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Parton showers as sources of energy-momentum deposition in the QGP and implications for jet observables

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I present results on the derivation of the distribution of energy and momentum transmitted from a primary fast parton and its medium-induced bremsstrahlung gluons to a thermalized quark-gluon plasma. The calculation takes into account the important and thus far neglected effects of quantum interference between the resulting color currents. From the result I obtain the rate at which energy is absorbed by the medium as a function of time and find that the rate is modified by the quantum interference between the primary parton and secondary gluons. This Landau-Pomeranchuk-Migdal type interference persists for time scales relevant to heavy ion phenomenology. The newly derived source of energy and momentum deposition is coupled to linearized hydrodynamics to obtain the bulk medium response to realistic parton propagation and splitting in the quark-gluon plasma. Implications for jet observables are discussed.

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