Motivation

Hot media emit electromagnetic signals & γ, H can be direct signals from the media.

"Curious puzzle" Large photon ν₂ is observed.

Landau damping is small enough compared to annihilation rate.

To research deconfined medium contribution seems important.

One needs "rate" & hydro model.

Self energy

Propagator determines vertexes by Ward-Takahashi identity and isotropy

* Photon rate is estimated with "bare" vertex.

WTI is not satisfied but Quasi-particle kinematics can be understood.

Strategy

1-loop with bare vertex

Lattice quark propagator

γ rate


Results

Photon production rate

T_c=290MeV m_c=0.75T thermal mass ω, q : photon four momentum perturbative analysis

Virtual photon dispersions

Landau damping

Dilepton production rate

Our Result No Vertex Correction HTL Free

Comparable to perturbative analysis

- Sum of three production processes, plasmino-plasmino annihilation, normal-plasmino annihilation and normal-plasmino Landau damping.
- The structure reflects a simple result that plasmino exists in space-like region.
- Cherenkov radiation is small enough compared to annihilation rate.
- Enhancement around 1.1m_c is caused by Landau damping.
- 2 divergence comes from van Hove singularity.
- The vertex correction produces a production in which no corresponding annihilation process nor Landau damping of two quasi-particles exists.

Summary

- We calculated photon & dilepton production rate from static deconfined medium using the quark propagator obtained in quenched lattice QCD.
- Photon production rate is comparable to perturbative result although production processes are different.
- Dilepton production rate enhanced owing to Landau damping.
- Future: a vertex correction & finite momentum analysis is need.