

Medium induced shower in an expanding QCD plasma

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Due to multiple scattering with the medium, hard partons can be driven slightly off-shell leading to medium-induced radiation. The BMDPS-Z framework [1], developed within the light cone path integral formalism, has been instrumental in obtaining the medium-induced radiation spectra. This framework was reformulated by Caron-Huot and Gale [2] into a radiation rate and solved numerically for finite medium length with constant temperature.

While these splitting rates can be used to resum multiple successive radiation, the literature has typically relied on approximations to the radiation rate. This includes either using radiation rates in a medium of infinite length, which overestimates the rates, or approximations to the rates in a medium of finite length that are only valid in different limits of the phase-space. We present an extension of the framework to the case of an expanding medium and employ the resulting rate to resum multiple radiation, which allows us to follow the full medium-induced shower of hard partons in an expanding QCD plasma.

[1] B. G. Zakharov, JETP Lett. 63 952 (1996).

B. G. Zakharov, JETP Lett. 65, 615 (1997).

R. Baier, Y. L. Dokshitzer, A. H. Mueller, S. Peigne and D. Schiff, Nucl. Phys. B 478, 577 (1996) ; 483, 291 (1997).

[2] S. Caron-Huot and C. Gale, Phys.Rev.C 82 (2010) 064902

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