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Medium-induced soft gluon radiation in the quark scattering process without color transfer in t-channel

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We study coherence effects on the medium-induced soft gluon radiation off an “asymptotic quark” traversing a hot and dense QCD medium. The transverse momentum spectrum of the emitted gluon is computed at first order in opacity expansion. The interference effects between the initial and final state radiation modify the soft gluon radiation when a finite angle between the initial and final quarks is considered. The spectrum presents a soft divergence. We comment on possible implications on observables in heavy ion collisions which are sensitive to the initial state radiation.

Author: MA, Hao

Co-authors: SALGADO LOPEZ, Carlos Albert (Universidade de Santiago de Compostela (ES)); MARTINEZ GUERRERO, Mauricio (FIAS); ARMESTO PEREZ, Nestor (Universidade de Santiago de Compostela (ES)); MEHTAR--TANI, Yacine

Presenter: MA, Hao

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