

QCD at the high-energy frontier

Friday 3 January 2020 21:10 (20 minutes)

When probed in very high energy collisions hadrons and nuclei are dense gluonic systems. The nonlinear interactions between these gluons can be understood with the color glass condensate effective theory that describes them as a classical color field. This talk will discuss recent advances in using this theoretical framework for scattering processes where the gluon field is probed with a dilute probe. Such processes include proton-nucleus collisions, exclusive photon-mediated interactions in nucleus-nucleus collisions and both inclusive and exclusive deep inelastic scattering. These processes are studied experimentally at the LHC and in future DIS experiments such as the EIC. The most natural way to describe them in the nonlinear high energy limit is a “dipole” picture where the dilute perturbative probe is quantized in light cone perturbation theory.

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Session Classification: submitted talks