital tool to study Quark-Gluon Plasma The photon production rate from the plasma at some temperature T is proportional to the transverse spectral function $\rho_T(\omega = |\vec{k}|, \vec{k})$. One can calculate the photon production rate also from the difference between $\rho_T(\omega, \vec{k})$ (transverse) and $\rho_L(\omega, \vec{k})$ (longitudinal) correlator as ρ_L vanishes at the light cone. The UV part of $\rho_T - \rho_L$ is suppressed; therefore, the corresponding Euclidean correlator receives most of its contribution from the IR part of $\rho_T - \rho_L$. We also calculate the T-L correlator on $N_f = 2 + 1$ flavor HISQ configurations with $m_l = m_s/5$ at temperature $\sim 1.15T_c$ and $1.3 T_c$. We have used two ansätze of the spectral function, which are 1) Polynomial ansatz of the spectral function connected to the UV region compatible with OPE expansion and 2) Hydro-inspired spectral function. We have also used the Backus-Gilbert method to estimate the spectral function. We will compare the photon production rate estimated from all these different methods.

Experiment/Theory

Theory/Phenomenology

Affiliation

Bielefeld University

Hauptautor: BALA, Dibyendu (Bielefeld University)

Co-Autoren: ALL, Sajid (Bielefeld University); KACZMAREK, Olaf (Bielefeld University); FRANCIS, Anthony (National Yang Ming Chiao Tung University (NYCU)); JACKSON, Greg (INT, University of Washington); UEDING, Tristan (Bielefeld University)

Vortragende: BALA, Dibyendu (Bielefeld University); ALL, Sajid (Bielefeld University)

Sitzung Einordnung: Parallel: Electromagnetic & Electroweak Probes

Track Klassifizierung: Electromagnetic and electroweak probes