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Recent developments in jet quenching theory

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Motivated by the new experimental capabilities of the LHC and the new results from heavy-ion experiments, several extensions of the standard calculations of energy loss have been made recently. In this presentation, I will provide a short overview of recent developments in jet quenching theory. First, I will discuss some improvements computed by different groups to implement energy-momentum conservation in a rigorous way, relaxing some of the assumptions that were made in the standard jet quenching calculations. Second, quantum interference effects between different parton emitters when propagating through an extended coloured medium will be considered, within a quark-antiquark antenna as a model setup. Finally, other recent extensions as the modification of the colour flow inside a jet in a QCD medium with respect to vacuum, and the use of SCET to compute transverse momentum broadening and medium-induced gluon radiation, will be very briefly presented.

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