

The 175th HENPIC seminar by Dr. Xiaoxuan Chu (褚晓璇)

Title: Di-hadron correlations and implication of gluon saturation

Abstract: The gluon distribution function grows with lower and lower momentum fraction x very fast. As the total scattering cross section is bound by quantum mechanics, the raise of the gluon density has to be tamed, which is explained by gluon recombination under the color glass condensate (CGC) framework. A definitive discovery of nonlinear effects in QCD and as such the saturation regime would significantly improve our understanding of the nucleon structure and of nuclear interactions at high energy. Two particle azimuthal correlation is one of the most direct and sensitive channels to access the underlying nonlinear gluon dynamics. In this talk, we will present the recent results of forward di-hadron correlations measured at RHIC, together with the signatures of gluon saturation predicted by CGC. New opportunities for measurements with the STAR forward upgrade and future EIC to study the nonlinear effects in QCD will also be discussed.

Summary