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Improved opacity expansion for in-medium branching: transverse momentum dependent distribution

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When an energetic parton propagates in a hot QCD medium it loses energy by emitting radiation induced by the parton scattering in the medium. The emission spectrum for such processes is typically split into either a regime dominated by a single hard scattering (GLV) or by a regime dominated by multiple low momentum transfers (BDMPS-Z). Both these regimes admit a close analytic treatment. Only recently, a complete analytic (and systematic) formula was provided which allows to interpolate between these two regimes by expanding around the multiple soft scattering solution. In this talk, we present new results for the k_t differential spectrum. We show that despite the increase in complexity, the formulas are analytically tractable. We compare our approach to the plain opacity expansion and analyse in particular the convergence of the improved opacity expansion by computing the NNLO. Finally, we comment on Monte Carlo implementations for future applications to jet quenching phenomenology.

Collaboration (if applicable)

Track

Jets and High Momentum Hadrons

Contribution type

Contributed Talk

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