



Contribution ID: 324

Type: **Parallel Talk**

Particle production in high energy collisions: from high to low pt and back

Wednesday, 16 May 2018 15:40 (20 minutes)

We describe a new approach to particle production in high energy hadronic/nuclear collisions which aims to unify the Color Glass Condensate (CGC) formalism at low x (low pt) with that of pQCD and collinear factorization formalism at intermediate to large x (high pt) and therefore generalizes the CGC formalism to include high pt physics. To this end we consider scattering of a quark from high x modes of the target hadron or nucleus in addition to (all-order) scattering from the usual soft color field describing the low x modes. We derive an analytical expression for the quark propagator which includes longitudinal momentum exchange with the target and allows for large angle deflection of the projectile quark. This quark propagator is then used to compute the Leading Order DIS structure functions F_2 and F_L in the general kinematics $0 < x < 1$ and thus generalizes the dipole picture of structure functions at small x . We outline how this formalism can be extended to calculate particle production in high energy proton-nucleus and nucleus-nucleus collisions at all pt , and how it enables one to compute jet energy loss effects from the early stages of a heavy ion collision.

Based on Phys.Rev. D96 (2017) no.7, 074020 (arXiv:1708.07533) and work in progress

Content type

Theory

Collaboration

Centralised submission by Collaboration

Presenter name already specified

Primary author: JALILIAN-MARIAN, Jamal (Baruch College)

Presenter: JALILIAN-MARIAN, Jamal (Baruch College)

Session Classification: New theoretical developments

Track Classification: New theoretical developments