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Improved opacity expansion for medium-induced parton splitting

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Improved opacity expansion for medium-induced parton splitting

Medium-induced parton splitting is the building block for jet evolution in the presence of a hot QCD medium and plays a central role in quantitative studies of jet quenching. It exhibits two regimes: single hard and multiple soft scattering regimes that dominate at high and low frequency respectively. A closed analytic formula encompassing both regimes is so far lacking. To remedy this we propose an improved opacity expansion approach where instead of expanding around vacuum the expansion is performed around the harmonic oscillator providing a better convergence of the series at low frequencies. We show that the first two orders account for the two known analytic limits.

Primary author: MEHTAR-TANI, Yacine

Presenter: MEHTAR-TANI, Yacine

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