Hard Probe 2016



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Non-thermal photons in the quark-gluon plasma induced from jets

Saturday 24 September 2016 11:00 (20 minutes)

We investigate photon production in the non-equilibrium partonic transport approach BAMPS (Boltzmann Approach to Multi-Parton Scatterings). BAMPS serves as a microscopic tool to study expanding fireballs, employing a stochastic method to solve the relativistic 3+1d Boltzmann equation for quarks, gluons, photons and dileptons. The algorithm is able to closely reproduce the leading order photon production rate (AMY) in thermal equilibrium, using elastic and radiative microscopic scattering processes. BAMPS is applicable for the whole evolution of the quark-gluon plasma (QGP) in RHIC and LHC heavy-ion collisions, where the photon production is influenced by the chemical and thermal non-equilibrium of the early phase. Highly energetic quark- and gluon jets will convert into or radiate photons, effects we include by default.

We show results for photon spectra from the QGP and investigate its role for the elliptic flow of photons. Photons induced by jet-like particles show very different momentum anisotropies compared to the radiating bulk.

Dilepton contributions from the QGP are studied in a similar fashion.

Summary

Presentation type

Oral

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