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Typ: Talk

On the momentum broadening of in-medium jet evolution using a light-front Hamiltonian approach

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Following the formalism developed in our preceding works [1], a non-perturbative light-front Hamiltonian approach, we investigated the momentum broadening of a quark jet inside a $SU(3)$ colored medium. We performed the numerical simulation of the real-time jet evolution in the Fock space of $|q\rangle + |qg\rangle$, at an extensive range of p^+ , and various medium densities. With the obtained light-front wavefunctions of the quark jet, we extracted the jet's observables, including its transverse momentum distribution, the quenching parameter, and the gluon emission rate. We analyzed the interplay between the medium-induced gluon emission and the momentum broadening. This work provides an enhanced understanding of jet quenching from non-perturbative perspectives.

[1] M. Li, T. Lappi, and X. Zhao, "Scattering and gluon emission in a color field: A light-front Hamiltonian approach", Phys. Rev. D 104 (2021) no.5, 056014; arXiv:2107.02225 [hep-ph].

Experiment/Theory

Theory/Phenomenology

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