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Realistic medium-averaging in radiative energy loss

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There has been a lot of interest in testing radiative energy loss
calculations against data from RHIC and the LHC. It is customary, as in the Gyulassy-Levai-Vitev (GLV) approach, to formulate the energy loss of a jet parton as a line integral from the production point along a straight-line trajectory. Calculations then account for variations in pathlength with jet origin and direction, and most recently also for fluctuations in the medium density (lumpiness), which give rise to fluctuations in energy loss that significantly affect high-pT observables such as the nuclear suppression R_AA or the momentum anisotropies v_n.

These studies, however, ignore that the line integrals themselves
represent an average over the location of possible interaction points
(color sources in GLV) along the jet path. We will present results from a
calculation with stochastically chosen interaction points for each jet,
which gives additional fluctuations in energy loss. The influence of these
fluctuations on RHIC and LHC observables will be discussed utilizing both
medium density parameterizations and realistic medium evolution from bulk
dynamics models, such as the parton transport MPC. A special advantage of
using parton transport is that it conveniently provides the evolution of
an ensemble of scattering centers.

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