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Jet quenching in expanding medium

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Comprehensive understanding of medium-induced radiative energy loss is of a paramount importance in describing observed jet quenching in heavy-ion collisions. In this work, we calculate the medium-modified gluon splitting rates for different profiles of the expanding partonic medium, namely profiles for static, exponential, and Bjorken expanding medium. In the presented study, the Baier-Dokshitzer-Mueller-Peigne-Schiff-Zakharov (BDMPSZ) formalism is used for multiple soft scatterings with a time-dependent transport coefficient for characterizing the expanding medium. The medium-evolved gluon spectra are systematically calculated using the kinetic rate equation for all the medium profiles and a study of the distinctive features at low and high momentum fractions of radiated gluons are provided. Finally, we provide a calculation of the jet R_{AA} which quantifies a sensitivity of the inclusive jet suppression on the way how the medium expands. Comparisons of predicted jet R_{AA} with experimental data from the LHC are also provided.

Authors: Dr ADHYA, Souvik Priyam (Institute of Particle and Nuclear Physics Faculty of Mathematics and Physics, Charles University); SPOUSTA, Martin (Charles University); Dr TYWONIUK, Konrad (University of Bergen (NO)); SALGADO LOPEZ, Carlos Albert (Universidade de Santiago de Compostela (ES))

Presenter: Dr ADHYA, Souvik Priyam (Institute of Particle and Nuclear Physics Faculty of Mathematics and Physics, Charles University)

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