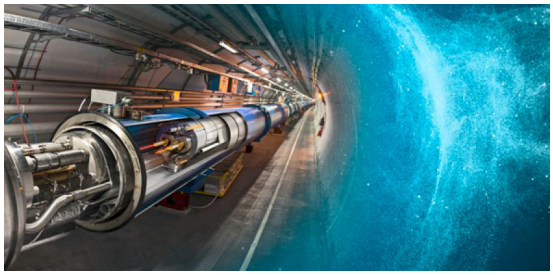

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Recoil Kinematics in Radiative Energy Loss

Tuesday, 22 March 2022 17:00 (15 minutes)

We investigate the behaviour of particle emission spectra in the large-x region following a rigorous implementation of the kinematic constraints in the simpler framework of a scalar field theory. We find that the small-x kinematic constraints in the simpler theory are identical to those implemented in sophisticated QCD-based energy loss models, but that the exact large-x kinematics are more complicated than those implemented in those same QCD-based energy loss models. We compute the multiplicity distributions for various values of the parent parton energy and see that our spectra respect energy conservation by smoothly vanishing outside the classically allowed $0 < x < 1$ region. We repeat the calculation for the emission of a spin-1 particle and similarly observe that the spectra have support strictly within kinematically allowed regions.

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